

MEDICATION ADHERENCE AND QUALITY OF LIFE IN EPILEPSY PATIENTS**NURULUMI AHMAD¹, NURUL IZATY OTHAMAN¹, FARIDA ISLAHUDIN^{2*}**¹Faculty of Pharmacy, Cyberjaya University College of Medical Sciences, 63000 Cyberjaya, Selangor, Malaysia ²Faculty of Pharmacy, University Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia. Email: faridaislahudin@yahoo.com*Received: 12 Mar 2013, Revised and Accepted: 26 Apr 2013***ABSTRACT**

Adherence to antiepileptic drugs is vital in maintaining control of seizure. This is even more important in epilepsy as poor seizure control directly affects daily productivity.

Objective: The aim of this study is to assess the adherence intention towards pharmacotherapy and its impact on quality of life in epilepsy patients.

Method: This prospective, cross-sectional study was conducted in a local tertiary hospital. Ethical approval was obtained from the Medical Research and Ethics Committee. Adults diagnosed with epilepsy and treated with at least one antiepileptic drug was included in the study with informed consent. Demographic data, frequency of seizures and medication were collected from patient medical records. Adherence intention was evaluated using the Modified Morisky Adherence Scale. Quality of life was evaluated using Quality of Life in Epilepsy Patient Weighted-10 questionnaire (QLIE-10).

Results: A total of 52 patients were included in the study. There was a negative correlation between complexity of medication with seizure control ($R=-0.33$, $p=0.017$). Only 21.2% ($n=11$) achieved high adherence intention in the study population. Furthermore, good seizure control was found to improve patient quality of life ($F=4.067$, $p=0.012$). Similarly, a higher adherence intention also improved quality of life ($F=4.161$, $p=0.021$).

Conclusion: This study demonstrates that adherence intention has a significant impact on patient quality of life. Therefore, adherence intention should be monitored to provide appropriate support in improving quality of life in epilepsy patients.

Keywords: Epilepsy, Quality of life, Adherence, Seizure

INTRODUCTION

Epilepsy is defined as a recurrent, usually unprovoked epileptic seizure which results from excessive synchronous and abnormal firing patterns of the cerebral cortical neuron [1]. Mortality rate among epilepsy patients has been shown to be as high as 90.9 per 1000 person per year [2]. The most common cause of mortality in epilepsy patients has been febrile convulsions (44.9%) [3]. Other causes of death associated with seizures include chest complications (6.8%), drowning (3.2%), asphyxia (2.3%), status epilepticus (2.2%) and burns (0.8%) [4]. However, management of epilepsy has been shown to be successful with antiepileptic agents [5]. Most interesting is that 60% of treated adults stop taking medication without relapse within 2-5 years of treatment [5]. Therefore, with appropriate drug management, improved quality of life in epileptic patients can be achieved.

Epilepsy has been shown to have significant effects on patient's lives. This is reflected on the ability to work and the standard of living in this group of patients. Approximately half of epilepsy patients feel that the disorder affects their ambitions and social life [6]. Patients also admit to missing school or work due to the disorder [7]. Furthermore, these patients also feel that the disease influences their memory [7]. Children and adolescent with epilepsy also admit that they feel embarrassed about their disorder and feel excluded by their peers [8]. Employment opportunity and capability to work for patients with epilepsy are important for self-esteem, self-image and quality of life [9].

Control of seizures can be achieved through medication adherence. More than half of epilepsy patients have poor seizure control due to non adherence to medication [10]. Effects of non adherence have also been linked to other problems. Amongst the effects of medication non adherence is an increased likelihood of an episode of status epilepticus [11]. In addition, non adherent patients were also more likely to be hospitalized and experience an emergency room admission [12]. In view of the state of the disorder, there is also a high rate of road accidents resulting in fracture, head injury and sudden unexpected death in patients with non controlled seizures [13].

Medication adherence is therefore important, especially in chronic disease patients. Unfortunately, adherence in these groups of

patients has been shown to be poor [14, 15]. Adherence to medication is affected by various patient factors such as age, duration of disease and co-morbidities [14, 16]. The direct effect of non adherence with reducing the quality of life in epilepsy patients however is a concern. Therefore, this work aims to identify the level of adherence to medication and perceived quality of life in epilepsy patients in the local setting.

MATERIALS AND METHODS

This study was performed as a prospective cross sectional study in a local tertiary hospital. Ethical approval was obtained from the Medical Research and Ethics Committee and informed consent was attained from patients before inclusion into the study. Adults treated for epilepsy with at least one drug was included in the study. Patient information, demographic data, seizure control (more than 1 episode per month, one episode per month, more than one episode per year and seizure free), complexity of medication (one or more medication) was obtained from patient medical records. Patients were then interviewed to assess patient adherence intention and quality of life.

