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LEVEL OF DEPRESSION AND QUALITY OF LIFE AMONG PATIENTS WITH BELL'S PALSY IN PESHAWAR; A CROSS-SECTIONAL STUDY

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Abstract

Objectives: *To determine the prevalence and severity of depression, assess quality of life, and examine the relationship between depression and quality of life among patients with Bell's Palsy.*

Method: *A cross-sectional study was conducted using non-probability convenience sampling to recruit 139 patients with Bell's Palsy from tertiary care hospitals in Peshawar. The Patient Health Questionnaire-9 (PHQ-9) and WHO Quality of Life-BREF (WHOQOL-BREF) instruments were administered to assess depression severity and quality of life across physical, psychological, social, and environmental domains. Data were analysed using SPSS version 22, employing descriptive statistics, chi-square tests, and Fisher's Exact Test with Monte Carlo simulation, with significance set at* $p < 0.05$*.*

Results: *Out of the respondents, 93.5 percent had clinically significant depressive symptoms with only 6.5 percent indicating minimal or none. The quality of life was significantly affected in all the domains with the lowest scores recorded in the environmental domain. The chi-square and Fisher Exact tests showed that the degree of depression was statistically significant with the general quality of life, especially with the social relationships part (*$p < 0.001$*) showing that social functioning was worse with greater levels of depression. There were no significant differences in severity of depression and gender (*$p = 0.115$*), past Bell's Palsy episodes (*$p = 0.978$*), or length of illness (*$p = 0.749$*), although clinical trends indicated that, in this case, depression was most likely to increase within the range of 1–3 months.*

Conclusion: *Depression is very common in patients with Palsy, and it is linked to poor quality of life particularly in social functioning. The results to this end demonstrate the necessity of combined psychological evaluation and treatment in the treatment of Bell's Palsy, especially of those with moderate-severe depressive symptoms.*

Introduction:

Bell palsy is the acute weakness or paralysis of one side of the face (typically) due to a sudden pathology of the seventh cranial nerve (facial nerve). It is reported to be the most common reason of peripheral facial paralysis and has a yearly instance of approximately 15 to 35 cases in 100000 people worldwide (1). The attack of Bell's palsy is generally surprising, and the face muscles on one side is paralysed. The patients face drooping of corner of the mouth, inability in closing their eyes and controlling their facial expressions. Despite the fact that the majority of the population will be cured on their own over time, some continue to complain of problems such as constant weakness, asymmetry of the face, or uncontrollable movements. These lingering effects have the potential of causing impacts on day to day functioning, emotional and social well being (2, 3). This problem tends to lead to anxiety, embarrassment, and avoidance of communication (4).

This can also disrupt socialization and impact the self image of an individual negatively, which could, in turn, diminish the confidence and lower the quality of life (5, 6). Research has demonstrated that individuals with facial nerve palsy had lower scores in the social and emotional well-being subscales of generic measures of quality-of-life (7). Thus, the impact of the Bell palsy is not limited to muscle weakness, but also involves psychological and social problems, which have a combined impact on the overall Health Related Quality of Life of an individual (HRQoL) (8).

Severe facial dysfunction can lead to emotional distress as patients with prolonged symptoms tend to experience greater psychological strain and reduced emotional well-being (9). Literature has demonstrated that the recovery of facial movements post-facial nerve palsy was associated with an increase in the quality if life scores.(10) Furthermore, psychological strain and fatigue are some of the factors that have been postulated to aggravate facial nerve dysfunction (11). Although there is an improvement on the diagnosis and treatment procedure, the psychological impacts of the condition have not been well-established especially in developing nations (12).

Even though, there is substantial evidence worldwide on the topics of depression and quality of life among patients with Bell's palsy, there is little-to-no such evidence in Pakistan, particularly, in Khyber Pakhtunkhwa. The local studies conducted have focused on physical or medical recovery and have not highlighted the psychological aspect of the disease. Hence there exists a significant gap between depression and quality of life of patients in Pakistan.

