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IMPACT OF TRIGEMINAL NEURALGIC PAIN AND QUALITY OF LIFE AMONG GERIATRIC POPULATION OF KARACHI

Original Research

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ABSTRACT

Background: Trigeminal neuralgia is a chronic neuropathic disorder marked by sudden, recurrent facial pain along one or more branches of the trigeminal nerve. Typically affecting one side of the face, this condition is often triggered by daily activities such as chewing, brushing teeth, talking, or exposure to cold substances. The pain can significantly disrupt both physical and emotional aspects of life, especially in the elderly population, leading to reduced functional capacity and social withdrawal.

Objective: To determine the impact of trigeminal neuralgic pain on the quality of life among the geriatric population residing in Karachi.

Methods: A cross-sectional study was conducted from November 2024 to April 2025 across seven districts of Karachi. A total of 385 participants aged 50 years and above were enrolled using a non-probability convenience sampling technique. The presence and severity of trigeminal neuralgia were assessed using the Visual Analog Scale (VAS), while the impact on quality of life was evaluated through the validated Oral Health Impact Profile-14 (OHIP-14) questionnaire. Data were analyzed using SPSS version 23.0, and associations were tested with chi-square analysis. A p-value ≤ 0.05 was considered statistically significant.

Results: Out of 385 participants, 268 (69.61%) reported neuralgic facial pain. Difficulties in pronouncing words were reported by 247 (64.15%), while dietary issues were experienced by 261 (67.79%). A total of 283 participants (73.50%) felt depressed due to their condition, and 218 (56.62%) admitted to skipping meals. According to VAS scores, 108 participants (28.05%) reported severe pain levels, directly affecting daily functioning.

Conclusion: Trigeminal neuralgia was highly prevalent among the elderly in Karachi, with significant impairment observed in their quality of life. Early multidisciplinary intervention is essential to reduce the physical and psychological burden of this condition.

Keywords: Aged, Depression, Facial Pain, Oral Health, Pain Measurement, Quality of Life, Trigeminal Neuralgia.

INTRODUCTION

Trigeminal neuralgia (TN) is a chronic neuropathic pain disorder characterized by sudden, severe, electric shock-like sensations, typically localized to one side of the face. The pain is often intense and brief, frequently affecting the divisions of the trigeminal nerve, particularly the second (maxillary) and third (mandibular) branches (1). This condition is more commonly reported on the right side of the face, a phenomenon attributed to the relatively narrower foramen rotundum on that side, which may predispose individuals to nerve compression (2). The episodes of pain are usually unilateral and predominantly felt in the lower facial region, triggered by routine activities such as speaking, chewing, or exposure to wind, all of which can irritate the affected nerve distribution (3). Trigeminal neuralgia may also present as a secondary manifestation in individuals with underlying neurological disorders, particularly multiple sclerosis (MS). Research suggests that about 1% to 6.3% of MS patients may develop TN, with symptoms often overlapping those of demyelinating diseases, including vertigo, altered vision, muscle weakness, and ataxia, complicating the diagnostic process (4,5). Furthermore, epidemiological data indicate that TN has a higher prevalence among women, with a female-to-male ratio of approximately 3:1, and is more frequently diagnosed in individuals over the age of 50 (6,7). Hypertension is another recognized risk factor, contributing to a higher incidence of TN in hypertensive individuals compared to the general population (4).

Given the diagnostic complexity of facial pain, a thorough clinical history and physical examination are vital to differentiate TN from other causes such as dental issues, temporomandibular joint dysfunction, and ear pathologies. A detailed neurological examination helps narrow down the etiology and guides appropriate management strategies (8). Treatment modalities are diverse, starting with pharmacological approaches like Carbamazepine—considered the first-line medication—followed by alternatives such as Gabapentin and Botox injections for refractory cases (9,10). Physical therapy, including acupuncture, isometric facial exercises, and the use of transcutaneous electrical nerve stimulation (TENS), plays a supportive role in pain management and functional rehabilitation (11). In cases where conservative management fails, surgical options—either percutaneous or open—may be explored based on clinical indications and patient preference (12). Despite a wide array of available treatments, TN continues to have a profound impact on the quality of life, especially in the geriatric population. Yet, there is a notable paucity of localized data exploring the burden of TN among older adults in urban Pakistan. Thus, the present study aims to evaluate the impact of trigeminal neuralgia on pain intensity and quality of life in the elderly population of Karachi, addressing a critical gap in region-specific clinical understanding and management of this debilitating condition.

