Original Article

Incidence and Outcomes of Hospitalized Adult Patients with Epilepsy: A National Data Report from Thailand

Pranboon S, MSN[1,4], Tiamkao S, MD[2,4], Thepsuthammarat K, PhD[3], on behalf of Integrated Epilepsy Research Group

[1] Nursing Division, Srinagarind Hospital, Khon Kaen University, Khon Kaen, Thailand
[2] Department of Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand
[3] Clinical Epidemiology Unit, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand
[4] Intergrated Epilepsy Research Group, Khon Kaen University, Khon Kaen, Thailand

Background: The national database of hospitalized adult patients with epilepsy in Thailand is limited in terms of the incidence, characteristics of the demographic, outcomes, and prognostic factors.

Objective: To investigate the incidence, characteristics of the demographic, outcomes, and prognostic factors of hospitalized adult patients with epilepsy in Thailand.

Materials and Methods: The retrospectively explored national data. The studied group was adult in-patients with epilepsy (over 18 years of age) in Thailand. The ICD10 code (G40) was used to identify eligible patients. Data from the reimbursement documents, which had been submitted by the hospitals under health insurance coverage; universal coverage, social welfare, and government welfare during the fiscal years of 2005 to 2014.

Results: The total number of in-patients adult with epilepsy was 330,944 cases. Most common in males with 208,935 cases (63.13%), and the average age was 45.86 years. The incidence rate of hospitalized adult patients with epilepsy has been increasing every year lowest at 4.86 patients/10,000/years in 2005 and highest at 9.01 patients/10,000/years in 2013. The average cumulative incidence of hospitalized adult patients with epilepsy is 7.27 patients/10,000/year. On discharge, the in-hospital mortality rate was 2.98%. The most common co-morbidities were hypertension (49,610 cases, 14.99%). The most common complication was pneumonia (10,223 cases 3.09%). Age, co-morbid conditions and complications were found to be significantly associated with poor outcomes (p<0.001).

Conclusion: The incidence rate of hospitalized adult patients with epilepsy in Thailand has been increasing tendency. The most common co-morbidities were hypertension. Age, co-morbidity conditions, and complications were associated with poor outcomes. These findings will be crucial for the development of epilepsy services and important data for nurses in planning effective nursing care and interventions for the physical and psychosocial problems of the patients.

Keywords: Incidence, Outcomes, Adult patients with epilepsy, Hospitalized, National

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Epilepsy is the most common serious neurological disorder worldwide[1]. It affects around 70 million people[2], and contributes to over 17 million disability-adjusted life-years annually[3]. In the present study of epilepsy and related disorders, epidemiology continues to be an important research tool by providing a better understanding of the frequency, causes, and natural history of the disorder[4]. In Thailand, a previous study indicated that the incidence rate of adult people with epilepsy (PWE) was 7.2 per 1,000 population[5]. However, this was community-based study and no study has been conducted with respect to the incidence rate of hospitalized adult patients with epilepsy in order that important information could be obtained to assist in developing epilepsy care for hospitalized adults in Thailand. However, most reports are mainly from local health care facilities. Large scale studies at the national level in term of incidence, characteristics of the demographic, and treatment outcomes are limited. This study aimed to address these issue by longitudinal national data of hospitalized adult patients with epilepsy in Thailand. Understanding the most common problems facing them may lead to a good progress in assessment, intervention, and reaching the ultimate goal in controlling these problems that are more likely improve quality of their life.

Correspondence to:

Tiamkao S.

Department of Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand.

Phone: +66-43-348399, **Fax:** +66-43-347542

E-mail: somtia@kku.ac.th

Materials and Methods

Study design

A retrospective study, exploring the national data, was conducted on an adult population of 18 years and above, who had been admitted to hospitals in Thailand. The study period was from the fiscal years of 2005 to 2014. The data

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were retrieved from the National Reimbursement Health Insurance system. The system is comprised of three levels of health insurance coverage: universal coverage, social welfare, and government welfare. Universal coverage is basic health insurance for the general population, while social welfare, and government welfare are in place for people, who work for private companies and governmental organizations. The ICD-10 code (G40) was used to identify eligible patients. Medical discharge forms were used to retrieve the clinical data, co-morbid diseases, complications, and the discharge status of the patients.