Patient adherence and persistence in long term continuation of treatment was assessed using the Modified Morisky Adherence Scale [17, 18]. The Modified Morisky Adherence Scale assesses adherence intention towards medications in long term treatment. The scale contains a total of 6 questions, 3 questions attributed to motivation and another 3 attributed to knowledge of medication. Each question is given a score of 1 for 'no' and 0 for 'yes'. Questions on motivation levels assess forgetfulness and carelessness as indicators. On the other hand, questions on knowledge of medication evaluate management of medications such as stopping of medications and understand the long term benefits of continued therapy. This provides a score range of 0-3 for both motivation level as well as medication knowledge. In both motivation level and medication knowledge, a total score of 0-1 is grouped as 'low' and 2-3 is grouped as 'high'. Based on the total score of both motivation level and medication knowledge, adherence intention is calculated. The adherence intention is divided into 4 quadrants; 1= motivation low, knowledge low, 2= motivation low, knowledge high, 3= motivation high, knowledge low, 4= motivation high, knowledge high.

Adherence was grouped as low in quadrant 1, variable in quadrants 2 and 3, and high in quadrant 4.

The quality of life was assessed using the Quality of Life in Epilepsy Patient Weighted-10 questionnaire (QOLIE-10) [19]. The questionnaire contains 10 items, 1 question on level of distress caused by epilepsy and 1 review of what is most bothersome to the patient. The questionnaire is divided into three main factors; epilepsy effects (mental, physical and memory effects), mental health (energy, depression and quality of life) and function (seizure worry, driving, work and social limitation). A higher quality of life is reflected by a lower score.

Data collected was analysed using Statistical Package for Social Sciences (SPSS) version 17 statistical programme. Parametric tests were performed using ANOVA and t-tests. Categorical data was assessed using Spearman. A p-value of less than 0.05 was considered significant.

RESULTS

Of the total of 52 patients, approximately half of the study population were male (n=28, 53.8%). There were 24 (46.2%) patients under the age of 30 years, 22 (42.3%) patients between 30-60 years and 6 (11.5%) patients above 60 years. The distribution of patients according to ethnicity was Indian (n=22, 42.3%), followed by Chinese (n=16, 30.8%) and Malay (n= 14, 26.9%). With respect to level of education, there were 4 (7.7%) patients that received primary education, 35 (67.3%) patients received secondary education and 13 (25%) patients received tertiary education. Most of the patients in the study group were not working (n=31, 60.7%), compared to 21.2% (n=11) that worked. There were 7 (13.5%) students and 3 (5.8%) of the study population were pensioners. Furthermore, 15 (28.8%) patients had at least one other co-morbidity present. The co-morbidities identified in the study

population were hypertension (n=7, 13.4%), hypertension and diabetes (n=3, 5.7%), heart disease (n=3, 5.7%), diabetes (n=1, 1.9%) and peptic ulcer (n=1, 1.9%).

From the study population, only 1 patient had been diagnosed for at least 1 year, whereas the remaining patients (n=51, 98.1%) had been diagnosed for more than a year. These patients were given antiepileptic for management of epilepsy with 27 (51.9%) receiving monotherapy and 25 (48.1%) receiving polytherapy. Of the 25 patients receiving polytherapy, 19 (36.5%) patients received two antiepileptics and 6 (11.5%) patients received three antiepileptics for seizure control. There were a total of 38 (73.1%) patients that had more than one episode of seizure per month, 3 (5.8%) patients had one seizure episode per month, 1 (1.9%) patient had more than one episode per year and 10 (19.2%) patients had no seizure within the past year. A negative correlation between complexity of regimen with patient's seizure control (R=-0.33, p=0.017) was demonstrated in this study population.

Adherence intention

Based on the Modified Morisky Adherence Scale [17], a total of 41 (78.8%) patients reported a score of low motivation and 11 (21.2%) patients reported high motivation. However, 13 (25%) patients reported low medication knowledge and 39 (75%) patients reported high medication knowledge. From these results, the adherence intention of patients in the study population was assigned (Table 1). There were a total of 13 (25%) patients with low adherence intention (motivation low, knowledge low) and 11 (21.2%) patients with high adherence intention (motivation high, knowledge high). When assessed for association between complexity of regimen with adherence intention, there was no significant association between the two variables (p>0.05). Similarly, when assessed for seizure control with adherence intention, no association was observed (p>0.05).

Table 1: Table showing the level of adherence intention of patients treated for epilepsy based on the Modified Morisky Adherence Scale [17].

Level of adherence intention	Frequency (n)	Percentage (%)
1: Motivation low, knowledge low	13	25.0
2: Motivation low, knowledge high	0	0
3: Motivation high, knowledge low	28	53.8
4: Motivation high, knowledge high	11	21.2

QOLIE-10

Quality of life of epilepsy patients in this study population was assessed using QOLIE-10 [19]. Results of the QOLIE-10 scores were then compared with adherence intention, complexity of regimen and seizure control. There was no association between quality of life and complexity of regimen (p>0.05). However, there was a significant

difference between quality of life and seizure control (F=4.067, p=0.012) (Table 2). The quality of life was observed to be higher in patients with better seizure control. When comparing the quality of life with adherence intention, it was demonstrated that a higher quality of life was observed in patients with a high adherence intention (F=4.161, p=0.021) (Table 3).

