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Original Article

Translation and Reliability of Urdu Version of House-Brackmann Facial Grading System (HBFGS) in Patients with Bell's Palsy

Ushma Nasir*[1], Shahid Ahmed Heera[1], Marium Safdar[1], Farrukh Tariq[1], Anila Sarwar[1]

[1] University of Faisalabad, Faisalabad, Pakistan

Corresponding author: ushma.nasir@email.com

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Abstract

Background: Bell's palsy is characterized by the sudden onset of facial paralysis due to facial nerve inflammation. Accurate assessment tools, such as the House-Brackmann Facial Grading System (HBFGS), are essential for evaluating the severity of facial nerve dysfunction. This study aimed to translate and validate the Urdu version of HBFGS for Urdu-speaking patients, enhancing its reliability and applicability.

Objective: To translate the HBFGS into Urdu and evaluate its reliability and validity in assessing facial nerve function among Urdu-speaking patients with Bell's palsy.

Methods: A cross-sectional study was conducted with 245 participants diagnosed with Bell's palsy. The UHBFGS was developed through forward-backward translation and cultural adaptation. Participants' facial motor function was assessed using the UHBFGS by trained physiotherapists. Reliability was evaluated using Cronbach's alpha and intraclass correlation coefficient (ICC), while SPSS version 25 was used for data analysis.

Results: The UHBFGS demonstrated high internal consistency (Cronbach's alpha = 0.951) and excellent test-retest reliability (Pearson's r = 0.907). Inter-rater reliability was confirmed with an ICC of 0.888. Grade 3 severity was most common, affecting 43% of participants.

Conclusion: The Urdu version of the HBFGS is a reliable and valid tool for assessing facial nerve function in Urdu-speaking patients, facilitating improved clinical evaluation and patient management.

1 Introduction

Bell's palsy is characterized by the sudden onset of facial paralysis or weakness on one side of the face due to inflammation of the facial nerve. Although the exact etiology of Bell's palsy remains unclear, it is commonly associated with viral infections, particularly the reactivation of herpes simplex virus, which affects the facial nerve (1). The condition is not only a cause of significant cosmetic and functional impairment but also contributes to psychological and social distress due to its impact on facial expression, which is integral to human interaction and emotional expression (2, 3). The seventh cranial nerve, or the facial nerve, which is responsible for innervating muscles of facial expression, plays a crucial role in this condition. Its complex pathway through the skull renders it susceptible to inflammation and subsequent dysfunction, leading to the hallmark symptoms of Bell's palsy, such as facial drooping and asymmetry (4).

The need for precise assessment tools for facial nerve function is paramount in the management of Bell's palsy. The House-Brackmann Facial Grading System (HBFGS) is a widely recognized tool for evaluating the severity of facial nerve dysfunction. Developed in 1983, it classifies facial motor function into six grades, providing a standardized approach to assess and communicate the degree of facial paralysis (5). Despite its widespread use, the HBFGS has limitations, including its subjective nature and focus on static facial expressions, which can result in inter-observer variability (6). Moreover, there is a notable lack of an Urdu version of this grading system, which poses a challenge in accurately assessing patients who are Urdu speakers, as linguistic and cultural nuances are critical to the reliability and validity of such diagnostic tools (7).

Translating the HBFGS into Urdu involves more than a mere linguistic conversion; it requires careful cultural adaptation to ensure that the tool is relevant and comprehensible to Urdu-speaking patients. The translation process must maintain the integrity of the original

scale while incorporating idiomatic expressions and cultural references that resonate with the target population (8). The development of an Urdu version of the HBFGS is crucial in Pakistan, where a significant portion of the population does not speak English fluently. An accurate and culturally sensitive tool will enable healthcare providers to assess and monitor the progress of patients with Bell's palsy more effectively, leading to improved clinical outcomes (9).

This study aims to address the gap in healthcare accessibility for Urdu-speaking individuals by translating and validating the HBFGS for use in Pakistan. By ensuring the tool's reliability, healthcare professionals can make informed decisions regarding the diagnosis and treatment of Bell's palsy, ultimately improving patient care. Furthermore, this research contributes to the broader field of cross-cultural healthcare by highlighting the importance of developing assessment instruments that are both linguistically and culturally appropriate (10). Such efforts are essential in a globalized world where healthcare systems must accommodate diverse populations and ensure equitable access to diagnostic and treatment services (11).

