

# Epilepsy at a tertiary referral center in Iran, a quality of life study

Farzan Kheirkhah<sup>1</sup>, Payam Saadat<sup>2,3</sup>, Sanaz Navari<sup>4</sup>, Alijan Ahmadi Ahangar<sup>2,3</sup>,  
Angela Hamidia<sup>5</sup>, Soraya Khafri<sup>6</sup>, Niloofar Razavi<sup>4</sup>

<sup>1</sup>Neuroscience Research Center, Health Research Institute,  
Babol University of Sciences, Babol, I.R. Iran

<sup>2</sup>Mobility Impairment Research Center, Health Research Institute,  
Babol University of Medical Sciences, Babol, Iran

<sup>3</sup>Clinical Research Development Unit of Rouhani Hospital, Department of Internal Medicine,  
Babol University of Medical Sciences, Babol, Iran

<sup>4</sup>Student Committee Research, Babol University of Medical Sciences, Babol, Iran

<sup>5</sup>Social Determinants of Health Research Center, Health Research Institute,  
Babol University of Medical Sciences, Babol, I.R. Iran

<sup>6</sup>Infertility and Reproductive Health Research Center, Health Research Institute,  
Babol University of Medical Sciences, Babol, I.R. Iran

## ABSTRACT

**Background.** Epilepsy is caused by frequent generation of excitatory impulses in different part of the brain and it would affect different aspects of quality of life in these patients. The present study was conducted to evaluate the quality of life and diverse Confounding Factors in epileptic patients.

**Methods.** This Descriptive-analytical study was performed in 2017 with a simple random sampling method on 150 patients with epilepsy who admitted to the neurology department of Rouhani hospital of Babol. We used Patient Weighted Quality Of Life In Epilepsy (QOLIE-31-P) questionnaire. All statistics were carried out using SPSS v21.0 and  $P < 0.05$  was accepted as statistically significant.

**Results.** Of the 150 participant. The mean overall quality of life score in the patients was 54.07 (11.63%). The quality of life of patients with epilepsy in females ( $54.19 \pm 11.52$ ) was higher than males ( $53.89 \pm 11.88$ ,  $p = 0.979$ ). The overall quality of life score of married patients with epilepsy 54.12 (11.12) was higher than single patients 54.04 (11.90,  $p = 0.65$ ). In the extent of energy (tiredness), quality of life score decreased significantly with increasing age ( $p = 0.028$ ). In the field of medication effects the quality of life score decreased significantly with increasing level of education ( $p = 0.030$ ).

**Conclusion.** The mean overall quality of life score was intermediate which is expected required policies will be adopted to improve the status quo. It is also necessary to consider the marital status and aging in these patients.

**Keywords:** epilepsy, quality of life, seizure, neurological disorder, QOLIE-31

## INTRODUCTION

Epilepsy is one of the most common neurological disorder with an incidence of 0.5 to 2% in the general population that is mainly caused by frequent generation of excitatory impulses in various parts of brain (1). Its incidence varies by development from 45 per 100,000 people per year to 81.7 per 100,000 people (2).

There are various treatment protocols including medication, surgery, vagal nerve stimulation and having a ketogenic diet, which, if properly followed, can greatly prevent epilepsy. However, for a variety of reasons, many of these patients develop multiple seizures attacks. One of the most important reasons is the treatment gap in therapy period (3). There are several factors that cause treatment gap (4). As a result, the therapeutic gap either will

Corresponding author:

Payam Saadat

E-mail: sepanta1968@yahoo.com

Article History:

Received: 10 May 2019

Accepted: 25 May 2019

have no effect on patient status or exacerbate the disease.

Epilepsy affects all aspects of a person's life, including immunity, memory, cognition, mood and consequently, the quality of life in patients (5). Epilepsy affects the various aspects of life such as social function. Epileptic patients suffers from poor quality of life, low family relationship and deal with various forms of social support withdrawals including concerning about discrimination, social isolation, unemployment, driving constraints, emotional vulnerability, fear of seizure attack on public, dependence and unpredictability of the attacks. The therapeutic gap and socioeconomic factors together cause epilepsy to have an asymmetric global distribution (6). So, the factors affecting epilepsy and quality of life in patients should be investigated separately in each region. On the other hand, there was not any study in this field in Babol city to properly measure the dimensions of the disease and its impact. This study aimed to determine the quality of life in epileptic patients and its Confounding factors in Babol in 2017.