The discharge status for all admitted patients was defined by the attending physicians at four levels: a complete recovery, improved, not improved, and death. The first two categories have been classified as "improved" or as "good outcomes", while the latter two were classified as "not improved" or "poor outcomes". All eligible patients were then divided into two groups: those who had had good outcomes and those with poor outcomes.

Statistical analysis

Descriptive statistics were utilized in order to study the baseline characteristics. The student t-test was used for the purpose of comparing the group mean values, which were expressed as continuous variables. The Chi-square test was used to compare the categorical variables between the groups. Model for poor outcomes were exacted by multivariate logistic regression analysis. All of the data analyses were performed using STATA software version 10 (College Station, Texas, USA) on a personal computer. Furthermore, a *p*-value of less than 0.05 was considered to be statistically significant.

Results

Demographics

During the study period, 330,944 adult epilepsy patients were admitted. The majority of the patients had been males (208,935 patients; 63.13%). The mean age for all patients had been 45.86 years (with an age range of 18 to 104 years). Of the adults with epilepsy, who had been admitted to hospitals, most of them were living in the Northeastern region of the country at the time and accounted for 108,023 patients (32.64%). As shown in Table 1, patients from other regions of the country were as follows: Central Thailand with 97,377 patients (29.42%), Northern Thailand with 86,563 patients (26.16%), and Southern Thailand with 38,977 patients (11.78%).

National Incidence of hospitalized in adult patients with epilepsy

The number of hospitalized adult patients with epilepsy has been increasing every year from 20,969 patients in 2005 to 40,684 patients in 2014. The national incidence was lowest in 2005 with 4.86 patients/10,000/year and at its highest with 9.01 patients/10,000/year in 2013. The average cumulative incidence of hospitalized adult patients with epilepsy is per 7.27 patients/10,000/year as shown in Table 2.

Table 1. Demographic data of adults with epilepsy admitted all over Thailand during the 10-year study period from 2005 to 2014

Variables	Number (%)
Sex	
Male	208,935 (63.13)
Female	122,009 (36.87)
Age (years)	
18 to 29	66,944 (20.23)
30 to 39	66,978 (20.24)
40 to 49	68,261 (20.63)
50 to 59	51,195 (15.47)
60 to 69	38,421 (11.61)
70 to 79	28,175 (8.51)
80+	10,970 (3.31)
Regions	
Central	97,377 (29.42)
Northern	86,563 (26.16)
Northeastern	108,023 (32.64)
Southern	38,977 (11.78)
Types of Insurance	
Social welfare	2,607 (0.79)
Universal coverage	157,470 (47.58)
Government welfare	170,867 (51.63)

Co-morbidities and in-hospital complications

The most common co-morbid conditions were hypertension (49,610 patients; 14.99%), diabetes mellitus (20,931 patients; 6.32%), traumatic brain injuries (9,902, patients; 2.99%), and previous strokes (9,603 patients; 2.9%). The common complications were pneumonia (10,223 patients; 3.09%), urinary tract infections (8,941 patients; 2.7%), and sepsis (6,848 patients; 2.07%) as shown in Table 3.

Outcomes of treatment

The mean (SD) hospital stay was 5.28 (29.39) days. According to the four discharge statuses, 89.18% of patients had improved (0.48% complete recovery), while 7.36% had not improved. The in-hospital mortality rate was found to be 2.98 %. As shown in Table 3, the treatment outcomes for hospitalized adult patients with epilepsy were shown to be good at 89.66%, while the poor outcomes accounted for 10.34%.

