

Original Research

Impact of an educational intervention for Libyan patients with epilepsy: a trial study

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Abstract

Living with epilepsy, its unpredictable seizures, and its comorbid conditions present many challenges over the time. Continued educational efforts can play a key role in helping people learn to live with epilepsy and understand epileptic medications over the life span. The aim of this study is to assess the impact of pharmacist-initiated education on patients with epilepsy. Prospective and observational pilot study to evaluate the impact of educational interventions during February and March, 2019 was conducted. A total of seven patients with epilepsy was included in this study. They received ordinary consultation care in National Centre of Epilepsy at Ali Omar Askar Hospital in Tripoli, Libya. Knowledge assessment questionnaire was assessed initially and patients were subjected to pharmacist-initiated education and they have given follow up reporting card. A follow up for one month has continuously been done and final evaluation included: knowledge assessment questionnaire, adverse drug reactions and epileptic attacks reporting. All the patients completed the pre and post education questionnaire. There was no significant difference between the patients' knowledge before and after interventional questionnaire except for only two patients which is statistically significant ($P=0.03$) and ($P=0.02$) whose knowledge was significantly enhanced by post education. Thus, there are a lot of opportunities and challenges for pharmacists to play a role in epileptic care and education as patients with epilepsy are not knowledgeable about their illness regardless of age, educational background or duration of epilepsy. This role must be highly enforced and implemented in patients with epilepsy.

Introduction

Epilepsy is neurological disease characterized by recurrent seizures unprovoked by any immediately identifiable cause. Seizure is a clinical manifestation of an abnormal and excessive discharge of a set of neurons in the brain [1, 2]. There are various types of epilepsy as classified by International League Against Epilepsy, ILAE [3]. Seizures are divided into two types, generalized seizures, typical and atypical absence seizures. Epilepsy accounts for a significant proportion of the world's

disease burden affecting more than 50 million people worldwide according to WHO reports. The estimated proportion of the general population with active epilepsy is between 4 and 10 per 1000 people. However, in low- and middle-income countries, this proportion is much higher (between 7 and 15 per 1000 people) [4 - 6]. This is likely due to the increased risk of endemic conditions, higher incidence of road traffic injuries; birth-related injuries and variations in medical infrastructure, availability of preventative health programs and accessible care. Close to 80% of people with epilepsy live

in low- and middle-income countries [7 - 10]. Patient education is a process of improving knowledge and skills to influence the attitudes and behaviour required to maintain or improve health. It includes all educational activities directed at patients, including aspects of therapeutic education, health education and clinical health promotion [11]. The goals of education are to help the patient to actively participate in their own care, make informed choices about treatment and health care behaviours and engage in self-care with competence and confidence. Knowledge increases perceived control and facilitates the patient's adaptation to chronic illness role and self-care behaviour as restricted fluid and salt intake, exercise and adhering to pharmacological treatment [12]. Education about the consequences of epilepsy and skills development in self-management is essential components for helping individuals to become better partners in patient-centered care. Patients with epilepsy and their families are often not educated about epilepsy's risks. Children and youth with epilepsy also need increasing information about epilepsy and its implications [13]. Elderly patients may have specific information needs as they are taking medications for chronic health conditions. Knowledge needs of all people with epilepsy and their families, especially as it relates to each person's specific diagnosis and treatment plan [14]. The information needs related to diagnosis, treatment options, medications and their side effects, seizures, seizure type, seizure control, safety, injury prevention and social as well as psychological problems should be given, preferably in writing specific information [15]. To manage the fears and prevent unnecessary anxiety, people with epilepsy and their families need complete and accurate information about the comorbidities and mortality risks associated with epilepsy. Patients and families need to be made aware of the risk for suicidal ideation associated with seizure medication, including symptoms of depression and mood changes that should be reported to health care providers [16].

The process of patient education includes an assessment of the patient's previous knowledge, misconceptions, learning abilities, learning styles, cognition, attitudes and motivation. After this assessment, the patient's recourses, barriers and learning needs can be diagnosed. Further step is the planning of the education with the patient, goals are set and educational interventions are choosing. Continuous evaluation of patient's needs and goals provide the basis for further education [17]. There is general consensus that education about epilepsy is more effective when provided around the time of diagnosis

[18]. Educational providers are a multidisciplinary team including, physicians, nurses, dieticians, pharmacists, social workers, psychologists and physiotherapists [17, 18]. The aim of this study was to assess the role of pharmacist in improving epileptic patients' knowledge and outcome.