METHODS

A cross-sectional study was carried out among the geriatric population of Karachi over a six-month period from November 2024 to April 2025. Participants were recruited from all seven administrative districts of the city, including East, West, Malir, Korangi, South, North, and Central. A non-probability convenience sampling method was employed to recruit individuals aged 60 years and above. The required sample size was calculated using Raosoft sample size calculator, yielding a minimum of 385 participants based on a 95% confidence interval and a 5% margin of error. Both male and female participants were included, provided they met the inclusion criteria and provided written informed consent. Individuals diagnosed with rheumatoid arthritis, ankylosing spondylitis, gout, or those unwilling to participate were excluded from the study. Ethical approval for this study was obtained from the Institutional Review Board (IRB) prior to the commencement of data collection. Before data collection, all participants were informed about the nature, purpose, and confidentiality of the study, and informed consent was obtained in writing. Two validated tools were used to assess the dependent variables of interest: the Visual Analog Scale (VAS) for the severity of pain and the Oral Health Impact Profile-14 (OHIP-14) questionnaire to evaluate quality of life. The VAS is a globally recognized tool for pain assessment, where participants were asked to rate their pain on a scale from 0 to 10—0 indicating no pain and 10 indicating the most severe pain imaginable. Pain scores were categorized as mild (1–4), moderate (5–7), and severe (8–10) (13). The OHIP-14 is a well-established instrument that assesses the impact of oral health on various dimensions of life, including functional limitation, psychological discomfort, and social disability. It consists of 14 items, and higher cumulative scores reflect greater negative impact on quality of life, while lower scores indicate better oral health-related well-being (14). Data were analyzed using SPSS version 23.0. Descriptive statistics including frequencies and percentages were calculated to summarize

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demographic and clinical variables. Inferential statistics were applied to determine associations between variables, and a p-value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 385 geriatric individuals aged 50 years and above participated in the study. Among them, 197 (51.16%) were aged between 50 and 59 years, 169 (43.89%) were between 60 and 69 years, and 19 (4.93%) were aged over 70 years. The gender distribution included 201 males (52.20%) and 184 females (47.79%). The presence of facial pain was reported by 268 participants (69.61%), while 117 (30.38%) reported no pain. Comorbid conditions were present in 214 individuals (55.58%), whereas 171 (44.41%) had no known comorbidities. Pain severity, measured using the Visual Analog Scale, showed that 72 participants (28.05%) experienced severe pain. The remaining respondents fell into mild and moderate pain categories, based on their individual ratings. Quality of life was assessed through the OHIP-14 questionnaire. Difficulty in pronouncing words was reported by 247 participants (64.15%), and 205 (53.24%) experienced problems related to taste. A total of 226 (58.70%) reported oral pain, while 196 (50.90%) experienced discomfort during eating. Self-consciousness was observed in 202 participants (52.46%), and 283 (73.50%) reported feeling depressed about their condition. Dietary challenges were experienced by 261 (67.79%) participants, and 218 (56.62%) had skipped meals due to the issue. Constant discomfort and inability to relax were reported by 291 individuals (75.58%).

Other findings included 81 participants (21.03%) expressing feelings of shame, while 137 (35.58%) felt irritable during social interactions. Functional limitations were also reported, with 143 participants (37.14%) having difficulty performing tasks at work. However, the majority expressed life satisfaction (303 participants, 78.70%) and maintained the ability to perform daily routine activities (254 participants, 65.97%). Regarding the geographic distribution, participants were drawn from all seven districts of Karachi, with the largest proportion coming from the Central district (90 participants, 23.13%). Association analysis revealed significant relationships between pain severity and certain clinical variables. A chi-square test demonstrated a statistically significant association between pain severity and the presence of comorbidities ($\chi^2 = 6.52$, $p = 0.0385$), indicating that individuals with comorbid conditions were more likely to report higher levels of pain. Similarly, a strong association was observed between pain severity and self-reported depression ($\chi^2 = 15.41$, $p = 0.0004$), suggesting that emotional and psychological distress may intensify perceived pain levels. In contrast, no significant associations were found between pain severity and age group ($\chi^2 = 3.63$, $p = 0.4581$) or gender ($\chi^2 = 4.68$, $p = 0.0961$), indicating that these demographic variables did not significantly influence pain intensity in this sample. These findings support the multidimensional nature of trigeminal neuralgia, highlighting the need to consider psychological and systemic health factors when assessing pain and designing individualized treatment strategies.

