

Knowledge and Practice of Patients with Epilepsy on Vehicle Driving and Epilepsy at a Tertiary Neurological Center in Kathmandu

Pravesh Rajbhandhari¹, Sharad Hari Gajuryal², Matrika Singh², Medhawe Nepal², Samir Acharya¹, Reema Rajbhanbhari³, Resha Shrestha¹, Sudan Dhakal¹, Pranaya Shrestha¹, Basant Pant¹

¹Department of Neurosurgery; Annapurna Neurological Institute of Allied Sciences, Maitighar, Kathmandu, Nepal

²Department of Public Health Annapurna Neurological Institute of Allied Sciences, Maitighar, Kathmandu, Nepal

³Department of Neurology, Annapurna Neurological Institute of Allied Sciences, Maitighar, Kathmandu, Nepal

CORRESPONDENCE

Dr. Pravesh Rajbhandari
Department of Neurosurgery
Annapurna Institute of Allied Sciences
Email: praveshrajbhandhari@hotmail.com
Orchid ID: <https://orcid.org/0000-0001-6093-5850>

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ABSTRACT

Introduction: Patients with epilepsy are instructed to avoid driving to prevent harm to themselves and others. The Motor Vehicle And Transport Act 2049(1993)- Nepal Law Commission regarding driving license Chapter 4/47/C disqualifies driver license to People With Epilepsy. This study aims to find out the Knowledge and Practice of Patients with Epilepsy in vehicle driving at the Tertiary Neurological Center of Kathmandu Nepal.

Methods: A Cross-sectional prospective study was conducted among the patients diagnosed with epilepsy who were seeking treatment at Annapurna Neurological Institute and Allied Science (ANIAS). Structured questionnaire was administered among 102 participants regarding knowledge and practice on driving during the study period. All data were entered in MS Excel and descriptive analysis was done using SPSS Version 21.

Results: Among 102 participants, 40.1% of participants with epilepsy frequently drive the vehicle whereas 79.4% of participants had encountered accidents due to epilepsy in the past. 56% of the participants could control the vehicle beforehand after they felt an aura of epileptic seizure.

Conclusion: This study showed that the majority of the participants didn't report their epilepsy condition to the driving management department which should be made to improve awareness and education among license applicants and instructors on driving by people with epilepsy. The majority of participants did not have adequate access to information on epilepsy and driving licenses. Legislations on driving by people with epilepsy should be strictly followed.

Keywords: Vehicle License; Epilepsy; Knowledge; Nepal Law Commission.

INTRODUCTION

Epilepsy is a worldwide public health concern, epilepsy affects individuals of all ages, genders, ethnicities, nationalities, and socioeconomic classes. More than 50 million people worldwide have epilepsy globally, making it a major contributor to the burden of disease worldwide. Low- and middle-income countries (LMIC) have higher incidence and prevalence of epilepsy than the rest of the world. The number of patients with active epilepsy is 4 to 10 per 1000 worldwide at any given moment. In LMICs, the number is substantially higher, ranging from 7 to 14 per 1000.¹ About 80% of patients with epilepsy (PWE) reside in resource-poor LMIC, where the rate of new cases can double compared to high-income nations.²

The National Mental Health Survey 2020 of Nepal shows that the overall prevalence of epilepsy was found to be 0.5% among adults and 1.4% among adolescents.³ Various factors including social stigma on patient with epilepsy, lack of health system resources such as limited epilepsy specialist, access to accurate diagnostic tools such as MRIs, CT scans, and EEGs, difficulty in obtaining anti-epileptic medications, and the lack of recognition of epilepsy centers are major bottlenecks for the treatment gap of more than 70% in Nepal.⁴ According to Chapter 4, Section 47, Sub clause C of the Motor Vehicle and Transport Act 2049(1993)-Nepal Law Commission, "A person who is suffering from epilepsy or insanity or a