This paper aims at filling this gap by examining the level of depression and quality of life of the patients with Bell-palsy in Peshawar. The findings will deliver the region-specific data, guide the rehabilitation planning, and reveal the significance of integrating psychological care into the regular physiotherapy courses. The study will also help the region to adopt a holistic and patient-centred approach in the management of Bell's palsy.

Objectives:

- To determine the prevalence and severity of depression among Bell's Palsy patients using PHQ-9.
- To assess the quality of life in Bell's Palsy patients.
- To examine the relationship between depression severity and quality of life in Bell's Palsy patients.

Methods:

Operational Definitions:

Level of depression:

Depression is defined as the score obtained from the Patient Health Questionnaire-9 (PHQ-9). In the score range from 0 to 27.

Quality of life:

The quality of life was assessed by use of the WHO quality of life-BREF (WHOQOL-BREF) questionnaire. It is composed of 26 items that refer to 4 domains: physical, Psychological, social and environmental.

Study Design:

The study employed a cross-sectional design.

Study Settings:

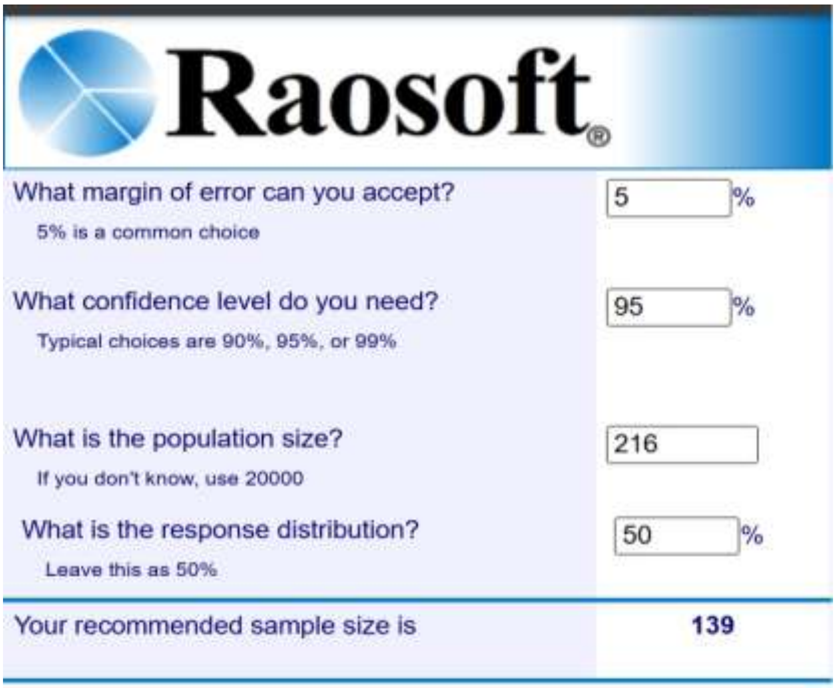
The study was conducted in the Govt tertiary care hospitals of Peshawar, Khyber Pakhtunkhwa.

Study Duration:

This study was conducted in time duration of six (06) months i.e., July to December 2025.

Sample Size:

The recommended sample size based on the calculation using Raosoft sample size calculator, 5% margin of error, 95% confidence level, population size of 216, and 50% distribution of responses was 139.



Raosoft®

What margin of error can you accept? 5% is a common choice	5 %
What confidence level do you need? Typical choices are 90%, 95%, or 99%	95 %
What is the population size? If you don't know, use 20000	216
What is the response distribution? Leave this as 50%	50 %
Your recommended sample size is	139

Sampling Technique:

Data was collected using a non-probability, convenience sampling technique.

Sample Selection:

- **Inclusion Criteria:**
  - ➤ Patients clinically diagnosed with Bell's Palsy
  - ➤ Mentally stable
  - ➤ Both Male and Female gender.
  - ➤ Age >18 years
  - ➤ Patients seeking care in tertiary care hospital
- **Exclusion Criteria:**
  - ➤ Other neurological conditions
  - ➤ Bell's Palsy Patients who are not willing to provide informed consent

Data Collection Procedure:

Upon the acceptance of the research proposal, permission was obtained from the authorities of the Tertiary Care Hospitals in Peshawar to commence data collection. All ethical requirements were met with the help of obtaining the Ethical clearance of the Institutional Review Board (IRB) of IPM&R Khyber Medical University (KMU) Peshawar.

