The Effect of Comprehensive Video-Assisted Epilepsy Education on Drug Adherence and Self-Care in People with Epilepsy

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Abstract

Background Epilepsy is a chronic neurological disorder which needs proper drug adherence and follow-up care to control the recurrent seizure events as one of the most common reasons for “breakthrough” seizures is nonadherence to antiepileptic drugs. In addition to usual therapeutic management, patients are encouraged to involve in epilepsy self-management by understanding the nature of the disease and its control measures to prevent the complications.

Methods A single group experimental design (pretest–posttest) was conducted to evaluate the effect of comprehensive video-assisted teaching program on self-care efficacy and level of knowledge of patients with epilepsy. Data was collected by direct interview with Epilepsy Self-Management Scale and epilepsy knowledge questionnaire. A video-assisted teaching covering all aspects of epilepsy was given on the day of pretest. At the interval of 3 months, the level of drug adherence, self-care, and knowledge level were assessed.

Results Majority of the study participants (47.1%) belonged to the age group between 19 and 30 years, 54.3% participants were male, majority of them (70%) had tonic-clonic seizure, and 40% of them reported the onset of seizures as above 20 years. Eighty-seven percent of participants had no family history of seizures or epilepsy. Note that 38.6% of the participants had at least one seizure episode/month. Majority of the caregivers were either parents (41.4%) or spouse (48.6%). The study revealed that, following video-assisted teaching, the proportion of participants with adequate knowledge has increased from 14 to 64.3%. Similarly, the percentage of participants who had good drug adherence increased from 52 to 65% and no participant had poor drug adherence. Participants who had high level of self-care increased from 71.4 to 88.6%.

Conclusion To overcome the poor drug adherence-related complications, people with epilepsy are to be personally educated adequately to increase the factual information about the condition and their self-care practices.

Introduction

Among common neurological disorders, seizure disorder shares approximately 1% of the total burden of disease worldwide; out of which, more than three-quarters of the population live in low to lower middle income countries. In India, approximately 10 to 12 million people suffer from epilepsy.1,2 Epilepsy is a disorder of chronic, frequent seizures in which the onset and duration of the seizure cannot be anticipated. This common disease have a notable social

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stigma which leads to discrimination in the society which further disable the self-esteem of people with epilepsy. Societal stigma often caused by misconceptions, myths, and misunderstandings about the disease have been observed for thousands of years. Social discrimination often leads to reduced interest to access medical care, and many of them try to hide their disease in view of negative stereotyping. A range of incorrect and even harmful practices to regulate seizure are frequently embraced; for instance, keeping iron rod in the hand, rubbing irritants to eyes, holding the patient in fire, burns, and ingestion of cow urine. It is imperative to educate about management of this chronic disease to the caregivers and patients with epilepsy to improve self-care.

Persons with seizure disorder need to transform their lifestyle primarily focusing on drug adherence and self-care. Modification of the lifestyle and adhering to treatment regime is key for improving their quality of life. Hence, this study is focused to evaluate the self-care management educational program with the support of video, focused on disease characteristics, monitoring symptoms, management modalities, significance of drug adherence, and managing lifestyle pattern to increase patient’s self-confidence by improving their understanding about the disease.

Methods
A single group experimental design (pretest–posttest) was applied to evaluate the effect of comprehensive video-assisted teaching program on self-care efficacy and level of knowledge among patients with seizure disorder. Participants who were in the age group of 18 to 65 years, who were enrolled in the institute’s epilepsy clinic were included in the study. Sample size estimated was 70 with power of the study as 90% and 5% level of significance. It was calculated based on mean difference in drug adherence score before and after implementation of education program as 6.58 versus 7.53. Consecutive sampling technique was used. Under Graduate Research Monitoring Committee and Institute Ethical Committee approval was obtained (JIP/IEC/2018/111).

With the help of epilepsy knowledge questionnaire and Epilepsy Self-Management Scale (ESMS), the data was collected by interview method. The ESMS has five domains which focus on safety management, medication management, seizure management, and lifestyle management. The internal consistency reliability was 0.81 to 0.86. The epilepsy knowledge questionnaire has 20 items about the knowledge of epilepsy. The score ranges from 0 to 20; the higher the score, the higher the knowledge level.

A video-assisted teaching covering all aspects of epilepsy was given to the people with epilepsy on the day of pretest. At an interval of 3 months, the level of drug adherence, self-care, and knowledge level were assessed.