disease of sudden faintness or loss of consciousness" is disqualified from obtaining a driving license.⁵ Because of this, the majority of PWE conceals their illness and avoids seeking medical attention from specialists; even when they do take medication, they are hiding their disease and driving the vehicle. Even though there is proper legislation regarding driving license and epilepsy, risk of accidents are due to flaws in the process of issuing driver's license for both private and public vehicle drivers in Nepal.⁶ This study was set out in a tertiary neurological center in Kathmandu, Nepal to study the knowledge and practice of PWE on motor vehicle driving as well as their awareness regarding driving and concern of their health. The results of this study could help to develop a sensible medical and transportation policy regarding epilepsy and driving.

METHODS

A Cross-sectional prospective study was performed among 102 patients diagnosed with epilepsy and seeking treatment at Annapurna Neurological Institute & Allied Sciences, Kathmandu, Nepal. The study was conducted for the 3 months period from March to May 2023. Patient selection was performed by non-probability enumerative consecutive sampling techniques. All consecutive PWE who visited the epilepsy outpatient clinics and met the inclusion criteria were provided with a semi-structured self-administered questionnaire for data collection.

The questionnaire where socio-demographic profile, clinical characteristics, knowledge, awareness and practice of driving was accessed among the study participants. Participants were also assessed for status of vehicle driving, Possession of vehicle, Possession of license, Types of vehicle own and accidents due to epilepsy. The ethical Approval for the study was obtained from the Institutional Review Committee of Annapurna Neurological Institute. (Ref no. ANIAS-IRC/ 2023-06)

RESULTS

Among the 102 participants of the study, 59.8% were male and the majority of the participants were from the age group 16-30 years. Regarding educational background, 70.6% (n=72) participants had high school and bachelor level education. (Table 1). Few participants (n=5) had a history of epilepsy in family members and 58.8% of the participants had onset of epilepsy between the age of 16-30 years. 38.2% of participants have epileptic aura, most commonly with visibility of multi-colored light and 20.6% of the overall participant face frequent seizure in daily life. (Table 2)

Table 1: Socio-demographic profile

Characteristics	Frequency	Percentage
Age		
16-30	66	64.7
31-45	30	29.4
46-60	5	4.9
Gender		
Male	61	59.8
Female	41	40.2
Marital Status		
Married	37	36.3
Unmarried	63	61.8
Divorced	2	2.0
Occupation		
Unemployed	53	52.0
Job	30	29.4
Business	17	16.6
Agriculture	2	2.0
Educational Status		
Only able to read and write	7	6.9
Primary level	4	3.9
High School Level	36	35.3
Bachelor	36	35.3
Above Bachelor	19	18.6

Table 2: Clinical profile of participants

Characteristics	Frequency	Percentage
History of chronic illness		
Yes	11	12.8
No	89	87.2
History of epilepsy in family		
Yes	5	7
No	95	93
Age of onset of epilepsy		
1-15 years	26	25.5
16-30 years	60	58.8
31-45 years	13	12.7
Epileptic Aura		
Present	39	38.2
Absent	63	61.8
Medicine used		
1 medicine	68	65.7
2 or more	30	29.4
None	4	4.9
Frequency of Seizure		
Most of the time	21	20.6
Sometimes	41	40.2
Rarely	40	39.2

41.1% of the participants among 102 participants drive vehicles whereas only 30.4% own driving license. Out of 41.4% of the vehicle drivers with epilepsy, only 1 patient had reported about his epilepsy condition to the driving management department in the past and a significant portion of the respondent (97.6%) didn't report their epilepsy condition to the driving management department. Out of the total vehicle drivers, 19.1% of participants had encountered road traffic accidents due to epilepsy in the past. (Table 3)

Table 3: Vehicle driving and license status of participants

Do you drive a vehicle		
Yes	42	41.1
No	60	58.9
Possession of driver's license:		
Yes	31	30.4
No	71	69.6
Reported about epilepsy condition to the driving management department(n=42)		
Yes	1	2.3
No	41	97.6
Possession of driver's license before diagnosis (n=31)		
Yes	18	58.0
No	13	41.9
Accidents due to epilepsy/epileptic seizures in the past? (n=42)		
Yes	8	19.1
No	34	80.9

