A SYSTEMATIC REVIEW ON MONITORING OF PRESCRIPTION PATTERN AND QUALITY OF LIFE AMONG THE PATIENTS WITH EPILEPSY

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ABSTRACT

Prescription pattern monitoring studies (PPMS) and Quality of life (QOL) in epileptic patients is the tool for assessing the prescribing, dispensing and distribution of medicines and their effect on quality of life. The main aim of the review is to discuss the topic of the prescription pattern and quality of life in patients with epilepsy. From the prescription pattern study, we can assess the various factors affecting anti-epileptic drug (AED) usage; the main factors are the type of epilepsy, age and gender of patient and availability of medicines and affordability of the patient, and preference of the treating physician. To control epilepsy, the treatment attempt is done by using mono and polytherapy. To analyze commonly prescribed drugs as newer or old AEDs. 50% to 70% of patients can be treated with one antiepileptic drug (AED) as monotherapy, but all are not seizure free. So patients with seizures should generally be started on two or more AEDs. The study was designed to evaluate patterns of AED use and to examine the impact of factors, namely, demographic, clinical, and pharmacotherapy characteristics, affecting QOL. People with epilepsy face many psychosocial challenges can negatively impact the quality of life (QOL). Hence, to achieve optimal seizure control, the convenient antiepileptic drug (AED) use, along with monitoring of adverse effect, and assessment of QOL as an outcome measure are important in the management of epilepsy.

KEYWORDS: Epilepsy, Prevalence, Prescription pattern monitoring study (PPMS), Antiepileptic drugs (AEDs), Quality of life (QOL).
INTRODUCTION

Epilepsy (from the Ancient Greek ἐπιληψία (epilepsia) - to seize”) is the most common neurological disorder characterized by spontaneously recurring seizures and it is due to the occurrence of abnormal synchronous activity in the brain.[1] Epilepsy is also remarkably uniformly distributed around the world as 0.5 to 1% of the population.[2,3] There are no racial, geographical or social class boundaries for epilepsy.[12,4] It occurs in both sexes, at all ages, especially in childhood, adolescence and increasingly in aging populations.[2,3,4] Prescription pattern monitoring studies (PPMS) indicated to evaluate the prescribing, dispensing and distribution of medicines and to assist the appropriate use and minimization of abuse of monitored drugs[5] and to promote the prescribing practices and the standards of treatment at all levels of healthcare.[6] Due to the long duration of treatment, various adverse reactions (ADRs) are seen, which require the change of medication and monitoring.[3] Anti-epileptic drugs (AEDs) are increasingly being prescribed to patients of all ages in populations worldwide, either as monotherapy or polytherapy. Although AEDs are primarily prescribed for epileptic seizures, they are also used for other co-morbidities, such as neuropathic pain, particularly diabetic neuropathy and post-herpetic neuralgia, migraine prophylaxis and bipolar disorder. The prescribing of first-choice AEDs, in particular, has changed over the last decade, with prescribers tending to prescribe newer AEDs (e.g. gabapentin, lamotrigine, levetiracetam, and pregabalin) to patients due to their improved tolerability.[4,7]

Epilepsy is both a medical diagnosis and a social label because people with epilepsy as an impact on their lifestyle and face many psychosocial challenges (anxiety, social stigma, difficulty in driving, unemployment) and also affects memory, thinking, relationships and emotional well-being. It even leads to depression that can negatively impact the quality of life (QOL). It indicated that the psychological effect mainly influences the QOL. For the optimal control of epilepsy, we have clearly focused on prescription pattern analysis and quality of life and assessing the adverse effects.[2,8] Age, missed medication, lack of sleep, psychological stress, and flashlight are some common risk factors in epilepsy.[4]
The measurement of QOL using validated tools such as Quality of Life in Epilepsy Inventory-31, QOLIE-31P, QOLIE-10, QOLCE-55 and short-form 36 health survey are commonly used to evaluate QOL. The analysis of QOL is comparatively a new measure to find out the patient-related outcome of AED treatment for epilepsy. Some factors influence the QOL poorly, such as demographic characteristics, high seizure frequency, and long duration of the disorder etc. World Health Organization (WHO), International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE) are carrying out a global campus, ‘Out of the Shadows’ to provide better information and raise awareness about epilepsy.

**Prevalence**

Based on a meta-analysis, the median prevalence of lifetime epilepsy is 5.8, 10.3, and 15.4 per 1,000 in developed countries, lower-income or developing countries and in rural areas of developing countries respectively. Prevalence studies were conducted in South Africa have reported a lifetime prevalence of 7.3 per 1,000 in children (rural district) and an estimated prevalence of 7.0 per 1,000 (rural north-east district). A study reported that the problem is nearly two and half times higher in rural areas as compared to urban areas, where they are not receiving any treatment. Thomas SV et al conducted a study on the annual economic burden of epilepsy in India is 88.2%. Epilepsy: Indian perspective study concluded that the burden of epilepsy is decreased in India by reducing the preventable causes (e.g. head injury, parasitic disease) and by surgeries and treatment. Senthil A et al states on review article about Epilepsy in India I: Epidemiology and public health; explains that the overall prevalence is about 3.0-11.9 Per 1,000 population and incidence is about 0.2-0.6 per 1,000 populations per year data from recent studies in India on the general population (the mainly coordinate epidemiological aspect of epilepsy for developing efficient public health prevention and control programs in India, and the second series mainly explain about to understand the social impact and economic burden to develop a comprehensive program for control and prevention of epilepsy. Another study was conducted by Purcell B et al. about trends in the prevalence of treated epilepsy and in use of new antiepileptic drugs (AEDs) in England and Wales between 1994 and 1998 using the General Practice Research Database. The age-standardized prevalence in 1998 was 7.4 per 1,000 in males and 7.2 per 1,000 in females, and 7 per cent increase in between 1994 and 1998.
Demographics and Clinical Profile