## MATERIALS AND METHODS

This descriptive-analytic study was conducted to evaluate the quality of life in epileptic patients and its Confounding factors in the neurology department of Ayatollah Rohani hospital in Babol in 2017. According to previous studies conducted in this field and according to the statistical advisor recommendations, 150 patients with epilepsy who had inclusion criteria were enrolled in by simple random sampling method. All patients with 15 to 65 years old who admitted to the Ayatollah Rohani hospital of Babol with a definite diagnosis of epilepsy which has been certified by a neurologist with the consent of participation were enrolled in the study. In addition, patients with a history of neurological debilitating diseases such as dementia, neurodegenerative disease, brain developmental disorders, hydrocephalus, M.S., etc., severe disability, asthma, diabetes and cardiovascular disease, and mental retardation were excluded. In this study, researcher was referred to the Neurology Department of the Rouhani Hospital in Babol, describe the study process to the patients and obtain consent from them and then the questionnaire was completed by the patients.

## DATA COLLECTION TOOLS

In this study Patient Weighted Quality Of Life In Epilepsy (QOLIE-31-P) questionnaire was used and scoring for each scale was done based on the scoring guide of questionnaire. The questionnaire has two parts: the first part is related to demographic and clinical features (Age, sex, level of education, family income, age at onset of epilepsy, type of epilepsy, duration of disease, seizure frequency per month, number of medication used, last seizure date, family history of seizure and Age of starting treatment). The second part of the questionnaire consists of 31 questions in 7 dimensions: Seizure Concerns (five items), Overall Quality of Life (two items), Emotional Well-Being (five items), Energy/Fatigue (four items), Cognitive Function (six items), Medication Effects (three items), Social Function (five items) And a general question about the importance of disease-related dimensions to assess the quality of life of patients. Scoring for each scale is based on the scoring guide for the questionnaire. The scale is scored from 0 to 100. High scores reflect that the quality of life is high (7). This questionnaire has been used in research conducted in Iran.

In Montazeri's et al. study the Cronbach's alpha value of the items in this questionnaire was 0.71 to 0.89. This study showed that Persian standard questionnaire of quality of life in patients with epilepsy was valid and reliable (8).

This study was approved by the Ethics Committee of Babol University of Medical Sciences, Babol, Iran (no: MUBABOL.REC.1395.228).

The analysis and assessment of the collected data were performed by a computer using Statistical Package for the Social Sciences version 21.0 (SPSS Inc., Chicago, IL, USA) package program And analyzed by descriptive statistics and Mann-Whitney statistical tests. Statistical significance was assessed at a level of 0.05 (two-tailed) for all analyses.

## RESULTS

As shown in table 1, of the 150 patients with epilepsy examined for quality of life, 88 (58.70%) were female and 104 (69.31%) were married. Also, 71 (47.31%) of the participants were 26 to 45 years old and 79 (52.7%) of the epileptic individuals had diploma or higher education level. In addition,

most of the samples (45.30%) were suffering from epilepsy for more than 10 years.

**TABLE 1.** Some demographic characteristics of patients with epilepsy (n=150)

| characteristics              | n (%)              |            |
|------------------------------|--------------------|------------|
| gender                       | female             | 88 (58.7)  |
|                              | male               | 62 (41.3)  |
| age (years)                  | 15-25              | 41 (27.3)  |
|                              | 26-45              | 71 (47.3)  |
|                              | 46≤                | 38 (25.3)  |
| marital status               | single             | 46 (30.7)  |
|                              | married            | 104 (69.3) |
| Education status             | illiterate         | 20 (13.3)  |
|                              | below diploma      | 51 (34.0)  |
|                              | diploma and higher | 79 (52.7)  |
| duration of epilepsy (years) | <1                 | 19 (12.7)  |
|                              | 1-5                | 39 (26)    |
|                              | 5-10               | 24 (16)    |
|                              | 10<                | 68 (45.3)  |

Table 2 shows the mean quality of life score among patients with epilepsy in different domains. The table shows that the average score for overall quality of life in patients was 54.07±11.63. Among the studied domains, the lowest and highest mean score was 27.24 and 64.25, respectively related to seizure worry and cognitive function.