The data were sampled at the Outpatient Departments (OPD) of the tertiary care hospitals sampled. Participants were recruited according to the selection criteria. Informed consent was obtained and the purpose and objectives of the study were fully explained to the participants.

Data was collected using the Patient Health Questionnaire-9 (PHQ-9) and the WHO Quality of Life-BREF (WHOQOL-BREF). PHQ-9 consists of 9 items and is a standardized instrument to measure the severity and presence of depressive symptoms. The ratings are performed on Likert-scale with 4 points with 0 representing Not at all and 3 representing Nearly every day. The overall score is 0 to 27. The cutoff score of ≥10 was applied in determining patients with clinically significant depression, using the established clinical guidelines.

WHOQOL-BREF is a universal tool that measures the perceived quality of life of the individual and has 26 items, which evaluates the individual quality of life along four domains: physical health, psychological, social relationships, and surroundings. It also incorporates two distinct items in overall quality of life and general health.

Data Analysis Procedure:

Data was analysed using SPSS version.

To summarize the descriptive statistics, categorical variables were summarized by means of frequencies and percentages: age, gender, marital status, affected side, previous episodes, and PHQ-9 severity categories. Means and standard deviations were used to summarize continuous variables, such as age, PHQ-9 total scores, and WHOQOL-BREF domain scores.

To examine the relationship between categorical variables, including gender and depression severity categories and previous episodes of Bell's palsy and depression severity categories, Fisher's Exact Test was applied because a substantial number of cells had expected frequencies less than five, violating the assumptions of the Pearson Chi-square test.

The association between depression severity categories (PHQ-9) and quality of life categories derived from WHOQOL-BREF domains was analysed using the Chi-Square test. When more than 20% of cells had expected counts below five, Fisher's Exact Test with Monte Carlo simulation was used to ensure valid statistical inference.

The relationship between duration of illness categories and depression severity categories was also assessed using the Chi-Square test of independence, with Fisher's Exact Test applied where assumptions were violated. In all inferential statistical tests, the p-value value less than or equal to 0.05 ($p \leq 0.05$) was used to determine statistical significance.

Results:

Participants characteristics

Table 1: Descriptive Statistics

characteristics	Population	Frequency (%)
Gender	Male	75 (54)
	Female	64 (46)
Marital status	Single	48 (34.5)
	Married	84 (60.4)
	Divorced	5 (3.6)
	Widowed	2 (1.4)