Table 1: Demographical representation

Variable	Frequency (%)
Age	
50-59	197 (51.16%)
60-69	169 (43.89%)
>70	19 (4.93%)
Gender	
Male	201 (52.20%)
Female	184 (47.79%)
Presence of Pain	
Yes	268 (69.61%)
No	117 (30.38%)
Comorbidities	
Yes	214 (55.58%)
No	171 (44.41%)

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Table 2: Questions asked to the participants

Sr. No.	Questions	Yes	No
1	Do you have any trouble pronouncing words?	247 (64.15%)	138 (35.84%)
2	Do you have any problem with your sense of taste?	205 (53.24%)	180 (46.75%)
3	Do you have any pain in your mouth?	226 (58.70%)	159 (41.29%)
4	Do you experience any discomfort during eating food?	196 (50.90%)	189 (49.09%)
5	Are you self-conscious?	202 (52.46%)	183 (47.53%)
6	Are you feeling depressed about your problem?	283 (73.50%)	102 (26.49%)
7	Do you have dietary issues due to this problem?	261 (67.79%)	124 (32.20%)
8	Do you ever skip a meal due to this problem?	218 (56.62%)	167 (43.37%)
9	Do you feel discomfort & unable to relax all the time due to this problem?	291 (75.58%)	94 (24.41%)
10	Do you feel shame among others?	81 (21.03%)	304 (78.96%)
11	Do you feel irritable during interactions with other people?	137 (35.58%)	248 (64.41%)
12	Do you have difficulty performing any task at your workplace?	143 (37.14%)	242 (62.85%)
13	Are you satisfied with your life?	303 (78.70%)	82 (21.29%)
14	Are you able to do anything in your daily routine?	254 (65.97%)	131 (34.02%)

Table 3: Chi-Square Association Results

Variable 1	Variable 2	Chi²	p-value
Pain Severity	Age Group	3.63	0.4581
Pain Severity	Gender	4.68	0.0961
Pain Severity	Comorbidity	6.52	0.0385
Pain Severity	Depression	15.41	0.0004

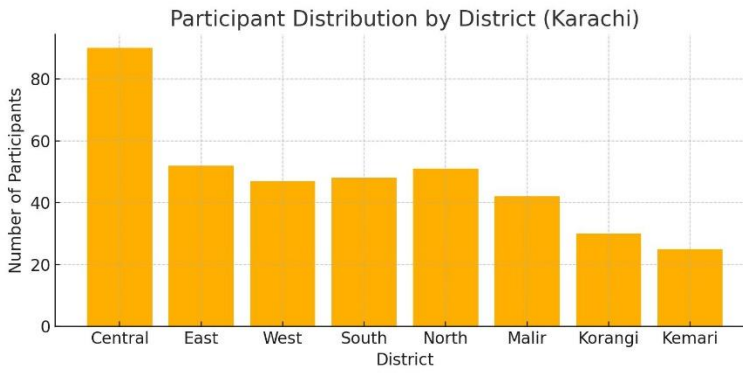

Figure 1 Participant Distribution by District (Karachi)

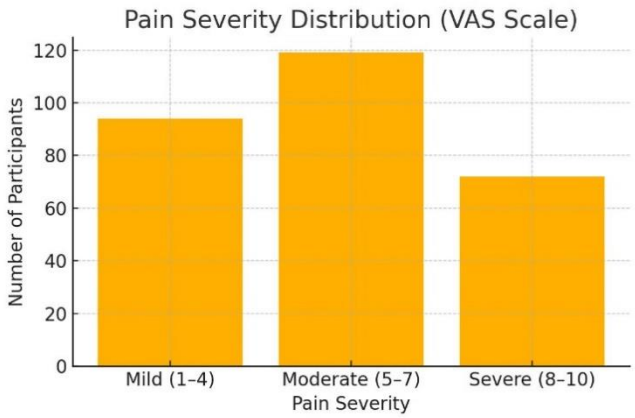

Figure 2 Pain Severity Distribution (VAS Scale)