Regarding the knowledge of the participants about epilepsy and driving, 6 item questionnaires were administered to the participants where 23.5% were unknown about the disqualification of driving license to epileptic patients by the law of Nepal and 48% of the participant accepted on providing driving license to the epileptic patient.56.9% of the participant responded that for a short distance travel, epileptic patient can drive the vehicle and 38.2% of patient responded that epilepsy patient can drive vehicle while under the medication. (Table 4)

Table 4: Knowledge of participants on epilepsy & driving

Epileptic Patients are disqualified by the law of Nepal from driving	Frequency	Percentage
Yes	43	42.2
No	35	34.3
I don't know	24	23.5
Should a driver's license be issued to an epileptic?		
Yes	49	48
No	41	40.2
I don't know	12	11.8
It is fair enough not to provide a license for an epilepsy patient who does not have any seizure		
Yes	45	44.1
No	46	45.1
I don't know	11	10.8
Considering in emergency, epileptic Patients can drive vehicles for short distances		
Yes	58	56.9
No	41	40.2
I don't know	3	2.9
Uncontrolled seizure can increase the risk of traffic accidents on public highway		
Yes	85	83.3
No	17	16.7
Even while consuming medication could an epileptic patient drive a vehicle		
Yes	39	38.2
No	56	54.9
I don't know	7	6.9

Regarding the practice of the participants about epilepsy and driving, 6 item questionnaires were administered to the participants where 44.1% of participants responded that they wouldn't allow epileptic patients to qualify for driving if they were to amend or lobby about the legislation in epilepsy and 65.7% agreed that they wouldn't drive the vehicle despite the prohibition in law for driving. Similarly, 54.9% replied that they would lobby for the allowance of driving license for patients with epilepsy but have not had any seizure recently. Half of the participants agreed on driving their vehicle for a short distance in emergency condition and 63.7% denied driving their vehicle being epileptic and under constant medication. (Table 5)

Table 5: Practice of participants on epilepsy and driving

I would rather allow epileptic patients to qualify for driving if I were to amend or lobby		
I would	45	44.1
I wouldn't	45	44.1
I don't know	12	11.8
I, as an epileptic patient would still drive my vehicle despite the prohibition law for		
I would	35	34.3
I wouldn't	67	65.7
I would lobby for allowance of license for epilepsy patients who do not have any seizure		
I would	56	54.9
I wouldn't	40	39.2
I don't know	6	5.9
I drive my vehicle for a short ride/distance when in an emergency/urgency.		
I would	51	50.0
I wouldn't	51	50.0
I would drive my vehicle being an epileptic when under constant medications.		
I would	37	36.3
I wouldn't	65	63.7
While driving, I could control the vehicle beforehand if happened to feel an aura of epileptic seizure		
I could	27	26.5
I could not	56	54.9
I don't know	19	18.6

DISCUSSION

Restrictions on patients with epilepsy regarding driving motor vehicles have been in place for decades but vary widely between countries. Restriction on driving may impact employment, social life, and hospital visits of epilepsy patients. In this study, we surveyed the patients with epilepsy to understand their knowledge and practice toward driving with epilepsy in a Tertiary Neurological center in Kathmandu, Nepal. In the context of Nepal, studies on PWE and driving have not been conducted so far though there is the provision of screening for epilepsy during the application of driving license.