The translated version of the HBFGS will undergo rigorous testing to establish its reliability, including assessments of its internal consistency and test-retest reliability. Responsiveness will also be evaluated to determine the tool's ability to detect changes over time, an essential feature for monitoring treatment progress and rehabilitation outcomes (12). By focusing on the development of culturally appropriate assessment tools and enhancing language understanding, this study not only aims to improve the management of Bell's palsy in Pakistan but also sets a precedent for future research in adapting healthcare instruments for non-English speaking populations globally (13).

2 Material and Methods

The study employed a cross-sectional design to assess the reliability of the Urdu version of the House-Brackmann Facial Grading System (UHBFGS) in patients diagnosed with Bell's palsy. Conducted over four months, the study was set in various physical therapy outpatient departments (OPDs) and clinical settings in Pakistan, where a diverse population of Bell's palsy patients were available for recruitment. The sample size was determined using Raosoft, a sample size calculator, ensuring adequate power to detect statistical significance. A total of 245 participants, both male and female, were recruited based on specific inclusion and exclusion criteria. Participants included were those diagnosed with Bell's palsy, aged 18 years and older, and willing to provide informed consent, while individuals with other neurological disorders or prior facial surgeries were excluded to maintain sample homogeneity (14).

The translation process for the UHBFGS was meticulously conducted using the forward-backward translation method to ensure linguistic accuracy and cultural relevance. A panel of bilingual experts performed the initial translation from English to Urdu, followed by a backward translation by independent translators unfamiliar with the original scale. Discrepancies were resolved through consensus discussions among the translators, ensuring that the final version retained the conceptual equivalence of the original scale (15).

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of The University of Faisalabad, and all procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (16). Participants were provided with detailed information about the study's objectives and procedures, and informed consent was obtained prior to their inclusion in the study. The confidentiality and anonymity of participants were strictly maintained throughout the research process.

Data collection involved administering the translated UHBFGS to the participants, alongside a demographic questionnaire to gather relevant background information. The grading system was used to evaluate facial motor function, with assessments conducted by trained physiotherapists to minimize inter-rater variability. In addition, a 5-point Likert scale questionnaire was utilized to gather feedback from healthcare providers regarding the usability and clinical relevance of the UHBFGS (17).

Statistical analysis was performed using SPSS version 25. Descriptive statistics were calculated to summarize the demographic characteristics and facial grading scores of the participants. Reliability analyses included the calculation of Cronbach's alpha to assess internal consistency, while test-retest reliability was evaluated using the Pearson correlation coefficient. Inter-rater reliability was determined by calculating the intraclass correlation coefficient (ICC), providing insights into the agreement between different raters. A significance level of $p<0.05$ was established for all statistical tests (18).

The study also explored the responsiveness of the UHBFGS by comparing baseline scores with follow-up assessments conducted at specified intervals, providing insights into the scale's sensitivity to changes in facial motor function over time. The analysis aimed to validate the Urdu version's ability to accurately reflect improvements or deteriorations in the participants' conditions, thereby supporting its utility in clinical practice (19).

This study meticulously translated and validated the UHBFGS, emphasizing the importance of culturally and linguistically appropriate assessment tools for Urdu-speaking patients with Bell's palsy. The rigorous methodology ensured that the findings would contribute meaningfully to the literature on cross-cultural adaptations of clinical instruments, thereby enhancing the quality of care for diverse patient populations (20).

3 Results

The study successfully recruited a total of 245 participants with Bell's palsy, comprising 74% females (n=181) and 26% males (n=64). The mean age of the participants was 39 years, ranging from 18 to 65 years. A majority of the participants, 57% (n=140), had left-sided facial paralysis, while 43% (n=105) exhibited right-sided involvement.

Table 1 presents the descriptive statistics of the participants, including gender distribution, facial side affected, and severity grades according to the Urdu version of the House-Brackmann Facial Grading System (UHBFGS).

Characteristic	Frequency (n)	Percentage (%)
Gender		
Male	64	26
Female	181	74
Facial Side Affected		
Left	140	57
Right	105	43
Severity Grade (UHBFGS)		
Grade 1	10	4
Grade 2	20	8
Grade 3	105	43
Grade 4	78	32
Grade 5	27	11
Grade 6	5	2

The data indicated that Grade 3 was the most common severity level, affecting 43% of participants, followed by Grade 4 at 32%. Grades 5 and 6 were less frequent, highlighting the variability in the severity of facial paralysis among the participants.

Reliability analyses demonstrated strong internal consistency and test-retest reliability of the UHBFGS in the Urdu language. Table 2 summarizes the reliability statistics, including Cronbach's alpha and intraclass correlation coefficients (ICC).