**TABLE 2.** Mean score of quality of life in patients with epilepsy in different domains (n=150)

| quality of life domain  | mean (SD)     |
|-------------------------|---------------|
| seizure worry           | 27.24 (20.87) |
| overall quality of life | 59.68 (21.09) |
| emotional well-being    | 48.90 (14.45) |
| energy/fatigue          | 46.93 (17.02) |
| cognitive function      | 64.25 (21.90) |
| medication effects      | 53.18 (22.60) |
| social function         | 55.34 (17.88) |
| overall score           | 54.07 (11.63) |

Information about the mean scores for quality of life, broken down by age, is given in Table 3. The following table shows that in the energy/fatigue domain with increasing age the mean score of quality of life decreased significantly. In other domains, the mean score of quality of life did not have a significant relationship with age.

Information about the average quality of life score, broken down by education status, is presented in Table 4. The table below shows that in the medication effects domain, the level of the quality of life score has significantly decreased with increasing the level of education. In the other parts there was no significant relationship.

**TABLE 3.** Mean scores of quality of life in patients with epilepsy in different ages

| domains                 | age (years)   |               |               | p Value |
|-------------------------|---------------|---------------|---------------|---------|
|                         | 15-25         | 26-45         | 46≤           |         |
| seizure worry           | 31.00 (23.07) | 27.71 (20.11) | 22.31 (19.30) | 0.223   |
| overall quality of life | 61.76 (18.18) | 57.18 (21.73) | 62.10 (22.76) | 0.448   |
| emotional well-being    | 50.63 (13.07) | 47.09 (15.59) | 50.42 (13.58) | 0.392   |
| energy/fatigue          | 43.04 (16.95) | 45.14 (17.46) | 43.68 (14.87) | 0.028   |
| cognitive function      | 63.93 (20.08) | 63.45 (21.84) | 66.11 (24.25) | 0.826   |
| medication effects      | 51.21 (20.96) | 52.58 (24.45) | 56.42 (20.85) | 0.579   |
| social function         | 55.17 (18.17) | 56.10 (16.79) | 54.11 (19.85) | 0.810   |
| overall score           | 55.47 (11.16) | 53.19 (11.70) | 54.19 (12.14) | 0.657   |

**TABLE 4.** Mean scores of quality of life in patients with epilepsy by education status

| domains                 | age (years)   |                   |                      | p Value |
|-------------------------|---------------|-------------------|----------------------|---------|
|                         | Literate      | below high school | high school and more |         |
| seizure worry           | 25.58 (20.86) | 29.00 (21.71)     | 26.52 (20.51)        | 0.783   |
| overall quality of life | 64.00 (16.23) | 61.91 (23.06)     | 57.15 (20.74)        | 0.346   |
| emotional well-being    | 49.80 (13.70) | 48.39 (15.03)     | 49.01 (14.42)        | 0.915   |
| energy/fatigue          | 43.00 (13.70) | 46.66 (18.72)     | 48.10 (16.66)        | 0.457   |
| cognitive function      | 64.52 (22.70) | 65.60 (24.54)     | 63.32 (20.06)        | 0.750   |
| medication effects      | 61.52 (17.05) | 58.00 (19.79)     | 47.95 (24.36)        | 0.030   |
| social function         | 52.73 (17.36) | 56.13 (19.22)     | 55.49 (17.26)        | 0.612   |
| overall score           | 53.97 (7.16)  | 55.08 (13.82)     | 53.43 (11.07)        | 0.775   |

As shown in table 5, generally, the quality of life in patients with epilepsy is higher in women than in men. The overall mean score of quality of life in women is higher than men, which was not significant. In addition except subscales of medication effects and social function, the mean score of women’s quality of life was higher than men, which was not significant in any of them.

Table 6 shows that generally the quality of life of married patients with epilepsy is more than single patients, which is not significant. There was no significant relationship between the quality of life domains and the marital status of patients with epilepsy.