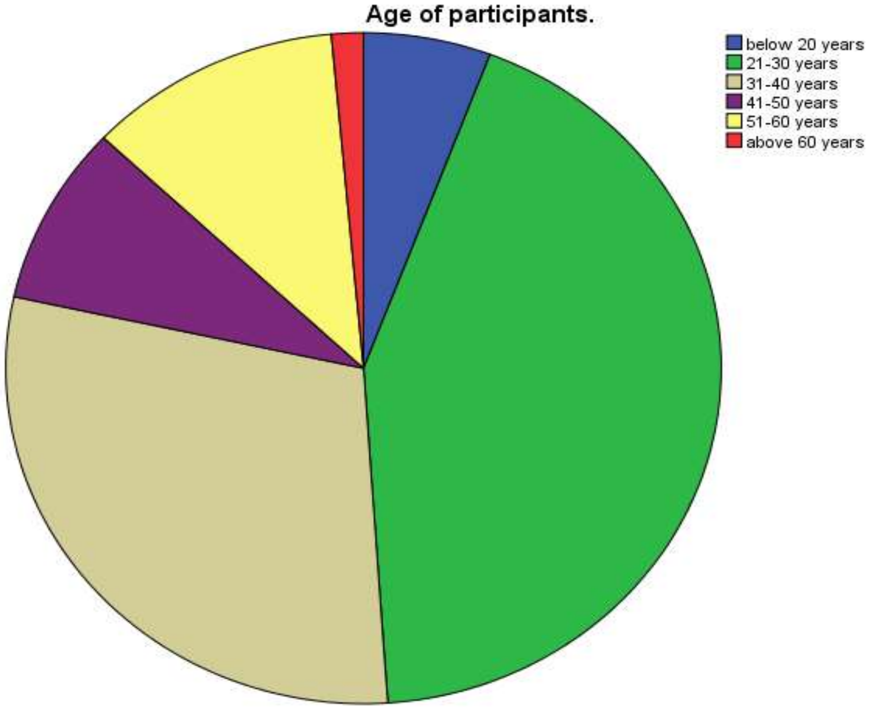


Figure 1: Age of the participants.

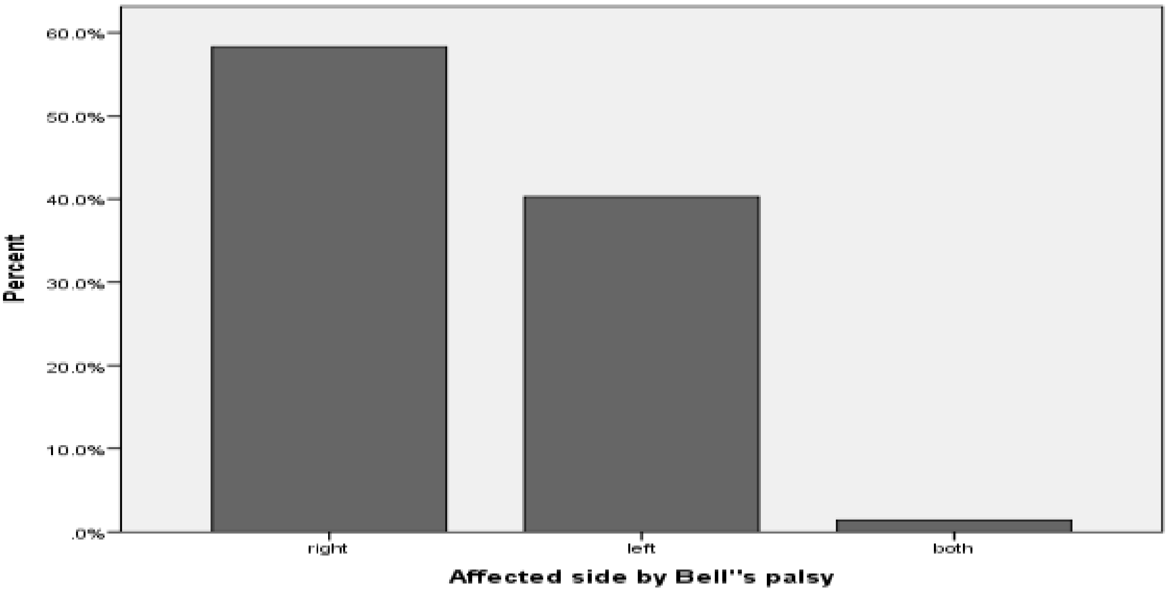


Figure 2: The distribution of the participants based on the side (right side or left side) of the Bell palsy.

Table 2: Category-Wise Depression Distribution (Phq-9)

CATEGORIES	FREQUENCIES (%)
Minimal to no depression	9 (6.5)
Mild depression	27 (19.4)
Moderate depression	37 (26.6)
Moderately severe depression	36 (25.9)
Severe depression	30 (21.6)
Total	139 (100)

Table 3:Gender wise distribution of depression severity

Gender	*Minimal*	*Mild*	*Moderate*	*Moderately severe*	*Severe*
Male (n=75)	7	18	19	20	11
Female(n=64)	2	9	18	16	19

The Exact Test was done to determine the correlation between history of Bell palsy cases in the past and the level of depression. The correlation of previous episodes and the severity of depression showed no statistically significant correlation (p = 0.978).

Chi-square test was applied to examine the association between duration since onset and depression severity among Bell's Palsy patients. The results revealed no statistically significant association (p = 0.749).