Of 12 co-morbid conditions, there were 11 significant co-morbidity factors, which had been associated with poor outcomes in hospitalized adult epilepsy patients. The following factors were determined by utilizing multivariate logistics analysis: hypertension, diabetes mellitus, previous strokes, chronic renal failure, cirrhosis, alcoholism, psychosis, and CNS infections. Moreover, all of them had been significantly associated with poor outcomes ($p<0.001$). In addition, schizophrenia and brain tumors had been shown to be associated with poor outcomes

Table 2. The incidence rate of adults with epilepsy admitted all over Thailand during the 10-year study period from 2005 to 2014

Years	Patients with epilepsy	Percent	Population	Rate/10,000 population
2005	20,969	6.34	43,137,883	4.86
2006	23,406	7.07	43,655,494	5.36
2007	25,113	7.59	43,904,916	5.71
2008	28,717	8.68	44,306,316	6.48
2009	32,765	9.9	44,812,188	7.31
2010	35,972	10.87	45,381,084	7.92
2011	39,764	12.02	45,949,359	8.65
2012	41,128	12.43	46,530,817	8.83
2013	42,426	12.82	47,063,548	9.01
2014	40,684	12.29	47,585,424	8.54
Total	330,944	100		Average 7.27

Table 3. Clinical Features of adult epilepsy patients admitted all over Thailand during the 10-year study period from 2005 to 2014

Variables	Number (%)
Co-morbid Conditions	
Hypertension	49,610 (14.99)
Diabetes mellitus	20,931 (6.32)
Traumatic brain injuries	9,902 (2.99)
Previous strokes	9,603 (2.9)
Chronic renal failure	8,365 (2.53)
Psychosis	5,568 (1.68)
Cirrhosis	5,294 (1.6)
Schizophrenia	4,259 (1.29)
CNS Infections	2,644 (0.8)
Depression	1,861 (0.56)
Brain Tumors	1,400 (0.42)
Complications	
Pneumonia	10,223 (3.09)
Urinary tract infections	8,941 (2.7)
Sepsis	6,848 (2.07)
Shock	4,221 (1.28)
Pressure sores	3,988 (1.21)
Discharge Status	
Completely recovered	1,578 (0.48)
Improved	295,136 (89.18)
Not improved	24,358 (7.36)
Dead	9,872 (2.98)

(p<0.002), as well as traumatic brain injuries (p = 0.023). The factor, which was found to be most positively associated with poor outcomes was CNS infections with an adjusted odds ratio of 2.38. Additionally, 5 complications were associated with poor outcomes (p<0.001). The factor, which was found to be most positively associated with poor outcomes, was sepsis with an adjusted odds ratio of 6.71 as shown in Table 4.

Discussion

From our 10-year longitudinal national data, the number of hospitalized adult patients with epilepsy has been increasing every year and most had been males. Our findings was similar to low-income countries that reported from sub-Saharan Africa[6] found that the overall incidence of hospital admissions among people with epilepsy was 45.7/100,000 person-years and study from high-income countries such as United Kingdom[7] found that the rate of hospital admission increased from 66 to 68/100,000 persons/year over 10 years. The mean (SD) hospital stay was 5.28 (29.39) days similar to other study reported the overall median duration of hospitalization in days was 3.0 days[6]. People with epilepsy were more likely to have prolonged stays in the hospital if an epilepsy-related cause compare to those without cause[6]. Our findings indicated that the discharge status had shown improved conditions for 89.18% of the patients (0.48% complete recovery), while 7.36% had shown no signs of improvement. In addition, the in-hospital mortality rate was 2.98%. The WHO reported the mortality rate for epilepsy at 1.86%[8]. PWE who recurrent seizures are due to status epilepticus (SE), which is a life-threatening emergency condition. It may lead to high morbidity and mortality rates, which may be as high as 42% depending upon the etiology, the patient's age, the type of seizures, and the duration of SE[9-12].