**TABLE 5.** Mean scores of quality of life in patients with epilepsy in different genders.

| domains                 | gender           |                  | p Value |
|-------------------------|------------------|------------------|---------|
|                         | female           | male             |         |
| seizure worry           | 27.73<br>(20.35) | 26.54<br>(21.73) | 0.674   |
| overall quality of life | 60.14<br>(21.12) | 59.03<br>(21.21) | 0.676   |
| emotional well-being    | 49.40<br>(14.00) | 48.19<br>(15.16) | 0.606   |
| energy/fatigue          | 47.15<br>(16.37) | 46.61<br>(18.03) | 0.977   |
| cognitive function      | 64.71<br>(21.68) | 63.61<br>(22.39) | 0.738   |
| medication effects      | 51.85<br>(23.01) | 55.06<br>(22.05) | 0.325   |
| social function         | 54.56<br>(17.66) | 56.46<br>(26.18) | 0.407   |
| overall score           | 54.19<br>(11.52) | 53.89<br>(11.88) | 0.979   |

**TABLE 6.** Mean quality of life score in patients with epilepsy by marital status

| domains                 | marital status   |                  | p Value |
|-------------------------|------------------|------------------|---------|
|                         | married          | single           |         |
| seizure worry           | 30.61<br>(21.89) | 25.75<br>(20.33) | 0.257   |
| overall quality of life | 60.05<br>(18.88) | 59.51<br>(22.08) | 0.958   |
| emotional well-being    | 49.47<br>(13.15) | 48.65<br>(15.05) | 0.778   |
| energy/fatigue          | 49.34<br>(17.96) | 45.86<br>(16.56) | 0.271   |
| cognitive function      | 63.49<br>(21.81) | 64.59<br>(22.03) | 0.772   |
| medication effects      | 51.32<br>(21.17) | 54.00<br>(23.26) | 0.446   |
| social function         | 53.51<br>(18.13) | 56.15<br>(17.79) | 0.410   |
| overall score           | 54.12<br>(11.12) | 54.04<br>(11.90) | 0.645   |

Information about the mean scores of quality of life in terms of the duration of the disease is presented in Table 7. The following table shows that there was no significant relationship in the quality of life score with any of the subscales studied.

**TABLE 7.** Mean scores of quality of life in patients with epilepsy by duration of the disease

| domains                 | duration of the disease (years) |                  |                  |                  | p Value |
|-------------------------|---------------------------------|------------------|------------------|------------------|---------|
|                         | <1                              | 1-5              | 5-10             | 10≤              |         |
| seizure worry           | 21.58<br>(20.15)                | 25.43<br>(17.29) | 28.05<br>(22.92) | 29.50<br>(22.22) | 0.522   |
| overall quality of life | 58.42<br>(22.58)                | 60.25<br>(22.70) | 57.50<br>(18.13) | 60.47<br>(21.00) | 0.899   |
| emotional well-being    | 46.73<br>(12.58)                | 51.89<br>(12.99) | 45.00<br>(16.31) | 49.17<br>(14.93) | 0.329   |
| energy/fatigue          | 45.00<br>(17.95)                | 48.20<br>(17.03) | 48.12<br>(18.52) | 46.32<br>(16.51) | 0.808   |

| domains            | duration of the disease (years) |                  |                  |                  | p Value |
|--------------------|---------------------------------|------------------|------------------|------------------|---------|
|                    | <1                              | 1-5              | 5-10             | 10≤              |         |
| cognitive function | 58.33<br>(21.49)                | 68.93<br>(22.47) | 66.55<br>(20.11) | 62.07<br>(22.04) | 0.214   |
| medication effects | 46.19<br>(24.95)                | 54.48<br>(21.79) | 55.09<br>(23.85) | 53.71<br>(22.09) | 0.512   |
| social function    | 52.18<br>(16.49)                | 57.30<br>(16.88) | 50.30<br>(15.41) | 56.88<br>(19.44) | 0.261   |
| overall score      | 50.43<br>(13.22)                | 56.31<br>(10.25) | 53.27<br>(9.67)  | 54.07<br>(12.47) | 0.499   |

## DISCUSSIONS

This descriptive cross-sectional study was carried out in the neurology department of Ayatollah Rouhani Hospital in Babol in order to determine the quality of life of epileptic patients in 2017. The results suggests that the mean quality of life score in patients was 54.07 (11.63). The highest and lowest mean score was related to seizure concerns and cognitive functions (27.24, 64.25 respectively). In addition, the results showed that there was no significant relationship between the duration of developing seizure, marital status and gender with quality of life. Moreover, in medication effects field high level of erudition significantly had negative effect on quality of life. Also, in energy and fatigue field the older the age the lower the quality of life.