In our study, male participants were higher (59.8%) compared to females, the majority of them in between the age group 16-30 years (64.7%). This finding was similar with the study conducted in Burkino Faso, west Africa (60.4%) and China (58.1%) and were in similar age groups.^{7,8} This study showed that out of overall participants, 41.1% drive a vehicle which is contradictory with the studies conducted in Saudi Arabia^{9,10} where almost all of the participants drive the vehicle which may be due to the majority of people using public transportation in Nepal. Similar type of study done in China showed that 26.5% of participants currently hold a valid driving license which is almost similar to this study. In our study 42% participants agreed that epileptic patients are disqualified by the national law from driving which is similar to the study conducted in Belfast, UK where 41% participants had similar agreement.¹¹ The study shows that there is inadequate knowledge among the participants regarding epilepsy and driving which is highly required for their wellbeing and daily activities. The findings are similar to that of the study conducted at the Riyadh, Saudi Arabia as well as west Africa.^{7,12}

Although the majority of the participants agreed that uncontrolled seizure can increase the risk of traffic accidents on public highways and also more than half of the participants agreed on the point that the PWE should not drive vehicles even if they are in anti-epileptic drugs. Regarding practice, although 58.9% of the participants in this study do not drive vehicles, the majority of the participants have good practice on vehicle driving. This response shows that even after acquiring their own vehicle they will have good practice which would reduce risk of road traffic accidents due to epilepsy. The laws governing driving for PWE have evolved over time and may continue to do so. Most countries had severe restrictions in the past. The laws and regulations are being reviewed and altered in numerous nations.¹³ PWE are allowed to drive in the US if they are seizure-controlled with antiepileptic drugs (AED), a device, or therapy and they meet the state-specific criteria for seizure control (ranging from 3 to 12 months).¹⁴ whereas Australia legislation allows PWE to drive a vehicle after least 1 year of seizure freedom for private license holders and 10 years seizure freedom for commercial drivers.¹⁵ Similar rule have been set in European countries for vehicle driving ranging from 1-10 years after being seizure free.¹⁶ In Iran, available fitness to drive protocol in country still lacks sufficient details and clinicians might encounter serious problems in terms of the driving issue in epileptic patients.¹⁷ Canadian Council of Motor Transport Administrators is followed mostly in Canadian provinces and territories which stipulated a 6-month seizure free period, but with no restriction

applying in the case of an unprovoked first seizure with normal neurological assessment and EEG.¹⁸ Patients with epilepsy (PWE) remain completely and permanently banned from driving under the latest changes to China's laws whereas in India, all license applicants need to fill declaration of physical fitness' form. If declared as having epilepsy, the applicant is required to undergo a medical examination. In the case of positive medical recommendations as well there is no provision to issue a driving license if the person has epilepsy. Some countries like Argentina & Pakistan still have no regulation on epilepsy and driving till date.¹⁹

Nepal Motor Vehicle and Transport Act 2049(1993) states that "A person who is suffering from epilepsy or insanity or a disease of sudden faintness or loss of consciousness" is disqualified from obtaining a driving license but have not mentioned any seizure free interval for driving vehicle after disqualification.⁵ The Nepal Epilepsy Society (NES) has recommended simplest measures to the government which includes making a online database of people with seizures accessible to physicians which needs to be implemented with the help of Physicians, Neurologists, Psychiatrist, and Neurosurgeons. This can facilitate transportation division authority to auto detect the epileptic condition of the patient. Furthermore NES has suggested the government authority to amend the legislation for acquiring the driving license. Aside from seizure-free intervals, other potential risk factors for motor vehicle crashes in persons with epilepsy includes nonadherence with medication or medical visits, or lack of credibility, alcohol or substance misuse, structural brain disease, uncorrectable brain functional or metabolic disorder which must be considered on a daily basis.

CONCLUSION

The study's findings evaluated the cognitive knowledge and practice-related gaps among individuals with epilepsy. The knowledge regarding epilepsy and driving among the participants were found to be inadequate in this study whereas some aspects of practice was sound in majority of the participants. Recommendation of Nepal epilepsy society shall help stakeholders to plan the necessary interventions for the legislation on the driving based on the international regulations. Efforts should be made to improve awareness and education among license applicants on the driving by people with epilepsy.

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