

Epilepsy and Urban Inequality: Uncovering the Socioeconomic and Structural Barriers Faced by Patients in Karachi

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ABSTRACT

Background: Epilepsy is a chronic neurological disorder that affects millions worldwide, often leading to not only medical complications but also significant social and economic burdens. In low- and middle-income countries like Pakistan, limited awareness and access to resources further exacerbate the challenges faced by individuals living with epilepsy. The study aimed to evaluate the socioeconomic and health-related challenges experienced by individuals living with epilepsy in Karachi.

Methods: A descriptive cross-sectional study was conducted from March to October 2023 involving 252 patients diagnosed with epilepsy. Participants were recruited using non-probability purposive sampling from Jinnah Postgraduate Medical Centre (JPMC), Darul Sehat Hospital, and the Neurology and Epilepsy Care Centre, Karachi. Informed consent was obtained, and a pilot study was conducted to assess questionnaire validity. Data were collected using a structured questionnaire and analyzed using SPSS version 22, with a p-value of <0.05 considered statistically significant.

Results: Among the 252 participants, 75 individuals (29.7%) reported being financially dependent, while 177 (70.3%) were economically independent. Only 64 patients (25.4%) were able to visit healthcare facilities without assistance, whereas 188 (74.6%) required support. Educational challenges were reported by 68 participants (27.0%), and 87 individuals (34.5%) experienced employment-related difficulties. Most participants, 209 (82.9%), attended regular medical checkups, while 43 (17.1%) did not. Additional medication use besides antiepileptic drugs was reported by 51 individuals (20.2%), with 201 (79.8%) relying solely on antiepileptics. A majority, 165 participants (65.5%), reported financial burdens associated with their condition. Additionally, 107 individuals (42.5%) experienced bowel or urinary incontinence during seizures, while 145 (57.5%) did not.

Conclusion: Epileptic patients in Karachi face significant socioeconomic and functional challenges, including financial dependence, mobility limitations, and employment barriers. Targeted healthcare policies and support services are essential to improve the quality of life and promote social inclusion for this population.

Keywords: Social, Epilepsy, Worldwide, Seizures, Effect, Drugs.

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INTRODUCTION

Epilepsy is a common neurological illness described by intermittent seizures & it affects 50 million people globally. Epilepsy is a substantial public health problem in Pakistan, with a frequency of 9.99/1000 suffering from this disease. It is associated with cultural views, social disgrace & inadequate healthcare, especially in rural zones. These patients confront complex challenges that interplay with socio-economic issues, healthcare discrepancies, and cultural dynamics. Epilepsy is a chronic medical complication characterized by the presence of nerve cells in the epileptic brain¹. Roughly 75% epileptic incidences begin during childhood, reflecting the vulnerability of the developing brain to seizures². Epileptic patient feels disgrace due to unpredictability of seizures and social prohibition because of the deleterious approach of society, like academic problems, marriage & finding a respectable job. Due to embarrassment, patients conceal their ailment from relatives, buddies, and employers. Our research is focused on that epilepsy is misjudged and concealed in misapprehensions, which can lead to an economic burden, delayed management, and reduced quality of life for patients³.

These patients frequently face psychosocial challenges, which will be more painful than the illness itself⁴. Health issues, depressive mood, and daily life stresses make it challenging for patients to effectually cope with their illness⁵. Psychological suffering, like anxiety and depression, is mostly associated with the unpredictability of seizures⁶.

Individuals living with severe mental illnesses often face a multitude of challenges that hinder their recovery and overall well-being. As a result, many individuals with severe mental illnesses struggle to secure fundamental necessities like quality education, stable housing, meaningful employment, and adequate healthcare, ultimately compromising their quality of life⁷. Despite the improvements in the management of epilepsy, there remains a huge treatment gap and stigma across the globe. A study conducted in Pakistan in 1987 found a high prevalence of active epilepsy (0.98%) and a large treatment gap (98.1% in rural and 72.5% in urban areas), partially due to stigma. As a solution, in 2001, a team of medical volunteers established the Comprehensive Epilepsy Control

Programme of Pakistan (CECP), which consists of two parts: Epilepsy Support Pakistan (CECP-ESP) awareness and education programme, and National Epilepsy Centre (CECP-NEC) holistic management, professional training, and research centre^{8,9}. Epilepsy is a persistent neurological disorder, which happens when diverse factors interrupt brain functioning, including stroke, drug abuse, birth trauma, infection such as meningitis, encephalitis, parasitic infection such as cysticercosis, brain abscess, and some hereditary or genetic illnesses^{10,11,12}.