There were different results among other studies. In a study by Sureka et al. aiming to determine quality of life in epileptic patients in India in 2017, 70 patients were evaluated using the QOLIE-31 questionnaire. The results showed that the mean score of quality of life was 60.46 which was higher than the results of the present study. In addition, among the studied domains, the highest and lowest score were medication effect and energy-fatigue (88.064, 51.42 respectively) which was in coordination of our study. However, the sample size and patients age was higher in our study (9). Another study by Staniszewska et al. In 2015 on 252 epileptic patients' quality of life in Poland the results showed that the mean score was 55.18, which is similar with the results of the present study.

However, there are differences in the demographic characteristics of the two studies (10). In addition, in a study by Norsa'adah et al. In Malaysia in 2013, the overall quality of life score of 106 patients with epilepsy was 68.9 which is higher than the results of our study. In contrast to our study, medication effect has the highest score in

study domains (79.4). Seizure concerns gets the lowest score similar with our study. It is worth mentioning that sample size in our study was larger (11).

The other results showed that the quality of life of patients is higher in women than men. Among the studied domains, except for the effects of medication, the mean score of women's quality of life was higher than that the men, which was not significant. In addition, there was no significant relationship between the marital statuses, the duration of epilepsy and the quality of life among the domains. In Staniszewska et al., among the 252 patients with epilepsy, 136 were female (53.97%) and the rest were male. In assessing the relationship between quality of life domains and gender, the results showed that there was no significant relationship between gender and quality of life that was consistent with the results of this study (10). In the study of Norsa'adah et al., Most of the participants were women (56.6%). Results showed that there was not a significant relationship between quality of life domains and gender. In this study, the quality of life of women (70.7) was more than men (66.7) (11).

In addition, the results showed that in the area of fatigue-energy with increasing age and in the field of medication effect by increasing the level of education, the mean score of quality of life decreased significantly. In the study of Staniszewska et al., the level of education has a significant relationship with the seizure concern, which is in contrast to the results of our study. Moreover, there was a significant relationship between the medication effects on the level of education, which was not in line with the results of our study. Also, in this study, a significant relationship was noticed between age and cognitive function and medication effects, which contradicted the results of our study. Besides, there was no significant relationship between the energy-fatigue and age, which was contrary to the results of our study (10). In the study of Norsa'adah et al., with an increase in the level of education, the mean score of quality of life increased, but was not statistically significant. The results of this study are in line with our study. The results also showed that 39 (36.8%) and 36 (34%) patients were between 18- 25 years old and 36-62 years old respectively. In addition, 31 (29.2%) patients were between the ages of 26-35 years old. Also, there was no signifi-

cant relationship between age and quality of life (11). In a study by Paul and colleagues, 68% of 50 patients were aged 19-30. In assessing the relationship between age and mean score of quality of life domains, the results showed that there was no significant relationship between these two components, which is not in line with the results of our study (12).

The results of our study in marital status indicated that married participants have higher quality of life. There was no significant relationship between married and single persons among the studied areas. In Staniszewska et al., 112 patients (44% 44) were single and 104 patients (41.27%) were married and the rest were divorced or widowed. There was a significant relationship between the cognitive function of quality of life and marital status which was in contrast to our study (10).

In a study by Norsa'adah et al., of 106 patients, 64 (60.4%) were single and the rest were married. Also, the mean quality of life score in single individuals was 68.3 and in married people was 70. According to the results of our study, this difference was not statistically significant (11).

In the study of Tedrus et al., the mean quality of life score in patients in married individuals was 60, 62.7 reported in single patients, 55.4 in divorced people and 54.6% in widowed ones, which has no significant relationship between marital status and quality of life. But in our study, the mean quality of life score of married people was higher than the results of this study (13).

The results of this study regarding the duration of epilepsy showed that there was no significant relationship with the quality of life score in any of the areas studied. In Staniszewska et al., 17.28% of the participants were developed less than 5 years with epilepsy. The results of the study showed that the duration of the epilepsy with quality of life, seizure concerns and fatigue-energy domain have a significant relationship, which is not in line with the results of our study (10).

In the study of Norsa'adah et al., 15 patients (14.2%) and 69 patients (65.1%) had developed epilepsy less than 5 years and 5-20 years, respectively. In addition, 22 patients (20.7%) were developed more than 20 years with epilepsy. In assessing the quality of life with the duration of the disease, the results showed that with an increase in the duration

of the disease, the mean score of quality of life decreased, which was consistent with the results of the our study but was not statistically significant (11).