Materials and methods

During February and March 2019, this prospective observational pilot study was conducted. A total of seven patients was included in the study who were presenting to outpatient clinics of the National Centre of Epilepsy at Ali Omar Askar Hospital in Tripoli, Libya and receiving ordinary consultation care. Eligible subjects were patients with epilepsy not suffering from any organic diseases such as diabetes mellitus or mental retardation or pregnancy. At enrolment, through a face-to-face interview, the investigators gathered information about patient history including patient's name, sex, age, marital status, occupation, epilepsy type, epilepsy cause, duration of epilepsy and family history. For all the patients, the knowledge assessment questionnaire was done to evaluate patient's basic level of knowledge. The knowledge assessment questionnaire was validated by physician who is working in the same Centre where the study was conducted and a colleague in Faculty of Pharmacy at University of Tripoli, Tripoli, Libya. The knowledge assessment questionnaire composed of 19 questions that assessed the various basic knowledge regarding epilepsy and anti-epileptic medications. The option answers were "yes", "no" and "I do not know". The answer with "I do not know" is considered "no". Anti-epileptic medications knowledge consists of 1 - 6 questions which represented the basic knowledge about medications. Questions 7 - 19 represented the basic knowledge about disease. A structured epileptic education was performed by two pharmacists to cover the basic epileptic knowledge and education required. The patients one by one were educated in separated area by the two pharmacists and the education was supported with illustrated flyers. Patients were given the follow-up reporting card. The follow-up card was used for the patients' self-assessment and reporting of the frequency of adverse drug reactions and epileptic episodes. The main adverse drug reactions of each patient's regimen were listed in the follow-up reporting card. Patients were educated about using the follow-up card. After one-month duration, patients were assessed for the patient's information level by knowledge assessment questionnaire, frequency of adverse drug reactions,

incidence of epileptic episodes, learning needs and learning barriers.

Data analysis: SPSS version 26.0 (IBM, Armonk, New York) was used to carry out the statistical analyses. A statistical difference between the groups pre and post education was assessed by Wilcoxon signed-ranks test and 95% confidence interval considered significant. The patients' answers to the questions, yes expressed as 2 and no or I do not know as 1.

Results

Patient's demographic data and medical history are presented in **Table 1**. The number of patients who participated in the study was seven. All the patients were adult and the ratio between male and female was 4.0 : 3.0. Most of the patients diagnosed with generalized tonic clonic seizures GTC (57%). In **Table 2**, patients' medications regimen is presented, more than 50% of the patients were on mono-therapy with sodium valproate. Only one patient was on poly-therapy of sodium valproate and carbamazepine. **Tables 3** and **4** represent patient's knowledge about anti-epileptic medications and about disease (epilepsy), respectively. The patients' knowledge regarding anti-epileptic medications (questions 1 - 6) has not improved after education, except importance of "following the physician's instructions" and the "incidence of medications adverse reactions". As these aspects have enhanced, the overall patient's knowledge regarding anti-epileptic medications has not statistically been improved after education ($P = 0.08$). Regarding questions 7 - 11, the overall knowledge has slightly been improved considering seriousness and cause of epilepsy, however, statistically not significant ($P = 0.57$).

Concerning questions 12 - 16, the knowledge about the triggering factors has been ameliorated although there was no significant difference in the knowledge in these questions detected ($P = 0.16$). There was a slight enhancement in the knowledge regarding driving safety although most of them have no idea about the driving caution even after the initiated education. However, there were no significant differences in the answers before and after initiated education in relation to questions 17 - 19 are detected statistically ($P = 0.16$).

Table 1: Patients' demographics and medical history data

Age	mean \pm SD	33 \pm 10.24
		n (%)
Gender	Male	4 (57)
	Female	3 (43)
Marital status	Married	4 (57)
	Unmarried	3 (43)
Occupation	Working	2 (28.5)
	Not working	5 (71.5)
Type of epilepsy	Generalized tonic-clonic	4 (57.1)
	Generalized myoclonic	1 (14.3)
	Complex partial	1 (14.3)
	Psychological epilepsy	1 (14.3)
Cause of epilepsy	Febrile convulsion	2 (28.5)
	Head trauma due to RTA	3 (43)
	Idiopathic	2 (28.5)

n: number of patients, SD = standard division

Table 2: Patients' medications regimen

Drug regimen	n (%)
Sodium valproate only	4 (57.0)
Carbamazepine only	2 (28.7)
Sodium valproate & Carbamazepine	1 (14.3)

n: number of patients

Table 3: Individual patients' responses to knowledge about anti-epileptic medications before and after education.