The experience of caring for a loved one with seizure disorders may be both demanding and exhausting, representing a considerable strain on the physical and mental well-being of the caregivers. Coordinating doctor visits, treatments, and getting used to fluctuations in the condition of the patient can result in anxiety, frustration, and sadness. Unattended, the emotional burden on the caregivers may interfere with the quality of care they offer, which in the end reflects on the outcome and well-being of the patient^{13,14}.

Epilepsy affects not only physical health but also social, educational, and economic well-being, especially in low-resource settings like Pakistan. Karachi's diverse population provides a relevant context to explore these challenges. This study was selected to identify key barriers faced by epileptic patients in healthcare access, employment, education, and social inclusion, to inform targeted support and policy improvements. The research study aimed to evaluate the socioeconomic and health-related challenges experienced by individuals living with epilepsy in Karachi.

METHODS

A cross-sectional study was conducted at Jinnah Postgraduate Medical Centre Karachi, Darul Sehat Hospital Karachi, and Neurology and Epilepsy Care Centre, from March 2023 to October 2023. The study included epileptic patients aged between 19 and 65 years. Participants were known epileptics with a history of generalized epilepsy, focal epilepsy, combined generalized and focal epilepsy, or epilepsy of unknown type. Additionally, only patients who had experienced multiple seizure attacks were included. Children below 18 years of age and adults above 65 years were excluded from

the study. Furthermore, patients who had experienced only a single seizure episode were not considered for inclusion.

A sample size of 252 epileptic patients was calculated by the open EPI software for public health (version 3.01). The sample was taken through a non-probability purposive sampling technique. The IRB approval letter is taken from the institutional review board committee of LCMD with reference number IRB-68/03/LCMD/03/23. Both genders were included in the sample, i.e., 65% males and 45% females. 57% were married and 43% were unmarried. Consent was taken from patients, and the project was piloted to analyze the

questionnaire's validity. Data were collected through a designed questionnaire, and the validity of the questionnaire was checked by using Cronbach's alpha value, which was between 0.70 to 0.85. The validity of the data was checked by an expert from Jinnah Postgraduate Medical Centre Karachi, Darul Sehat Hospital Karachi, and Neurology and Epilepsy Care Centre.

SPSS (Statistical Package for Social Sciences) Version 22 was used to calculate the chi-square to determine the association between two or more categorical variables. The level $P < 0.05$ was set as the threshold for statistical significance.

RESULTS

Table 1: Demographic Data of Patients

Demographic	Frequency	Percentage
Gender		
Male	164	65%
Female	88	35%
Marital Status		
Married	144	57%
Unmarried	108	43%
Occupation		
Employed	106	42%
Unemployed	146	58%
Income		
Low	124	49%
Middle	91	36%
High	37	15%
Education		
Matric	113	45%
Intermediate	25	10%
Undergraduate	55	22%
Graduate	58	23%

A total of 252 individuals from the general population of Karachi were enrolled in the study. The sample consisted of 65% males and 35% females. In terms of marital status, 57% of the participants were married, while 43% were unmarried. Socioeconomic distribution showed that nearly half of the respondents (49%) fell into the low-income category, earning between PKR 5,000 and 30,000 per month. About 36% belonged to the middle-income group (PKR 31,000–80,000), and 15% were classified as high-income earners (above PKR 81,000), based on the Pakistan Economic Survey 2020. Employment data revealed that a majority (58%) of the participants were unemployed, with a reported average household income of approximately PKR 20,000 per month.