Ray BK et al conducted a study on the epidemiology of epilepsy – Indian perspective states that the incidence of epilepsy is higher in old age than the younger age.\textsuperscript{[18]} Sinha A et al conducted a study in a tertiary care hospital, Kolkata about the factors associated with QOL in patients with epilepsy, established that the men show a higher incidence of epilepsy.\textsuperscript{[19]} A European study conducted by Backer GA et al on the quality of life of peoples with epilepsy states that the higher unemployment rate shows the increased frequency of seizure.\textsuperscript{[20]} Thomas SV et al concluded that the primary generalized seizure is most common type by conducting a study on frequent seizure and polytherapy can impair quality of life in persons with epilepsy.\textsuperscript{[21]} Another study concluded by Ray BK et al states that the lower incidence of epilepsy is absence seizure compared to developed countries due to under detection.\textsuperscript{[18]}

Prescription Pattern

Dr. Vijayarangan et al conducted an observational study on The Prescribing Pattern of Anti-Epileptic Drugs by General Practitioners in a Semi-urban Area for the period of three months with 100 prescriptions.\textsuperscript{[1]} Arul Kumaran KSG et al conducted a study on drug use evaluation of antiepileptic at a multispecialty tertiary care teaching hospital states that the common type of seizure is generalized tonic-clonic seizures (GTCS) about 90% and followed by complex partial seizures affecting 4% of patients.\textsuperscript{[22]} Shobhana M et al conducted a study on Utilization Pattern of antiepileptic drugs and their adverse effects, in a teaching hospital states that the monotherapy was more commonly used than the polytherapy.\textsuperscript{[23]} Another retrospective analytical study was carried out in Dr. Bhim Rao Ambedkar Hospital, Raipur (C.G.) associated with Pt JNM Medical College, Raipur (C.G.). A study analyzed as per WHO guideline” How to investigate drug used in health facilities” by assessing all prescription, over 5 month period (January 2015 to May 2015) for epilepsy from the pediatric outpatient department\textsuperscript{[24]}. Ajay K et al conducted a retrospective study in the pediatric outpatient department, over five month period (from January 2015 to May 2015) was to analyze use of various AEDs and type of epilepsy.\textsuperscript{[25]} A prospective study was carried out in Neurosciences Centre OPD at All India Institute of Medical Sciences, New Delhi for the period of January to April 2011 to analyze the prescription pattern and utilization behavior of antiepileptic drugs as well as to analyze the quality of life data.\textsuperscript{[26]} Another study was conducted in Cuttack to get an overview about the type of epileptic seizures and to analyze the drug utilization pattern of antiepileptic drugs.\textsuperscript{[27]} Another study carried out in India to assess the utilization pattern of antiepileptic drugs in different hospitals.\textsuperscript{[28]} All these studies
Thasni et al. concluded that the poly-pharmacy is most commonly used in prescribing antiepileptic drugs and is the cause of concern.[5]

AED Treatment Profile
A study in a tertiary care hospital conducted by Perucca et al on pharmacological treatment of epilepsy in adult concluded that the initiation of polytherapy starts only in severe epilepsy cases or monotherapy is ineffective.[29] A nationwide population study on the prescription pattern of antiepileptic drugs in patients with epilepsy conducted by Landmark CJ et al states that in 70% cases, most commonly used AED is newer AEDs or its combination.[30] Another study conducted by Sigamani et al on the profile of pharmacotherapy and pharmacoconomics of epilepsy treatment at a tertiary care hospital concluded that the change in prescribing trends as conventional monotherapy with the addition on newer AEDs.[31] According to updated national institute for health care excellence guidelines, recommended that the first line drug choice for focal and generalized seizure is newer AEDs.[32] A recently completed double blend trial about Comparison of levetiracetam and controlled-release carbamazepine in newly diagnosed epilepsy by Brodie MJ et al has shows that levetiracetam meets ILAE class 1 criteria in newly diagnosed epilepsy in terms of efficacy and effectiveness.[33]

Quality of Life
Sriram S et al conducted a study on a prospective study on prescription pattern and quality of life in epilepsy patients at a private corporative hospital for nine months periods and concluded that the age inversely depends on the QOL.[2] Najam-us S et al conducted a study on Assessment of Psychological Distress in Epilepsy: Perspective from Pakistan and Venkateswara M et al conducted a study on Trends in Prescribing Pattern of Anti-Epileptic Drugs in Tertiary Care Teaching Hospital, these studies concluded that the epilepsy is mainly effect individuals with impairment of physical, physiological, social and cognitive function based on its severity and type of epilepsy.[34,35] Jesso G et al conduct a Tertiary Care Hospital-Based Study on Antiepileptic Drugs and Quality of Life in Patients with Epilepsy.[3] Valeria E et al conducted a multicentre Italian study on Health-related quality of life in adults with epilepsy: the effect of age, age at onset and duration of epilepsy and Gus A et al conducted a European study on Quality of the life in functions and these domains can determine the physical well-being of patients with health-related QOL. QOL mainly affect age more than 60 years.[20,36]
CONCLUSION
The prescription pattern monitoring study and quality of life in patients with epilepsy is an important topic. It compares the prescription pattern of drugs and current recommendations. The study concluded that the prescription pattern of drugs in epilepsy patients and their quality of life. From the PPMS, we can assess that the most commonly used drugs are newer AEDs, as the poly therapy. QOL is the important health outcome, and the quality of life in patients with epilepsy is the main factor that influences their psycho-social status. Some studies concluded that QOL inversely effects on the age of the patient and also depends on the various factors such as gender, social status, the severity of disease etc.

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