The continuous data such as age, duration of treatment, number of seizure per last month, number of drugs, and frequency of the drugs was expressed as mean with standard deviation or median with range, whereas the distribution of nominal data including literacy, occupation status, participants’ gender, marital status, domicile status, and comorbidity history was stated as frequency and percentages. Chi-square/Fisher’s exact test was used to analyze the level of drug adherence with sociodemographic characteristics. ESMS domains and knowledge score before and after implementation of video-assisted teaching program was analyzed with paired t-test. The level of statistical significance $p < 0.05$ was considered as significant.

Results
Results showed 47.1% of the participants belonged to the age group between 19 and 30 years, 54.3% participants were male, 7.1% were illiterate, and majority of the participants (82.9%) were from rural (Table 1). Majority of the participants (70%) had generalized tonic-clonic seizure, 40% of the participants had the age of onset of seizures at above 20 years, 87% of participants had no family history of seizures or epilepsy. Note that 38.6% of the participants had at least one seizure episode/month. Majority of the caregivers were either parents (41.4%) or spouse (48.6%) (Table 2).

Table 3 shows the pre- and postintervention mean score and standard deviation for the level of knowledge of people with epilepsy who had undergone the educational program (video-assisted epilepsy education). It shows during pretest 12 (17.1%) of the participants had inadequate knowledge regarding epilepsy, 48 (68%) participants had moderate level of knowledge, and 10 (14.3%) participants had adequate knowledge. During posttest, 45 (64.3%) had adequate knowledge, 23 (35.7%) had moderate knowledge, and no participants had inadequate knowledge. The level of good drug adherence of people with epilepsy improved to 65% from 52% and no participant had poor drug adherence after receiving the video-assisted teaching. Similarly, the percentage of participants who had high level of self-care increased from 71.4 to 88.6% (Tables 4 and 5). Various sub domain mean score of Epilepsy Self-Management Scale (ESMS) also improved following video-assisted education (Table 6).

Discussion
Sociodemographic and Seizure Characteristics
This study included 70 epilepsy patients with the mean age of 33.54 ± 11.22 years. Majority of the study participants (54.4%) were male and 38.6% of the participants had at least one seizure episode per month. Note that 7.1% had comorbidities like diabetes mellitus, hypertension, and hypothyroidism. Similar mean age of participants with seizures, and male preponderance has also been observed in earlier studies.

The average age of onset of seizure was 18 years with 7.1% of the participants suffering day time seizures. Seventy percent of them were in the category of tonic-clonic seizure. In a comparable study by Hovinga et al, it was reported that among 408 participants, the average mean age of onset was 20 years, and majority of them (57%) were reported with tonic-clonic seizures and 12% had day time seizure.
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Approximately more than half of patients in this study were on polytherapy. Similar proportions were found in other studies also.\textsuperscript{15,16}

**Level of Knowledge on Epilepsy**

In the current study, the mean knowledge score of the participants increased from 10.82 ± 3.93 to 15 ± 2.59 following video-assisted education during posttest which was significant at ($p = 0.000$). The number of participants with adequate level of knowledge increased from 10 (14.3%) to 45 (63.3%) after the implementation of the video-assisted epilepsy education. In a related study led by May et al, it was observed that the knowledge level improved after the educational treatment and was significant ($p < 0.001$).\textsuperscript{15}

**Drug Adherence and Self-Care**

Patients’ knowledge on disease management is directly proportionate to their disease outcome, satisfaction, and quality of life. Educating patients and their caregivers in epilepsy is an important component of quality management, including improving self-care outcomes and overall epilepsy care. The pretest mean score of the participants for the level of drug adherence were 39.34 ± 7.015, during posttest it was 45.40 ± 5.417 which was highly significant ($p = 0.000$). The number of participants with good level of drug adherence increased from 52 (74.3%) to 65 (92.9%) after the implementation of the video-assisted teaching program which was concurrent with the studies. Frequency of the drugs per day (patients with monotherapy) associated significantly with the level of drug adherence with a $p$-value of 0.010.