Among different countries, the co-morbid conditions in epilepsy patients may vary. In most developing countries, CNS infection was the most common cause or co-morbid condition of epilepsy[13], while stroke was the most common cause or co-morbid condition of epilepsy in the developed countries, particularly among elderly patients[14]. Our nationwide data showed that the most common co-morbid conditions were hypertension (14.99%) and diabetes mellitus (6.32%), which was similar to results from a study by Huang, et al[15] in China. These findings differed from previous studies conducted in Thailand. Phabphal, et al[16] conducted a study on the conditions of co-morbidity for epilepsy in the elderly, which showed that depression and anxiety had been the most common co-morbidities, followed by sleep-related disorders and strokes. In another study, Gaitatzis, et al[17]. found the most common

Table 4. Significant Factors associated with poor outcomes of hospitalized adult epilepsy patients admitted all over Thailand during the 10-year period of the study from 2005 to 2014

Variables	Discharge Status		Adjusted odds ratio (95% CI)	*p*-value
	Good outcomes, n (%)	Poor outcomes, n (%)		
Sex				
Male	187,752 (63.3)	21,183 (61.9)	1	0.188
Female	108,962 (36.7)	13,047 (38.1)	1.2 (0.99 to 1.04)	
Ages				
18 to 29	61,646 (20.8)	5,298 (15.5)	1	<0.001
30 to 39	60,784 (20.5)	6,194 (18.1)	1.13 (1.09 to 1.18)	
40 to 49	61,814 (20.8)	6,447 (18.8)	1.12 (1.08 to 1.17)	
50 to 59	45,942 (15.5)	5,253 (15.4)	1.14 (1.09 to 1.18)	
60 to 69	33,764 (11.4)	4,657 (13.6)	1.28 (1.22 to 1.34)	
70 to 79	23,949 (8.1)	4,226 (12.4)	1.51 (1.43 to 1.59)	
80+	8,815 (3.0)	2,155 (6.3)	2.00 (1.88 to 2.13)	
Co-morbidity conditions				
Diabetes mellitus	17,729 (6.0)	3,202 (9.4)	1.21(1.16 to 1.27)	<0.001
Hypertension	43,525 (14.7)	6,085 (17.8)	0.87 (0.84 to 0.90)	<0.001
Chronic renal failure	6,461 (2.2)	1,904 (5.6)	1.8 (1.70 to 1.91)	<0.001
Cirrhosis	1,841 (0.6)	504 (1.5)	1.89 (1.69 to 2.10)	<0.001
Alcoholic	4,512 (1.5)	782 (2.3)	1.45 (1.34 to 1.58)	<0.001
Psychosis	4,953 (1.7)	615 (1.8)	1.23 (1.13 to 1.34)	0.083
Previous strokes	7,785 (2.6)	1,818 (5.3)	1.55 (1.47 to 1.65)	<0.001
CNS infection	1,999 (0.7)	645 (1.9)	2.38 (2.16 to 2.63)	<0.001
Traumatic brain injury	8,896 (3.0)	1,006 (2.9)	1.08 (1.01 to 1.53)	0.023
Brain tumor	1,224 (0.4)	176 (0.5)	1.29 (0.73 to 1.03)	0.002
Depression	1,703 (0.6)	158 (0.5)	0.87 (0.73 to 1.03)	0.102
Schizophrenia	3,801 (1.3)	458 (1.3)	1.17 (1.06 to 1.30)	0.002
Complications				
Sepsis	3,304 (1.1)	3,544 (10.4)	6.71 (6.37 to 7.08)	<0.001
Pneumonia	6,536 (2.2)	3,687 (10.8)	3.01 (2.87 to 3.16)	<0.001
Pressure sore	2,847 (1.0)	1,141 (3.3)	1.70 (1.57 to 1.85)	<0.001
Urinary tract infections	7,091 (2.4)	1,850 (5.4)	1.19 (1.12 to 1.27)	<0.001
Shock	1,973 (0.7)	2,248 (6.6)	6.61 (6.18 to 7.07)	<0.001

CNS = central nervous system

co-morbidities for epilepsy were depression (30%), followed by anxiety disorders (10 to 25%) and psychoses (2 to 7%).