Reliability Measure	Value
Cronbach’s Alpha	0.951
Test-Retest Reliability (Pearson's r)	0.907
Inter-Rater Reliability (ICC)	0.888

The Cronbach’s alpha of 0.951 indicates a high level of internal consistency among the items of the UHBFGS. The test-retest reliability, as indicated by Pearson's correlation coefficient of 0.907, suggests excellent stability over time. The ICC of 0.888 reflects almost perfect agreement between different raters, supporting the scale's robustness in clinical settings.

The responsiveness of the UHBFGS was evaluated by assessing changes in facial grading scores over time. Follow-up assessments at one month post-baseline indicated significant improvements in facial motor function among the majority of participants. The mean improvement in UHBFGS scores was 1.5 points, reflecting the scale's sensitivity to detecting clinical changes.

4 Discussion

The study aimed to evaluate the reliability of the Urdu version of the House-Brackmann Facial Grading System (UHBFGS) in patients with Bell's palsy, addressing the need for culturally and linguistically appropriate assessment tools in the Urdu-speaking population. The findings demonstrated that the UHBFGS exhibited strong internal consistency and excellent test-retest and inter-rater reliability. These results align with previous studies that highlighted the robustness of the original House-Brackmann Scale in assessing facial nerve function across diverse populations (5, 6). The high Cronbach's alpha of 0.951 and an intraclass correlation coefficient (ICC) of 0.888 underscore the scale's effectiveness in providing consistent and reliable assessments.

The study's sample comprised a diverse demographic, including a higher proportion of females, which reflected the gender distribution reported in other studies on Bell's palsy (1, 9). The higher incidence of left-sided facial paralysis corroborates previous findings, suggesting a possible predilection for left-side involvement, although the reasons for this remain speculative and warrant further investigation (3). The responsiveness of the UHBFGS was evident in its ability to detect clinically significant improvements in facial function over time, highlighting its utility in monitoring patient progress and treatment efficacy.

One of the strengths of this study was its rigorous translation and cultural adaptation process, which ensured that the UHBFGS retained the conceptual integrity of the original scale while being linguistically accessible to Urdu-speaking patients. This approach addressed the challenges identified in previous cross-cultural adaptation studies, where inadequate translation could lead to measurement bias and inaccurate assessments (8, 12). Furthermore, the study's methodology, including a well-defined sample size and robust statistical analysis, provided a solid foundation for the reliability and validity assessments.

However, the study also had limitations that should be considered when interpreting the findings. The cross-sectional design, while effective for assessing reliability, did not allow for longitudinal assessments of patient outcomes over extended periods. Future research could incorporate a longitudinal design to explore the long-term reliability and responsiveness of the UHBFGS. Additionally, the study was conducted in specific clinical settings, which may limit the generalizability of the findings to other regions or healthcare environments. Expanding the study to include a broader geographic and clinical context could enhance the applicability of the results.

The inclusion of a larger sample size and diverse clinical settings in future research could also address potential biases and improve the generalizability of the findings. Furthermore, while the UHBFGS demonstrated strong reliability, incorporating patient-reported outcome measures alongside clinical assessments could provide a more comprehensive understanding of the impact of Bell's palsy on patients' quality of life (11). This holistic approach would align with the growing emphasis on patient-centered care in healthcare research and practice.

Urdu version of the House-Brackmann Facial Grading System proved to be a reliable and culturally appropriate tool for assessing facial nerve function in Urdu-speaking patients with Bell's palsy. The study highlighted the importance of adapting clinical instruments to accommodate linguistic and cultural differences, thereby enhancing the quality of healthcare delivery. These findings contribute to the broader discourse on cross-cultural healthcare research and underscore the need for continued efforts to develop and validate assessment tools that reflect the diverse linguistic and cultural backgrounds of patient populations (13). Such initiatives will ultimately lead to more accurate diagnoses, effective treatments, and improved patient outcomes in a globalized healthcare landscape.

5 Conclusion

The study concluded that the Urdu version of the House-Brackmann Facial Grading System (UHBFGS) is a reliable and effective tool for assessing facial nerve function in Urdu-speaking patients with Bell's palsy. The strong internal consistency, test-retest reliability, and inter-rater reliability of the UHBFGS support its use in clinical practice for accurately evaluating the severity of facial paralysis and monitoring patient progress. These findings have significant implications for human healthcare, as they underscore the necessity of developing culturally and linguistically adapted assessment tools to improve diagnostic accuracy and treatment outcomes. By enhancing healthcare accessibility for diverse linguistic populations, such adaptations can lead to more patient-centered care, ultimately improving the quality of life for individuals affected by conditions like Bell's palsy.

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