Quality of life outcomes

The quality of life scores were recorded on the four WHOQOL-BREF domains i.e., physical, psychological, social, environmental. To make the interpreting of the raw scores easier, the scores were converted into 0-100 scale using the standard scoring rules.

The highest transformed score (17.33) was found in the domain of Social Relationships, which implies that interpersonal relationship and social support were the most comparatively least influenced domains of quality of life in this population of Bell Palsy. This was closely trailed by psychological domain (13.33), and Physical Health domain (13.14). The lowest score was the Environmental domain (11.50), which indicated that the participants saw the most restriction in the physical environment, safety, and access to health services.

Overall Quality of Life and Health Satisfaction

The respondents indicated that the overall quality of life (Mean = 1.31 ± 0.55) and health satisfaction (Mean = 1.22 ± 0.46) were low scores on a scale of 1-5.

The scores represent that the Bell's Palsy patients experience significant impairments in their global wellbeing, and their dissatisfaction with their health condition is high. This is because the variability of the scores is low ($SD < 0.55$), which indicates a strong resemblance in the pattern of low self-rated quality of life and health amongst the population in the study.

Relationship between depression and quality of life

A Chi-square test of independence was conducted to examine the association between depression severity categories (PHQ-9) and quality of life domains categorized from the WHOQOL-BREF. Due to the presence of low expected cell frequencies, Fisher's Exact Test with Monte Carlo simulation was used to determine statistical significance.

The analysis demonstrated a statistically significant association between depression severity and overall quality of life (Fisher's Exact Test, $p < 0.001$). Participants with minimal or mild depression predominantly reported good to very good quality of life, whereas those with moderate to severe depression were increasingly represented in the moderate and poor quality of life categories.

Discussion:

The findings of the study report that the majority of the participants (93.5 percent) demonstrated clinically significant depressive symptoms, and only 6.5 percent of the respondents reported having minimal or no depression. This observation indicates that the psychological burden tackled by patients with Bell's palsy is of high importance, meaning that this condition should be managed with overall psychological evaluation and support.

A cross-sectional study by Machetanz K. et al (2024) conducted in Germany (13) measured the psychological effects of facial palsy using the same PHQ-9 tool. The findings indicated an average score of 14.52, which corresponds to moderate and moderately severe depression, a fact that greatly coincides with the heavy burden of depression that was witnessed in the present study.

The significantly low quality of life scores, noticed in all spheres of life in the present study highlight the widespread psychosocial effect of Bell's palsy. This finding is consistent with the global studies. A Polish study conducted on patients with facial nerve palsy report lower levels of quality of life and impairments were seen to be far wider than physical functioning (14). A systematic analysis of the psychosocial impact of the facial paralysis also established that patients had problems in social interaction and self perception as well as psychological distress, all of which have a negative impact on the overall quality of life (15).

The specified gap in the environmental sector (e.g. physical safety, access to healthcare and information, involvement in recreation) can be indicative of the difficulties that patients encounter in their day-to-day life. These impairments were evident across all WHOQOL-BREF domains based on descriptive analysis, indicating a broad reduction in perceived quality of life among Bell's palsy patients. The correlation analysis revealed statistically significant negative results between the severity of depression and the domain of quality-of-life. This meant that the quality of personal relations and social support worsened with the increase in depressive symptoms.

Although correlations with physical, psychological, and environmental domains did not reach statistical significance, the consistent negative direction indicates a clinically meaningful trend rather than a definitive association. This result highlights a possible vicious cycle in Bell's Palsy; the apparent disfigurement of the face, and functional loss, can cause depressive symptoms, including social withdrawal and anhedonia, and functional loss may result in the destruction of social networks and support. The resulting degradation of this important social buffer might then further add to a sense of isolation and depression.

A study by Dring and others (2025) affirmed that people with facial palsy had greater anxiety regarding social appearance and fear of negative assessment than their healthy counterparts. These findings are in accordance with the observations of the present study in regard that the social domain quality of life is most susceptible among patients with Bell's palsy. This uniform finding underscores the importance of the appearance-related anxiety in the medical burden of facial palsy patients (16).