Table 2: Analysis of Key Barriers in Access to Healthcare, Employment, Education, and Social Integration

Question Asked	Affected (%)	Not Affected (%)	P Value
Patients reporting physical dependence on others	29.7	70.3	0.001
Patients requiring assistance to visit the hospital	25.4	74.6	0.001
Marital life reportedly affected by the condition	28.2	71.8	0.002
Students experiencing academic difficulties	27.0	73.0	0.000
Patients reporting employment-related challenges	34.5	65.5	0.001
Patients adhering punctually to treatment regimens	82.9	17.1	0.007
Use of medications other than antiepileptics	20.2	79.8	0.001
Financial burden experienced due to epilepsy	65.5	34.1	0.001
Incidents of bowel and urinary incontinence reported	42.9	57.1	0.001

This study aimed to evaluate the challenges encountered by individuals living with epilepsy, focusing on barriers to healthcare access, employment, education, and social integration. **Table 2** presents a detailed analysis of these factors. Among the 252 participants, 29.7% ($p = 0.001$) reported requiring physical assistance, while 70.3% remained physically independent. Only 25.4% ($p = 0.001$) were able to visit healthcare facilities unassisted, indicating that the majority (74.6%) relied on others for hospital visits. Of the total sample, 57% were married; within this subgroup, 28.2% ($p = 0.002$) reported disruptions in marital life attributed to their condition, whereas 71.8% did not report such issues.

Academic performance was impacted for 27% of the respondents, while the remaining 73% reported no academic difficulties. Employment emerged as a notable area of concern, with 34.5% ($p = 0.001$) of participants experiencing challenges in securing or maintaining a job due to their condition, while 65.5% did not face such barriers. Regarding adherence to medical care, 82.9% ($p = 0.007$) of individuals reported being punctual with their treatment and follow-ups, whereas 17.1% lacked regular medical engagement.

When evaluating concurrent medication usage, 20.2% ($p = 0.001$) of participants were taking medications in addition to antiepileptic drugs, while the majority (79.8%) relied solely on antiepileptics. Financial burden due to epilepsy was reported by 65.5% ($p = 0.001$) of participants, highlighting a significant economic impact. Additionally, 42.9% ($p = 0.001$) experienced bowel or urinary incontinence during seizure episodes, a factor contributing to notable social difficulties, while 57.1% did not report such symptoms.

Table 3: Incidence of Bowel and Urinary Incontinence Among Epileptic Patients

Incontinence Reported	Frequency (n)	Percentage (%)
Yes	107	42.5
No	145	57.5
Total	252	100

Chi-Square Test: $\chi^2 = 2.645$, $p = 0.104$ (Not statistically significant)

A total of 42.5% of participants (107 out of 252) reported experiencing bowel and/or urinary incontinence during seizure episodes, whereas 57.5% (145 out of 252) did not report these symptoms. Statistical analysis using the Chi-Square test yielded a value of $\chi^2 = 2.645$ with a p-value of 0.104, suggesting that the observed difference was not statistically significant.

DISCUSSION

Epilepsy is a neurological disorder that affects millions of people worldwide, including a significant population in Karachi, Pakistan. Epilepsy is a substantial public health problem in Pakistan, with a frequency of 9.99/1000 suffering from this disease. It is associated with cultural views, social disgrace & inadequate healthcare, especially in rural zones¹⁴. Irrespective of being so common, epilepsy is surrounded by stigmas and misconceptions that cause serious socioeconomic problems to people with the condition¹⁵.

It causes social isolation and discrimination to patients and their families. This stigma stops the patients from seeking medical attention, coming out, and receiving proper care. Severe mental illnesses affect victims in various ways, such as low self-esteem, social impairment, and decreased treatment compliance, which challenge the recovery and well-being of individuals. They are also marginalized through stigma and discrimination, which denies them access to much-needed resources and opportunities. This undermines their capacity to obtain the basic needs such as educa-

tion, shelter, jobs, and health, and their general quality of life¹⁶.