The findings from the present study also revealed the following predictors for poor outcomes of the adults with epilepsy: age, diabetes mellitus, chronic renal failure, cirrhosis, alcoholism, psychosis, previous strokes, CNS infections, brain tumors, and schizophrenia. The factor, which was found to be most positively associated with poor outcomes was CNS infections with an adjusted odds ratio of 2.38. Additionally, 5 complications such as sepsis, pneumonia, urinary tract infections, pressure sore, and shock were associated with poor outcomes ($p<0.001$). The factor, which was found to be most positively associated with poor outcomes, was sepsis with an adjusted odds ratio of 6.71. Regarding the co-morbid conditions that are associated with epilepsy, two scenarios may be possible: epilepsy may be the cause of the co-morbid diseases or the co-morbid diseases may lead to epilepsy. For instance, chronic renal failure, may be the cause of epilepsy, such as in cases of uremic encephalopathy[18]. In addition, strokes[19], CNS infections[20], and brain tumors[21] could be the causes for seizures or epilepsy due to brain pathology. Conversely, epilepsy may be the cause of various diseases, such as psychosis and schizophrenia[22].

In another study, Patel et al[23] found the risk of inpatient death was only seen in epilepsy with comorbid alcohol abuse and epilepsy with comorbid depression was associated with a higher risk of a length of stay of more than three days (median), followed by comorbid psychosis. Psychiatric comorbidities are influential factors that must be considered in models of Health-Related Quality of Life (HRQOL) in epilepsy[23]. Nurses play an importance role in the assessment and management the physical and psychosocial problems of patients with epilepsy. Understanding the most common problems facing them especially on patients psychological functioning may lead to a good progress in assessment, intervention, and reaching the ultimate goal in controlling these problems that are more likely improve quality of their life[24]. Our finding was

important data for nurses in planning effective nursing care and interventions for the physical and psychosocial problems of hospitalized adult patients with epilepsy to reduce impact of disease.

Limitations

There were some limitations to the present study. Firstly, the data were retrieved only from reviewing medical charts. As a result, the authors were unable to identify the types of seizures and the anti-epileptic drugs used for treatment. Secondly, the data were retrieved using the ICD codes, which meant that there could have been some possible errors at the time the ICD codes were entered.

Conclusion

The incidence rate of hospitalized adult patients with epilepsy has been increasing tendency. The most common co-morbidities were hypertension. Age, co-morbidity conditions, and complications were associated with poor outcomes of hospitalized adult patients with epilepsy. These findings will be crucial for the development of epilepsy services in Thailand and important data for nurses in planning effective nursing care and interventions for the physical and psychosocial problems of hospitalized adult patients with epilepsy.

What is already known on this topic?

Epilepsy is the most common serious neurological disorder.

What this study adds?

The incidence rate of hospitalized adult patients with epilepsy has been increasing tendency. The most common co-morbidities were hypertension. Age, co-morbidity conditions, and complications were associated with poor outcomes of hospitalized adult patients with epilepsy.