### Table 1 Sociodemographic characteristics ($N = 70$)

| Sociodemographic characteristics | Frequency ($n$) | Percentage (%) | Chi-square | $p$-Value |
|----------------------------------|-----------------|----------------|------------|-----------|
| **Age (in y)**                   |                 |                |            |           |
| 19–30                            | 33              | 47.1           | 15.457     | 0.000     |
| 31–45                            | 29              | 41.4           |            |           |
| 46–65                            | 8               | 11.4           |            |           |
| **Mean age:** 33.54 ± 11.22 y    |                 |                |            |           |
| **Sex**                          |                 |                |            |           |
| Male                             | 38              | 54.3           | 0.514      | 0.473     |
| Female                           | 32              | 45.7           |            |           |
| **Education**                    |                 |                |            |           |
| Illiterate                       | 5               | 7.1            | 14.286     | 0.006     |
| Primary                          | 24              | 34.3           |            |           |
| High school                      | 17              | 24.3           |            |           |
| Higher secondary                 | 13              | 18.6           |            |           |
| Graduate                         | 11              | 15.7           |            |           |
| **Occupation**                   |                 |                |            |           |
| Unemployed                       | 6               | 8.6            | 31.143     | 0.000     |
| House wife                       | 23              | 32.9           |            |           |
| Agriculture                      | 7               | 10.0           |            |           |
| Employed                         | 34              | 48.6           |            |           |
| **Income (INR)**                 |                 |                |            |           |
| Less than 1,000                  | 5               | 7.1            | 96.200     | 0.000     |
| 1,000–2,000                      | 62              | 88.6           |            |           |
| More than 2,000                  | 3               | 4.3            |            |           |
| **Marital status**               |                 |                |            |           |
| Married                          | 51              | 72.9           | 14.629     | 0.000     |
| Unmarried                        | 19              | 27.1           |            |           |
| **Domicile**                     |                 |                |            |           |
| Rural                            | 58              | 82.9           | 30.229     | 0.000     |
| Urban                            | 12              | 17.1           |            |           |


Table 2 Seizure characteristics (N = 70)

| Seizure characteristics          | Frequency (n) | Percentage (%) | Chi-square | p-Value |
|----------------------------------|---------------|----------------|------------|---------|
| Type of seizure                  |               |                |            |         |
| Generalized tonic-clonic seizure | 49            | 70             | 116.286    | 0.000   |
| Complex partial seizure          | 6             | 8.6            |            |         |
| Absence seizure                  | 1             | 1.4            |            |         |
| Myoclonic seizure                | 1             | 1.4            |            |         |
| Others                           | 3             | 18.6           |            |         |
| Age of onset                     |               |                |            |         |
| Before 5 y                       | 15            | 21.4           | 9.200      | 0.027   |
| 6–12 y                           | 11            | 15.7           |            |         |
| 13–20 y                          | 16            | 22.9           |            |         |
| After 20 y                       | 28            | 40.0           |            |         |
| Mean age of onset: 18.81 ± 13.14 y|               |                |            |         |
| Family history                   |               |                |            |         |
| Yes                              | 9             | 12.9           | 38.629     | 0.000   |
| No                               | 61            | 87.1           |            |         |
| Duration of treatment            |               |                |            |         |
| Less than 5 y                    | 32            | 45.7           | 5.171      | 0.075   |
| 6–10 y                           | 17            | 24.3           |            |         |
| More than 10 y                   | 21            | 30.0           |            |         |
| No of drugs per day              |               |                |            |         |
| One drug                         | 29            | 41.4           | 33.086     | 0.000   |
| Two drugs                        | 29            | 41.4           |            |         |
| Three drugs                      | 11            | 17.7           |            |         |
| More than three drugs            | 1             | 1.4            |            |         |
| Drug resistant epilepsy          |               |                |            |         |
| No                               | 70            | 100            | -          | -       |
| Frequency of drugs per day       |               |                |            |         |
| 1 time                           | 5             | 7.1            | 26.429     | 0.000   |
| 2 times                          | 25            | 35.7           |            |         |
| 3 times                          | 40            | 57.1           |            |         |
| No of seizure per last month     |               |                |            |         |
| No seizure                       | 27            | 38.6           | 31.571     | 0.000   |
| One seizure                      | 22            | 31.4           |            |         |
| 2 seizures                       | 13            | 18.6           |            |         |
| 3 seizures                       | 6             | 8.6            |            |         |
| More than 3 times                | 2             | 2.9            |            |         |
| Usual time of seizure occurrence |               |                |            |         |
| Day time                         | 5             | 7.1            | 47.857     | 0.000   |
| Night time                       | 15            | 21.4           |            |         |
| No specific time                 | 50            | 71.4           |            |         |
| Caregiver                        |               |                |            |         |
| Parents                          | 29            | 41.4           | 17.686     | 0.000   |
| Spouse                           | 34            | 48.6           |            |         |
| Others                           | 7             | 10.0           |            |         |