They experience job insecurity, fear of being excluded from social functions, gatherings, and activities, in fear of seizures or stigmatization. The prevalence of epilepsy in Pakistan is 0.98 per cent, and the treatment gap is huge (98.1 per cent rural, 72.5 per cent urban) because of stigma. In 2001, the Comprehensive Epilepsy Control Programme of Pakistan (CECP) was initiated to help reduce these problems by creating awareness, educational programs, and managing the disorder in a holistic manner¹⁷. They have obstacles to obtaining specialized healthcare services, medication, and diagnostic tests. The cost of drug management is also high, and it leaves a great economic responsibility on the patients and their relatives¹⁸.

Limited education and awareness about epilepsy among healthcare professionals, patients, and the general public perpetuate stigma and hinder appropriate care. Caring for a loved one with seizure disorders can be emotionally draining, posing a significant burden on caregivers' physical

and mental health, potentially compromising the quality of care and the patient's well-being if left unaddressed¹⁹. Education and training for health-care professionals, patients, and caregivers on epilepsy management and first aid is essential, providing emotional support and reducing social isolation²⁰. Specified healthcare services, medications, and diagnostic tests are essential for epileptic patients of all ages^{21,22}.

CONCLUSION

Addressing the socioeconomic challenges faced by individuals with epilepsy in Karachi is essential for improving their overall well-being. In addition to enhancing access to consistent medical care, efforts must be directed toward alleviating financial burdens, reducing social stigma, and creating supportive educational and employment opportunities. Tackling these multifaceted barriers can contribute significantly to improving quality of life, promoting positive health outcomes, and fostering greater social inclusion for people living with epilepsy.

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CONFLICT OF INTEREST

None

ETHICAL APPROVAL

The study received ethical approval from the institutional review board committee of LCMD with reference number (IRB-68/03/LCMD/03/23).

AUTHORS' CONTRIBUTION

All the authors contributed equally as per ICMJE policy.

REFERENCES

1. Almarzouqi M, Alageel S, Almeharish A, Alsemari A. Marital status among patients with epilepsy in Saudi Arabia. *Epilepsy Behav.* 2022 Jan;126:108452. doi:10.1016/j.yebeh.2021.108452
2. Alkhotani AM, Alkhotani AM. Epilepsy Stigma Among University Students in Makkah: A Cross-Sectional Study. *Neuropsychiatr Dis Treat.* 2022 May 17;18:1047-1056. doi: 10.2147/NDT.S359472. PMID: 35615423; PMCID: PMC9124696.
3. Haseeb M, Iftikhar S, Masood IU, Malik MA. Disparities in epilepsy knowledge, beliefs and cost-effectiveness: a comparative analysis of rural healthcare facilities in Bhakkar hard-to-reach district in South Punjab-Pakistan. *BMC J Med Sci.* 2024 Jul;5(1):38-42
4. Lee SA, Kim SJ, Han NE, Lee SM, No YJ. Gender differences in factors associated with resilience for health-related quality of life in persons with epilepsy. *Epilepsy Behav.* 2021 Feb;115:107710. doi:10.1016/j.yebeh.2020.107710
5. Batchelor R, Taylor MD. Young adults with epilepsy:

- Relationships between psychosocial variables and anxiety, depression, and suicidality. *Epilepsy Behav.* 2021 May;118:107911. doi:10.3390/healthcare11050687
6. Holmes GL. Drug Treatment of Epilepsy Neuropsychiatric Comorbidities in Children. *Paediatr Drugs.* 2021 Jan;23(1):55-73. doi: 10.1007/s40272-020-00428-w. Epub 2020 Nov 24. PMID: 33230678; PMCID: PMC7899432.
 7. Malik NI, Fatima R, Ullah I, Atta M, Awan A, Nashwan AJ, Ahmed S. Perceived stigma, discrimination and psychological problems among patients with epilepsy. *Front Psychiatry.* 2022 Nov;13:1000870. doi:10.3389/fpsy.2022.1000870
 8. Scheffer IE, Berkovic S, Capovilla G, Connolly MB, French J, Guilhoto L, et al. ILAE classification of the epilepsies: position paper of the ILAE Commission for Classification and Terminology. *Epilepsia.* 2017 Apr;58(4):512-21. doi:10.1111/epi.13709
 9. Mogal Z, Aziz H. Epilepsy treatment gap and stigma reduction in Pakistan: a tested public awareness model. *Epilepsy Behav.* 2020 Jan;102:106637. doi:10.1016/j.yebeh.2019.106637
 10. Jones B, Reuber M, Norman P. Correlates of health-related quality of life in adults with psychogenic nonepileptic seizures: a systematic review. *Epilepsia.* 2016 Feb;57(2):171-81. doi:10.1111/e-pi.13268
 11. Jovel CA, Salazar SR, Rodríguez CR, Mejía FE. Factors associated with quality of life in a low-income population with epilepsy. *Epilepsy Res.* 2016 Nov;127:168-74. doi:10.1016/j.eplepsyres.2016.08.031
 12. Kinariwalla N, Sen A. The psychosocial impact of epilepsy on marriage: a narrative review. *Epilepsy Behav.* 2016 Oct;63:34-41. doi:10.1016/j.yebeh.2016.07.026
 13. Tomson T, Battino D, Perucca E. Valproic acid after five decades of use in epilepsy: time to reconsider the indications of a time-honoured drug. *Lancet Neurol.* 2016 Feb;15(2):210-8. doi:10.1016/S1474-4422(15)00314-2
 14. Balouch AH, Nazir S, Magsi SA, Kumar R, Awan I, Kumar A. Frequency of depression in caregivers of patients with epilepsy. *Pak J Med Health Sci.* 2022 Jun;16(4):1107. doi:10.53350/pjmhs221641107
 15. Keezer MR, Sisodiya SM, Sander JW. Comorbidities of epilepsy: current concepts and future perspectives. *Lancet Neurol.* 2016 Jan;15(1):106-15. doi:10.1016/S1474-4422(15)00225-2
 16. Akhter N, Kamal Z, Rahman FU, Sultana P, Dhurrani Z. Awareness and prevalence of epilepsy: a study in educational hubs at Sheringal, Khyber Pakhtunkhwa, Pakistan. *ARC J Neurosci.* 2018;3(1):9-20 doi: <https://dx.doi.org/10.20431/2456-057X.0301003>
 17. Kissani N, Balli K, Mesraoua B, Abdulla F, Bashar G, Al-Baradie R, et al. Epilepsy and school in the Middle East and North Africa (MENA) region: the current situation, challenges, and solutions. *Epilepsy Behav.* 2020 Nov;112:107325. doi:10.1016/j.ye-

beh.2020.107325

18. Singh G, Sander JW. The global burden of epilepsy report: implications for low-and middle-income countries. *Epilepsy Behav.* 2020 Apr;105:106949. doi:10.1016/j.yebeh.2020.106949

19. Shihata SS, Abdullah TS, Alfaidi AM, Alasmari AA, Alfaidi TM, Bifari AE, et al. Knowledge, perception and attitudes toward epilepsy among medical students at King Abdulaziz University. *SAGE Open Med.* 2021 Jan;9:2050312121991248. doi:10.1177/2050312121991248

20. Alshurem M, Aldosari MM, Aljaafari D, Alhashim

A, Shariff E, Almatar A, et al. Prevalence of medically resistant epilepsy in Saudi Arabia. *Neuroepidemiology.* 2021 Jun;55(3):232–8. doi:10.1159/000515743

21. Malik M, Malik S, Hussain A, Hashmi A. The burden of epilepsy and impact of anti-epileptic medications on cognition and psychomotor functioning: a literature review. *Indo Am J Pharm Res.* 2019;9(8). doi:10.5281/zenodo.3382513

22. Sen A, Jette N, Husain M, Sander JW. Epilepsy in older people. *Lancet.* 2020 Feb;395(10225):735–48. doi:10.1016/S0140-6736(19)33064-8

