Effectiveness of Nurse-Led Interactive Video Education on Seizure First Aid and Stigma Reduction among Mothers of Children with Epilepsy

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Abstract

Background: Caring for a child with epilepsy poses significant challenges for mothers, particularly when managing seizures and coping with stigma. **Aim**; This study aimed to evaluate the effectiveness of a nurse-led interactive video education program in reducing internalized stigma and improving seizure first aid knowledge and practices among mothers of children with epilepsy. **Methods**: A quasi-experimental pre-post design was conducted with 105 mothers received a structured educational intervention consisting of four nurse-led sessions supported by interactive videos. **Results**: post-intervention findings revealed a significant improvement in epilepsy-related knowledge (Mean ± SD: 11.20 ± 3.10 to 16.45 ± 2.5) and seizure first aid practices (10.75 ± 3.20 to 15.90 ± 2.70). Internalized stigma scores also declined significantly (34.10 ± 6.80 to 26.30 ± 5.90). **Conclusion**: The nurse-led interactive video education program was effective in enhancing seizure-related knowledge and practices while significantly reducing stigma among mothers of children with epilepsy. The findings support integrating such educational interventions into routine care to empower caregivers and promote safer home-based epilepsy management.

***Keywords*:** Epilepsy, Seizure First Aid, Nurse-Led Education, Stigma, Interactive Video**.**

Introduction:

Epilepsy is a common chronic neurological disorder that affects more than 50 million people worldwide, with children representing a significant proportion of this population **(Eslamian et al., 2024).** For pediatric patients and their families, the burden of epilepsy extends beyond clinical symptoms to include substantial social, psychological, and educational challenges **(Al-Worafi, 2024).** Mothers, often primary caregivers, are particularly impacted as they shoulder the dual responsibility of managing their child's health while navigating societal misconceptions and stigma surrounding the condition **(Mohamed et al., 2023).**

Despite medical advancements, epilepsy continues to be widely misunderstood across many cultures. Persistent myths and inaccurate beliefs about seizures contribute to discriminatory attitudes and social exclusion **(Willie, 2025)**. This stigma can have far-reaching effects undermining self-esteem, limiting social participation, and impeding access to education and support services for children with epilepsy **(Kishk et al., 2024)**. Mothers, as both advocates and caregivers, often internalize this stigma, which can affect their emotional well-being and reduce their confidence in managing seizures effectively **(Kaçan & Sakız, 2025).**

Moreover, a substantial gap remains in public and caregiver knowledge regarding appropriate seizure first aid. Inadequate or incorrect responses during seizures may exacerbate the risk of injury and create preventable complications **(Sun et al., 2025).** These knowledge deficits, combined with emotional stress and societal pressure, highlight the urgent need for comprehensive, accessible, and supportive educational interventions for caregivers **(Wang et al., 2024)**.

Interactive video-based education has emerged as an effective and engaging method in health promotion. By combining audiovisual learning with guided reflection and peer interaction, this approach can enhance knowledge retention, correct misconceptions, and empower caregivers with both practical skills and emotional resilience **(Wang et al.,2025).** Nurse-led education in particular offers added value, leveraging nurses' expertise and trusted roles in community health to provide accurate information, emotional support, and skill-based training **(Pouresmail et al.,2023)**.

Furthermore, this study recognizes the pivotal role that nurses play in community-based health promotion.

By placing nurses at the forefront of epilepsy education, the program reinforces their capacity as accessible educators and trusted advocates. The empowerment of mothers through this approach has the potential to create a ripple effect enhancing caregiver capability, improving child outcomes, and fostering more informed, compassionate communities (**Abdelgawad et al.,2025**).

Significance of Study

Epilepsy, though medically manageable in many cases, remains one of the most stigmatized neurological conditions globally (**Moore et al., 2025**). The misconceptions surrounding epilepsy often led to social exclusion, discrimination, and emotional distress not only for children diagnosed with the condition but also for their primary caregivers, particularly mothers. These challenges are compounded by the lack of public awareness and caregiver training in seizure first aid, which is crucial for ensuring child safety and reducing seizure-related harm (**Pitta et al.2025**).

This study is significant in its dual focus on stigma reduction and skill enhancement, addressing both the emotional and practical dimensions of epilepsy caregiving. By implementing a nurse-led interactive video education program, the study provides a holistic, evidence-based strategy to empower mothers with the knowledge, confidence, and social support needed to care for their children more effectively.

Aim of study:

To evaluate the effectiveness of nurse-led interactive video education on seizure first aid and stigma reduction among mothers of children with epilepsy.