DISCUSSION

Trigeminal neuralgia is a debilitating condition characterized by sharp, shooting, and electric shock-like sensations along one or more branches of the trigeminal nerve (15). These episodes are often brief, lasting from a few seconds to two minutes, yet the pain intensity significantly disrupts daily functioning (16). In previous regional data, the prevalence of trigeminal neuralgia in Pakistan was reported to be approximately 0.3%, translating to 4.3 to 12.6 cases per 100,000 individuals (17). However, in contrast to this relatively low population prevalence, the current study reported a remarkably higher rate of neuralgic pain, with 69.61% of participants experiencing symptoms consistent with trigeminal neuralgia. This discrepancy could be attributed to the study's targeted population—elderly

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individuals—who are more susceptible to age-related neuropathies. The sample population in this research was specifically limited to individuals aged 50 and above, as trigeminal neuralgia is predominantly observed in older adults (18). Demographically, the current findings aligned with prior research that documented a higher incidence of trigeminal neuralgia in males compared to females. In this study, 52.20% of the affected participants were male and 47.79% were female, reflecting a marginal male predominance consistent with previously reported gender-based distributions (19). Moreover, the functional impact of pain on daily life was evident in the responses obtained. A substantial proportion of participants (50.90%) reported discomfort while eating, reinforcing earlier findings that eating-related discomfort is a key functional limitation in trigeminal neuralgia. Such limitations may not only stem from the pain itself but also from associated complications like difficulty in chewing, oral infections, and psychosomatic responses (20). Alarmingly, 56.62% of participants reported skipping meals due to pain, supporting the view that this condition can directly affect nutritional intake, hydration status, and overall physical health (21).

The consequences of neuralgic pain extended beyond physical discomfort to emotional and psychological dimensions. The majority of participants expressed difficulty in engaging in daily routine activities, with 65.97% reporting functional incapacity, a finding that underscores the condition's burden on quality of life. Similar impairments have been documented in prior studies, particularly those evaluating the triggers of pain, such as speaking, brushing teeth, or even minor facial movements like smiling or breathing (19,20). The current findings also revealed that 28.05% of participants experienced severe pain, as measured by the Visual Analog Scale, placing a large proportion of patients in the highest pain intensity category. These results draw parallels with interventional studies where significant improvements in pain severity were observed following the administration of treatments such as Onabotulinum Toxin A, which effectively shifted VAS scores from severe to moderate over a few months (21). One of the strengths of this study lies in its comprehensive evaluation of both clinical and quality-of-life outcomes among a demographically well-defined geriatric population, using validated tools such as VAS and OHIP-14. The inclusion of multiple districts from Karachi adds geographic representativeness, making the findings more applicable to urban elderly populations. Additionally, the use of chi-square analysis to explore associations between pain severity and clinical variables such as comorbidity and depression contributes valuable insights into potential predictors of disease burden.

Nevertheless, certain limitations must be acknowledged. The non-probability convenience sampling technique may have introduced selection bias, potentially limiting the generalizability of the findings to the broader population. The study's cross-sectional design restricts causal inference, and no objective diagnostic confirmation (such as neuroimaging or clinical testing by neurologists) was employed to verify trigeminal neuralgia, relying instead on self-reported symptoms. Furthermore, while associations were identified between pain severity, comorbidity, and depression, multivariate regression analysis could have provided a more robust understanding of independent predictors. Future research should focus on longitudinal designs to assess changes in pain and quality of life over time, while incorporating clinical confirmation and biomarker validation. In addition, studies comparing conservative and interventional management strategies in elderly populations may offer valuable guidance for optimized patient care. Overall, this study highlights the profound physical and psychological impact of trigeminal neuralgia in older adults and underscores the need for early identification, multidisciplinary management, and evidence-based intervention strategies.

CONCLUSION

This study concluded that trigeminal neuralgia significantly compromises the quality of life in the geriatric population, with pain severity and associated emotional distress playing a central role. A higher tendency toward kinesiophobia was observed among males, potentially influenced by idiopathic factors. The findings underscore the importance of a multidisciplinary approach that integrates physical therapy alongside pharmacological and surgical interventions tailored to the severity of symptoms. Such comprehensive management may offer meaningful relief from neuralgic pain and support functional recovery in elderly individuals, ultimately enhancing their overall well-being.

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AUTHOR CONTRIBUTION

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Lubna Ilyas	Literature Search
Yumna Ilyas	Manuscript Writing and Data Collection
Tooba Tazeem	Data Collection, Data Entry
Ayesha Aftab	Manuscript Writing, Interpretation of Results
Ajay Dherwani	Interpretation of Results
Marryum Abid	Resources
Anum Zubair	Review and Editing
Komal Jamil*	Final Review

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