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Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Sander JW. The epidemiology of epilepsy revisited. Curr Opin Neurol 2003;16:165-70.
2. Ngugi AK, Bottomley C, Kleinschmidt I, Sander JW, Newton CR. Estimation of the burden of active and life-time epilepsy: a meta-analytic approach. Epilepsia 2010;51:883-90.
3. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 2012;380:2197-223.
4. Linehan C, Tellez-Zenteno JF, Burneo JG, Berg AT. Future directions for epidemiology in epilepsy. Epilepsy Behav 2011;22:112-7.
5. Asawavichienjinda T, Sitthi-Amorn C, Tanyanont W. Prevalence of epilepsy in rural Thailand: a population-based study. J Med Assoc Thai 2002;85:1066-73.
6. Kariuki SM, Chengo E, Ibinda F, Odhiambo R, Etyang A, Ngugi AK, et al. Burden, causes, and outcomes of people with epilepsy admitted to a rural hospital in Kenya. Epilepsia 2015;56:577-84.
7. Bruce M, Griffiths C, Brock A, Majeed A. Trends in mortality and hospital admissions associated with epilepsy in England and Wales during the 1990s. Health Stat Q 2004;23-9.
8. World Health Organization. Neurological disorders: Pubic health challenges. Geneva: WHO; 2006.
9. Knake S, Hamer HM, Rosenow F. Status epilepticus: a critical review. Epilepsy Behav 2009;15:10-4.
10. Tiamkao S, Suko P, Mayurasakorn N. Outcome of status epilepticus in Srinagarind Hospital. J Med Assoc Thai 2010;93:420-3.
11. Hui AC, Joynt GM, Li H, Wong KS. Status epilepticus in Hong Kong Chinese: aetiology, outcome and predictors of death and morbidity. Seizure 2003;12:478-82.
12. Ferlisi M, Shorvon S. The outcome of therapies in refractory and super-refractory convulsive status epilepticus and recommendations for therapy. Brain 2012;135:2314-28.
13. Nwani PO, Nwosu MC, Nwosu MN. Epidemiology of acute symptomatic seizures among adult medical admissions. Epilepsy Res Treat 2016;2016:4718372.
14. Govoni V, Fallica E, Monetti VC, Guerzoni F, Faggioli R, Casetta I, et al. Incidence of status epilepticus in southern Europe: a population study in the health district of Ferrara, Italy. Eur Neurol 2008;59:120-6.
15. Huang C, Feng L, Li YH, Wang Y, Chi XS, Wang W, et al. Clinical features and prognosis of epilepsy in the elderly in western China. Seizure 2016;38:26-31.
16. Phabphal K, Geater A, Limapichat K, Sathirapanya P, Setthawatcharawanich S. Risk factors of recurrent seizure, co-morbidities, and mortality in new onset seizure in elderly. Seizure 2013;22:577-80.
17. Gaitatzis A, Trimble MR, Sander JW. The psychiatric comorbidity of epilepsy. Acta Neurol Scand 2004;110:207-20.
18. Lohr JW. Uremic encephalopathy [Internet]. 2014 [cited 2015 Feb 16]. Available from: https://emedicine.medscape.com/article/239191-overview.
19. Pezzini A, Grassi M, Del Zotto E, Giossi A, Volonghi I, Costa P, et al. Complications of acute stroke and the occurrence of early seizures. Cerebrovasc Dis 2013;35:444-50.
20. Singh G, Prabhakar S. The association between central nervous system (CNS) infections and epilepsy: epidemiological approaches and microbiological and epileptological perspectives. Epilepsia 2008;49 Suppl 6:2-7.

21. Maschio M. Brain tumor-related epilepsy. Curr Neuropharmacol 2012;10:124-33.
22. Copeland LA, Ettinger AB, Zeber JE, Gonzalez JM, Pugh MJ. Psychiatric and medical admissions observed among elderly patients with new-onset epilepsy. BMC Health Serv Res 2011;11:84.
23. Patel RS, Elmaadawi A, Mansuri Z, Kaur M, Shah K, Nasr S. Psychiatric comorbidities and outcomes in epilepsy patients: An insight from a nationwide inpatient analysis in the United States. Cureus 2017;9:e1686.
24. Khudhur IAG, Mehabes FJ. Impact of epilepsy on patient's physical and psychosocial functioning: Iraqi study. Health Sci J 2012;6:563-75.

อุบัติการณ์และผลลัพธ์ของผู้ป่วยผู้ใหญ่โรคลมชักที่นอนรักษาในโรงพยาบาล รายงานจากฐานข้อมูลในประเทศไทย

สินีนาฏ พรานบุญ, สมศักดิ์ เทียมเก่า, แก้วใจ เทพสุธรรมรัตน์ ในนามกลุ่มวิจัยโรคลมชักแบบบูรณาการ มหาวิทยาลัยขอนแก่น