(Continued)
### Table 2  (Continued)

| Seizure characteristics | Frequency (n) | Percentage (%) | Chi-square | p-Value |
|--------------------------|---------------|----------------|------------|---------|
| Comorbidity              |               |                |            |         |
| No                       | 65            | 92.9           | 51.429     | 0.000   |
| Yes                      | 5             | 7.1            |            |         |
| CT/MRI findings          |               |                |            |         |
| No changes               | 62            | 88.6           | 41.657     | 0.000   |
| Changes                  | 8             | 11.4           |            |         |
| Hypodensity in frontal lobe | 1         | 1.4            |            |         |
| Parietal lobe calcification | 2           | 2.8            |            |         |
| Frontal lobe calcification | 1            | 1.4            |            |         |
| Ischemic vessel changes  | 1             | 1.4            |            |         |
| Small size of right hippocampus | 1            | 1.4            |            |         |
| Right temporal horn prominence | 1     | 1.4            |            |         |
| Right mesotemporal sclerosis | 1         | 1.4            |            |         |
| EEG findings             |               |                |            |         |
| No changes               | 69            | 98.6           | 66.057     | 0.000   |
| Epileptoform activity    | 1             | 1.4            |            |         |

Abbreviations: CT, computed tomography; EEG, electroencephalogram; MRI, magnetic resonance imaging.

### Table 3  Knowledge on epilepsy (N = 70)

| Knowledge          | Pretest          | Posttest         | p-Value |
|--------------------|------------------|------------------|---------|
|                    | Frequency (n)    | Percentage (%)   | p-Value |
| Inadequate         | 12               | 17.1             | 0.000   |
| Moderate           | 48               | 68.6             | 0.000   |
| Adequate           | 10               | 14.3             | 0.017   |
| Total              | 70               | 100              | 0.000   |
| Mean               | 10.8286          | 15.000           |         |
| Standard deviation | 3.93414          | 2.59004          |         |

### Table 4  Level of drug adherence (N = 70)

| Level of drug adherence | Pretest          | Posttest         | p-Value |
|-------------------------|------------------|------------------|---------|
|                        | Frequency (n)    | Percentage (%)   | p-Value |
| Poor                   | 1                | 1.4              | 0.000   |
| Average                | 17               | 24.3             | 0.000   |
| Good                   | 52               | 74.3             | 0.000   |
| Total                  | 70               | 100              | 0.000   |
| Mean                   | 39.34            | 45.40            |         |
| Standard deviation     | 7.015            | 5.417            |         |
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Dash et al have shown similar results where the level of drug adherence was increased after epilepsy health education ($p < 0.001$). The pretest mean score (ESMS) of the participants for the level of self-care was 130 ± 15.89, during posttest it was 154 ± 19.11 which was significant ($p = 0.002$).

In the present study, the number of participants with high level of self-care increased from 50 (71.4%) to 62 (88.6%) after implementation of the video-assisted teaching program which was concurrent with the previous studies. In a comparable study, which showed similar results, the mean score of self-care increased from 2.97 ± 0.11 to 3.39 ± 0.15 after epilepsy education and was significant ($p = 0.0005$).

### Conclusion

Educational program to the people with epilepsy is the need of the hour to enhance awareness about disease management and self-care which would improve the outcome of the treatment regimen. Further, this kind of programs helps the patient and their caregivers to overcome the myth and prejudiced lifestyle practices related with this chronic disease. The present study demonstrates that video-assisted epilepsy education improves the knowledge, drug adherence, and self-care in people with epilepsy.

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### Conflict of Interest

None declared.

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### Table 5 Self-care level ($N = 70$)

| Self-care level | Pretest | Posttest | p-Value |
|-----------------|---------|----------|---------|
|                 | Frequency (n) | Percentage (%) | p-Value | Frequency (n) | Percentage (%) | p-Value |
| Low             | –       | –        | 0.000   | –       | –        | 0.000   |
| Average         | 20      | 28.6     | 0.000   | 8       | 11.4     | 0.000   |
| High            | 50      | 71.4     | 0.000   | 62      | 88.6     | 0.000   |
| Total           | 70      | 100      | 0.000   | 70      | 100      | 0.000   |
| Mean            | 130     |           | 0.002   | 154     |           |         |
| Standard deviation | 15.893 |           |         | 19.114  |           |         |

### Table 6 Self-care domains ($N = 70$)

| Self-care domains            | Pretest | Posttest | p-Value |
|------------------------------|---------|----------|---------|
|                              | Mean    | Standard deviation | Mean    | Standard deviation | p-Value |
| Medication management        | 39.34   | 7.01      | 45.4    | 5.41    | 0.000   |
| Information management       | 22.28   | 7.92198   | 24.87   | 5.81    | 0.000   |
| Self-management              | 28.21   | 4.21      | 32.10   | 4.585   | 0.000   |
| Seizure management           | 23.13   | 5.464     | 25.00   | 4.700   | 0.000   |
| Lifestyle management         | 17.63   | 4.69      | 20.31   | 5.199   | 0.533   |
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