Question Patient's response	Pre-Education			Post-Education			P-value
	Yes (n)	No (n)	Neutral* (n)	Yes (n)	No (n)	Neutral* (n)	
1-Do you know what your medicine's name is?	100% (7)	-	-	100% (7)	-	-	0.083
2-Do you know the dose and regimen of your medication(s)?	100% (7)	-	-	100% (7)	-	-	
3-Do you think anti-epileptic medications have side effects?	28.5% (2)	43% (3)	28.5% (2)	43% (3)	14.3% (1)	43% (3)	
4-Do you take your medicine(s) according to the physician's instructions?	85.7% (6)	14.3% (1)	-	100% (7)	-	-	
5-Do you think you can reduce the dosage of the medicine(s) if the seizures were controlled for a few months?	-	100% (7)	-	-	100% (7)	-	
6-Do you think you can take higher dose of medicine(s) to control recurrent seizures?	-	100% (7)	-	-	100% (7)	-	

*Neutral = I don't know

Table 4: Individual patients' responses to knowledge about epilepsy before and after education.

Question Patient's response	Pre-Education			Post-Education			P-value
	Yes (n)	No (n)	Neutral* (n)	Yes (n)	No (n)	Neutral* (n)	
7-Do you think epilepsy is a very serious disease?	57% (4)	43% (3)	-	28.5% (2)	71.5% (5)	-	0.564
8-Do you think that all patients with epilepsy should be treated?	100% (7)	-	-	100% (7)	-	-	
9-Do you think there is a possibility of healing or curing from epilepsy?	71.5% (5)	-	28.5% (2)	71.5% (5)	-	28.5% (2)	
10-Do you think epilepsy can be caused by a particular cause?	71.5% (5)	28.5% (2)	-	100% (7)	-	-	
11-Did you know that epilepsy has several types?	28.5% (2)	71.5% (5)	-	57% (4)	43% (3)	-	
12-Do you think epilepsy is related to mental illness?	-	100% (7)	-	-	100% (7)	-	0.157
13-Do you think that all epileptic seizures lead to a complete loss of consciousness?	85.7% (6)	14.3% (1)	-	71.5% (5)	28.5% (2)	-	
14-Do you think that all patients with epilepsy have the same symptoms?	28.5% (2)	71.5% (5)	-	14.3% (1)	85.7% (6)	-	
15-Do you think that there are specific factors that may trigger seizures?	71.5% (5)	-	28.5% (2)	100% (7)	-	-	
16 - Do you think that relieving stress and improving public health may reduce epileptic seizures?	85.7% (6)	14.3% (1)	-	100% (7)	-	-	
17-Do you think that periodic laboratory tests are important?	85.7% (6)	14.3% (1)	-	85.7% (6)	-	14.3% (1)	0.157
18-Do you think that patients with epilepsy are allowed to drive without companion?	28.5% (2)	71.5% (5)	-	43% (3)	57% (4)	-	
19-Do you think you should reveal your health status in your workplace?	100% (7)	-	-	100% (7)	-	-	

*Neutral = I don't know

In reference to the figures that illustrate in each patient's answer (**Figures 1 and 2**), the differences in the answers of the patients to determine whether there was an improvement in knowledge attributable to education or not were looked for.

Only the third and seventh patients' knowledge were significantly improved after education, $P = 0.034$ and 0.024 , respectively.

In evaluating the incidence of adverse drug reactions and epileptic attacks, only two patients out of all seven patients suffered from epileptic attacks. All the patients experienced adverse drug reactions. Out of a total of seven patients, only three patients had up-to-date medication plasma concentration analysis.