ภูมิหลัง: ยังไม่มีการศึกษาวิจัยในฐานข้อมูลระดับประเทศเกี่ยวกับอุบัติการณ์, ข้อมูลทั่วไป, ผลลัพธ์และปัจจัยทำนายการพยากรณ์โรคของผู้ป่วยผู้ใหญ่โรคลมชักที่นอนรักษาในโรงพยาบาลในประเทศไทย

วัตถุประสงค์: เพื่อศึกษาอุบัติการณ์, ข้อมูลทั่วไป, ผลลัพธ์และปัจจัยทำนายการพยากรณ์โรคของผู้ป่วยผู้ใหญ่โรคลมชักที่นอนรักษาในโรงพยาบาลในประเทศไทย

วัสดุและวิธีการ: การศึกษาข้อมูลย้อนหลังจากฐานข้อมูลระดับประเทศ กลุ่มตัวอย่าง คือ ผู้ป่วยผู้ใหญ่โรคลมชัก (อายุ 18 ปีขึ้นไป) ที่เข้ารับการรักษาในโรงพยาบาลในประเทศไทย สืบค้นข้อมูลจากรหัสการวินิจฉัยโรคของผู้ป่วยโรคลมชักโดยใช้รหัส ICD 10 คือ รหัส G40 จากฐานข้อมูลที่โรงพยาบาลส่งเบิกจ่ายจากระบบประกันสุขภาพของประเทศ คือ ระบบประกันสุขภาพถ้วนหน้า ระบบประกันสังคมและระบบสวัสดิการรักษาพยาบาลข้าราชการในปีงบประมาณ พ.ศ. 2548 ถึง 2557

ผลการศึกษา: ผู้ป่วยผู้ใหญ่โรคลมชักที่นอนรักษาในโรงพยาบาลจำนวนทั้งหมด 330,944 ราย พบมากที่สุดในเพศชายจำนวน 208,935 ราย (ร้อยละ 63.13) อายุเฉลี่ย 45.86 ปี อุบัติการณ์ผู้ป่วยผู้ใหญ่โรคลมชักที่นอนรักษาในโรงพยาบาล เพิ่มขึ้นทุกปี ต่ำสุดในปี พ.ศ. 2548 คือ 4.86 ราย/10,000/ปี และสูงสุดใน ปี พ.ศ. 2556 คือ 9.01 ราย/10,000/ปี อุบัติการณ์สะสมเฉลี่ย 7.27 ราย/10,000/ปี สถานภาพของผู้ป่วยเมื่อจำหน่ายจากโรงพยาบาลพบว่าอัตราการเสียชีวิตในโรงพยาบาลร้อยละ 2.98 ภาวะโรคร่วมที่พบบ่อยที่สุดคือ โรคความดันโลหิตสูง จำนวน 49,610 ราย (ร้อยละ 14.99) ภาวะแทรกซ้อนที่พบบ่อยที่สุดคือ ปอดอักเสบ จำนวน 10,223 ราย (ร้อยละ 3.09) อายุ, ภาวะโรคร่วม และภาวะแทรกซ้อนเป็นปัจจัยที่มีผลต่อผลการรักษาไม่ดีในผู้ป่วยโรคลมชัก อย่างมีนัยสำคัญทางสถิติ (p<0.001)

สรุป: อุบัติการณ์ผู้ป่วยผู้ใหญ่โรคลมชักที่นอนรักษาในโรงพยาบาลในประเทศไทย มีแนวโน้มเพิ่มขึ้นทุกปี โรคร่วมที่พบได้บ่อยคือโรคความดันโลหิตสูง ปัจจัยที่มีผลต่อผลการรักษาที่ไม่ดีคือ อายุ ภาวะโรคร่วม และภาวะแทรกซ้อน การค้นพบนี้มีความสำคัญต่อการพัฒนาการให้บริการโรคลมชักและเป็นข้อมูลสำคัญสำหรับพยาบาลในการวางแผนให้การพยาบาลและปฏิบัติการพยาบาลที่มีประสิทธิภาพต่อปัญหาด้านร่างกายและปัญหาด้านจิตใจของผู้ป่วย