In the study of Paul et al., Most of the participants (69%) affected with epilepsy for more than 5 years. Also, other results of the study showed that in all groups, the average score of seizure concern was the lowest score compared with other areas. With the increase in the duration of the disease, the quality of life score has also increased, which is consistent with the results of the our study but was not statistically significant (12).

The aim of this study was to determine the quality of life in patients with epilepsy admitted to Aya-tollah Rouhani Hospital in Babol. In addition, the present study is a descriptive-cross-sectional study with a limited sample size that cannot be found causally related. Comparing the results of this study with other studies also suggests that the quality of life of these patients in different areas requires careful examination. In addition, the present study is a cross-sectional descriptive study in a limited area (in the city of Babol), which aggravates the results to other parts of Iran.

## CONCLUSIONS

The results of this study showed that the mean total score of quality of life was in the average

range, which is expected to be adopted new strategies in order to improve the existing situation. Among the studied domains, the lowest and highest mean were related to seizure concerns and cognitive function respectively. In addition, none of the areas studied had a significant relationship with the duration of the disease, gender and marital status with the quality of life score. Also, there was a significant relationship between the level of education with the quality of life score in the field of medication effects and the increase of age with the fatigue-energy domain. Regarding the results of this study, we can use interventions to improve the conditions of patients with epilepsy, taking into account different aspects of quality of life. It is also suggested to study the quality of life in these patients in a larger sample size and in different areas in order to increase the generalizability of the findings.

## Acknowledgement

The authors would like to express their gratitude to the Clinical Research Development Unit of Rouhani Hospital in Babol, Iran and no financial disclosure. The authors declare no conflicts of interest.

## REFERENCES

- Beghi E, Hesdorffer D. Prevalence of epilepsy – An unknown quantity. *Epilepsia*. 2014;55(7):963-7.
- Ngugi AK, Kariuki S, Bottomley C, Kleinschmidt I, Sander J, Newton C. Incidence of epilepsy – A systematic review and meta-analysis. *Neurology*. 2011;77(10):1005-12.
- Meinardi H, Scott R, Reis R, On Behalf of the Ilae Commission on the Developing World JS. The treatment gap in epilepsy: the current situation and ways forward. *Epilepsia*. 2001;42(1):136-49.
- Winkler AS, Mayer M, Schnaitmann S, Ombay M, Mathias B, Schmutzhard E et al. Belief systems of epilepsy and attitudes toward people living with epilepsy in a rural community of northern Tanzania. *Epilepsy & Behavior*. 2010;19(4):596-601.
- Wiebe S, Eliasziw M, Bellhouse DR, Fallahay C. Burden of epilepsy: The Ontario health survey. *Canadian Journal of Neurological Sciences*. 1999;26(4):263-70.
- Hermann B, Seidenberg M, Jones J. The neurobehavioural comorbidities of epilepsy: Can a natural history be developed? *The Lancet Neurology*. 2008;7(2):151-60.
- Mollaoğlu M, Durna Z, Bolayır E. Validity and reliability of the quality of life in epilepsy inventory (QOLIE-31) for Turkey. *Nöro Psikiyatri Arşivi*. 2015;52(3):289.
- Montazeri A, Tagha M, Vahdaninia M, Ibrahimi F. Psychometric quality of life questionnaire for adult patients with epilepsy as English (QOLIE-31-P). *Payesh*. 2010;9(4):417-24.
- Sureka R, Kuldeep SY, Agrawal R, Nijhawan M. Quality of Life in Patients with Epilepsy: Study from a Northern Indian Teaching Hospital. *Journal of Mahatma Gandhi University of Medical Sciences and Technology*. 2017;2(1):10-3.
- Staniszewska A, Kurkowska-Jastrzębska I, Tarchalska-Kryńska B. Quality of life in patients with epilepsy. *Journal of Public Health, Nursing and Medical Rescue*. 2015;157(2015\_3):20-6.
- Norsa'adah B, Zainab J, Knight A. The quality of life of people with epilepsy at a tertiary referral centre in Malaysia. *Health and quality of life outcomes*. 2013;11(1):1.
- Paul R, Joyce S, Kusanthan T. The Psychosocial Impact of Epilepsy; A Study on Adult People with Epilepsy Attending Clinics in Lusaka. *J Epilepsy*. 2015;1(101):2472-0895.1000101.
- Tedrus GMAS, Fonseca LC, Pereira RB. Marital status of patients with epilepsy: Factors and quality of life. *Seizure*. 2015;27:66-70