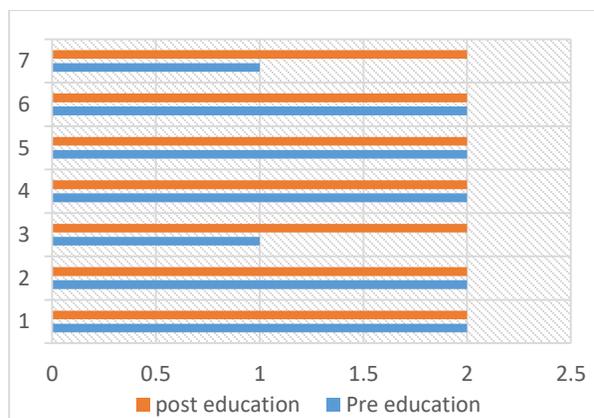


Figure 1: Individual patients' responses to knowledge about anti-epileptic medications

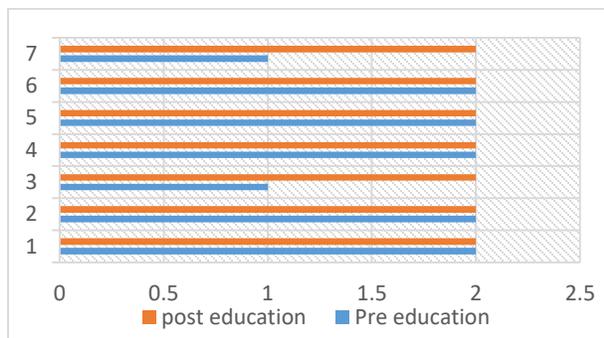


Figure 2: Individual patients' responses to knowledge about epilepsy before and after education

Discussion

Epilepsy education helps people with epilepsy become self-confident, competent in self-management, aware of their needs and able to access resources to meet their needs. In other words, it helps them to become better partners in patient-centered care. Having accurate, in-depth information about epilepsy helps people to better understand the disorder, prevents misconceptions and reduces concerns about stigma [12].

Epilepsy education helps promote optimal well-being and quality of life. In patient-centered care, the specific health and quality-of-life needs of people with epilepsy and their family members must be paramount in guiding the care provided by health professionals, similarly, the information, knowledge and skills-building needs of patients and families must guide educational efforts [15]. It is important that health professionals who educate patients and their families in a clinical setting understand the specific information needs and preferences of the patients and their families and taken into consideration factors related to the health literacy and culture, including cultural differences that may exist between them and their patients [13]. In this study, the patients' knowledge regarding anti-epileptic medications has not improved after education, except importance of "following the physician's instructions" and the "incidence of medications adverse reactions". As these aspects have enhanced, the overall patient's knowledge regarding anti-epileptic medications has not been improved statistically after education. The overall knowledge considering seriousness and cause of epilepsy has been slightly improved but statistically insignificant. Concerning the knowledge about the triggering factors has been ameliorated although there is no significant difference in the knowledge in these questions detected. In this study, there is a slight enhancement in the knowledge regarding driving safety although most of them have no idea about the driving caution even after the initiated education, however, there were no significant differences. The

absence of statistically significant differences among the patients' answers, do not necessarily mean that a failure in the initiated education. The reason may be the patients need more educational sessions because one education session is usually not enough and therefore there was no effect of education on responses to assessment questionnaire after education. AlAjmi and colleagues [19] have conducted a pharmacist-led educational interview with epileptic patients, the adherence was measured for the patients before and after six weeks of educational intervention. There was a significant difference in adherence scores between control and intervention groups after six weeks of intervention [19]. Another study conducted by Chen and colleagues [20] where knowledge scores of the caregivers were measured pre and post counselling session by the pharmacist. Average post-counselling knowledge scores was significantly higher than pre-counselling scores, caregivers' confidence to administer antiepileptic drugs to the child increased significantly post-counselling [20]. Thus, the present study highlights the need for further larger studies to evaluate the impact of educational interventions in improving patient knowledge about epilepsy and anti-epileptic medications on basis of understanding that there are some differences in perspectives among the patients with different sociocultural backgrounds.

Conclusion

There are a lot of opportunities and challenges for pharmacists to have a key role in epileptic care and education of patients with epilepsy who are not knowledgeable about illness regardless age, educational background or duration of epilepsy. Thus, this role must be highly enforced and implemented in Libyan society.

Limitation of the study

This is a pilot study but there are some points which should be considered for further studies. Sample size was small, the questionnaire has closed ended questions which may not detect correct responses, study duration was short.

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Conflict of Interest

The authors declare that no competing interest at all.

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