Table 2: Table demonstrating the difference between seizure control with quality of life (QOLIE-10) [19] scores in epilepsy patients

Adherence Intention	Frequency (n)	QOLIE-10 (mean ± SD)	p-value
More than 1 per month	38	37.6 ± 7.26	0.012
1 per month	3	30.7 ± 4.04	
More than 1 per year	1	1. ± 0	
None in the past year	10	30.2 ± 3.26	

Table 3: Table demonstrating the difference between adherence intention with quality of life (QOLIE-10) [19] scores in epilepsy patients

Adherence Intention	Frequency (n)	QOLIE-10 (mean ± SD)	p-value
High	11	31.71 ± 5.67	0.021
Variable	28	37.90 ± 6.66	
Low	13	1. ± 7.65	

DISCUSSION

Epilepsy is a neurologic disorder that affects people of all ages. Demographics of the study population were comparable to previous work in epilepsy patients. The majority of patients within the study

population were within the range of 18-30 years of age. This was similar to previous findings which demonstrate that most epileptic patients fall between the ages of 10-30 years old [20]. Interestingly, previous work has demonstrated a bimodal distribution of epilepsy incidence with a peak in ages below 30 years and a second

distribution peak in ages 60 years and over [20, 21], which was not observed in this study population. Nonetheless, the similar gender distribution observed in this study group has been observed elsewhere [22, 23]. In terms of ethnicity, previous work demonstrates the low number of epilepsy patients among Malay patients [24], which supports current findings. Education among epilepsy patients has also been an issue of concern. Findings from previous work have shown that epilepsy patients were less likely to continue higher education [25]. Similarly, only a quarter of the study population attended tertiary education. This gives risk to the high unemployment rate observed in the study population. The unemployment rate among epilepsy patients have been shown to be 34% higher than healthy patients [26], which reflects the debilitating effect that epilepsy can have on patients. Therefore, similarities observed in the local setting demonstrate the global concerns attributed to epilepsy and a need to ensure a better quality of life.

Monotherapy has been the gold standard of managing epilepsy [27], with an average of 30% of patients becoming seizure-free with the administration of antiepileptic monotherapy [28]. The lower treatment costs and simpler dosing schedule maximizes patient compliance [28]. However, patients who don't respond to monotherapy are prescribed 2 or more drugs with the aim of controlling seizures. Evidently, this current work illustrates the benefit of monotherapy with more patients achieving seizure control compared to patients taking more than one epileptic drug. Therefore, it would be beneficial to review patients on more than one drug to ensure that seizure control is achieved.

Identifying the level of adherence intention is important in patients with epilepsy. Long term management of patients allows healthcare providers to identify the motivation and knowledge involved in medication taking in order to provide appropriate support. The adherence intention was found to be poor with only 21% demonstrating high adherence intention. The high non adherence rate is similarly reflected in patients with chronic disease in the local setting [14, 15]. In patients with epilepsy, non adherence has been shown to be as high as 60% [10], similar to this present work. Poor medication management in epilepsy patients requires special attention as appropriate drug treatment has been shown to be beneficial in controlling seizures [28]. Among the most common reasons of non adherence was forgetting to take medication as well as failing to refill prescriptions [29, 30], which was also the main reasons identified in this study population. Therefore, the poor seizure control in patients with more than one medication could be attributed to poor adherence intention. Subsequently, poor adherence intention could also affect the quality of life of epilepsy patients.

The QOLIE-10 scores allowed the quality of life to be assessed in epilepsy patients. Patients with lower frequency of seizures had a higher quality of life. Seizure control is essential in improving quality of life as the lower seizure frequency allowed patients to be more productive [31, 32]. Patients with frequent seizures tend to have reduced social contact and limited daily activities [33]. Indeed a higher adherence intention within this group reflected an improved quality of life, which has also been demonstrated in previous work [34, 35]. The result of non adherence is reduced seizure control as well as job related productivity [7]. The role of healthcare personnel in educating patients in order to improve adherence and reduce drug related problems has been widely discussed in chronic disease patients [36, 37, 38]. To that end, appropriate management is required to ensure patients have sufficient control of seizures through effective monitoring of adherence intention.

CONCLUSION

Seizure control is essential in ensuring good quality of life. In this study, high adherence intention of epilepsy patients was demonstrated to positively affect quality of life. Unfortunately, poor adherence intention was observed in the majority of patients on epilepsy medication. Therefore, it is important for healthcare providers to review medication management and monitor adherence intention among epilepsy patients in order to provide the appropriate level of support.

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