Even though the present study did not report any statistical significance between gender and the extent of depression, there was a clear clinical trend in the population distribution. The incidence of severe depression was almost twice in female participants as compared to males. This aligns with the general epidemiological statistics and is supported by the latest publications on the Bell Palsy. According to a large-scale study, being a female was also a crucial predictor of the emergence of new mental health disorders after a Bell-palsy diagnosis (17). Additionally, other researchers have also reported that the female patients suffering paralysis of the face rank much higher in the ranks in terms of depression and lower in the rank of psychological quality of life than their male counterparts (4). All this evidence indicates that the female Bell's Palsy patients can be considered a particularly susceptible group that requires special clinical consideration.

Conclusion:

Depression is prevalent among the patients of Bell's palsy in Peshawar as shown in this study. The findings showed that 93.5 percent of the respondents had clinically significant depression symptoms as measured with the patient health questionnaire nine (PHQ-9). This conclusion defines that many patients with Bell's Palsy had a substantial psychological burden, which means that the management of this disorder needs to be expanded beyond the physical rehabilitation to cover the mental health.

The correlation between depression and quality of life was also analyzed, and the negativity between the variables was statistically significant with a negative correlation with Social Relationships domain (p = 0.039). This implies that with an increase in depressive symptoms, the perception of the patients regarding their personal relationships and social support becomes much worse and a vicious cycle when social withdrawal aggravates an isolated and depressed attitude develops.

Though significant clinical trends were observed, this study did not identify any statistically significant relationships between the severity of the depression and gender (p = 0.115), past episodes (p = 0.978) and duration of illness (p = 0.269). The implications of these findings might contribute to the fact that the acute psychological effects of facial paralysis are not negligible, and that the patients are impacted by it irrespective of these demographic or clinical characteristics. The apparent disfigurement and functional disabilities seem to be the primary cause of psychological distress.

As a result of these findings, it is evident that depression can significantly contribute to the general illness experience of the Bell Palsy patients. Frequent screening on depression with the PHQ-9 will aid in the identification of the individuals requiring psychological support and guide the use of the integrated, biopsychosocial strategies such as counseling, cognitive-behavioral therapy, and effective social networks.

In conclusion, the study found a large prevalence of depression among the Palsy patients of Bell in Peshawar, and it relates to a poor social quality of life. Therefore, timely diagnosis and specialized psychological treatment are needed to enhance the mental well-being and the general quality of life.

Limitations:

- The study employed a cross-sectional design and measured data at a single point in time. This made it impossible to develop causal relationships and follow the evolution of depression and quality of life throughout the illness.
- Data was collected using a convenience sampling technique which limits the

generalizability of results to all patients with Bell's Palsy.

- Although the sample size was adequate, some of the groups such as patients with bilateral palsy or those who had a history of illness >6 months were small therefore restricting the conclusion drawn to be made in relation to such a specific group of patients.
- As the data was collected using self-reported questionnaires, this may lead to recall bias or social desirability bias.
- The study did not take into consideration the possible influencing variables which may include the clinical severity of facial paralysis (i.e. the use of a grading scale), the specific socioeconomic status of the patients, or even the quality of the social support systems available.
- The study was conducted only in Peshawar, which implies that the findings can be inadequate to reflect the experience of patients in other parts of the world, where the cultures or the health care conditions are different.

Recommendations:

- Longitudinal studies such as prospective cohort designs should be conducted to follow the path of depression and quality of life since the onset of Bell Palsy through recovery and determine the critical points of intervention and causal relationships.
- Determine the impact of cultural beliefs, social stigma, and family support systems on psychological adjustment to facial palsy within the Pakistani context with the help of mixed-method methods.
- It is also suggested to replicate this study on a larger and more diverse sample across different parts of Pakistan to increase the generalizability and statistical power of subgroup analyses (e.g., bilateral cases, long-duration patients).
- Controlled trials should be conducted to develop and pilot the efficacy of customized psychological interventions, including acceptance and commitment therapy or support groups, among the Palsy patients at Bell with reported depression.

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