Specific objectives:

-Assess baseline epilepsy knowledge and practical skills related to seizure first aid among participating mothers.

-Identify internalized stigma associated with epilepsy in mothers of affected children.

-Design and implement a nurse-led interactive video education program focused on epilepsy and first aid.

-Evaluate post-intervention changes in knowledge, skills, and stigma to determine program effectiveness.

Research Hypotheses

H1: Mothers participating in the nurse-led interactive video education program will demonstrate significantly improved knowledge and practical skills related to seizure first aid post-intervention.

H2: Mothers will report lower levels of internalized stigma after the intervention compared to their pre-intervention scores.

Operational definition:

Interactive Video Education: A structured, nurse-led learning method combining short educational videos (2–5 minutes) with live discussion, reflection, and guided application. Videos include personal caregiving narratives, seizure first aid demonstrations, and stigma-challenging segments **(**Lopez et al**., 2025)**

Seizure First Aid: Knowledge and application of evidence-based steps to respond safely and effectively to seizures, minimizing harm and ensuring timely medical intervention **(Sun et al., 2025).**

Ethical Considerations

The study was approved by the **Research Ethics Committee** of the Faculty of Nursing, Suez Canal University (Approval No.86-7/2020). Informed consent was obtained from all participants mothers. Participation was voluntary, confidentiality was guaranteed, and participants had the right to withdraw at any point without penalty.

Intervention Procedures

The intervention was delivered over a structured timeline consisting of **three phases**: baseline assessment, interactive video education, and post-intervention evaluation. The study was conducted from **October 2021 to June 2022**.

Phase 1: Baseline Assessment (Pre-Intervention)

Following ethical approval and administrative clearance, eligible mothers were invited to participate through face-to-face recruitment at the pediatric neurology outpatient clinic. Those who consented were scheduled for a structured orientation session. During this session, mothers completed the following baseline tools: (socio-demographic questionnaire, epilepsy first aid knowledge and practice assessment, and ISES). These assessments were administered in a private setting by researchers to ensure participant comfort, confidentiality, and data accuracy. The baseline findings were used to identify knowledge gaps, misconceptions, and emotional challenges. These insights informed the content and emphasis of the subsequent video education sessions, ensuring the program was responsive to the specific needs of the participants.

Phase 2: Nurse-Led Interactive Video Education

Participants mothers were enrolled in a four-week nurse-led educational program based on interactive video modules and small-group discussions. Sessions were conducted once per week (20–30 minutes per session) in groups of 6–

8 mothers. Each session was built around core educational themes delivered through short, interactive video segments, followed by researcher's discussions and reflection exercises.

Session 1: Understanding Epilepsy causes and seizure sings seizure first aids and its safety child during attack through animated video overview of highlights awareness of infantile epilepsy animated power point presentation followed by group discussion of mothers about epilepsy definition, causes and its physiological brain change resulting from seizure epilepsy.

Session 2: Seizure Recognition and First Aid; the researchers demonstrated Video of real-life seizure scenarios and first aid steps from British Red Cross (2022) video clarify how to protect child from injury, do not restrain, when the seizure is over and help child to rest on their side with their head titled back. Nurse researchers guided role-play and Q&A: Clarifying misconceptions and safe responses.

Session 3: Breaking the Stigma; the researchers demonstrated create a short video that features real caregiver stories, focusing on overcoming stigma, building confidence in seizure response and Advocating for their child at school or in public. Ensure the video is culturally relevant and available in the mother's language Video. After viewing, ask mothers "Which part of this story did you relate to most?" and "What does empowerment mean to you as a caregiver?". The researchers emphasize that they are change-makers not only in their families but in the wider community. The videos were delivered via tablets or laptops, supported by printed handouts and verbal explanations from nurses. Participants engaged in discussions, peer validation, and feedback activities to enhance emotional support and learning retention.

Phase3:Post-Intervention Evaluation

One week after completing the final session, participants were re-assessed using the same tools from the baseline phase. The post-intervention assessments were administered individually in a confidential setting to ensure consistency and reduce response bias.

Data Analysis

Data was analyzed using SPSS (version 26). Descriptive statistics summarized demographic data and baseline scores. To assess the intervention's effectiveness, **paired t-tests** compared pre- and post-intervention scores for seizure first aid knowledge and internalized

stigma. The **Shapiro-Wilk test** assessed data normality; if violated, the **Wilcoxon signed-rank test** was used. **Effect sizes** (Cohen's *d* or *r*) measured the magnitude of changes. A significant level of **p < 0.05** was applied. Results were presented in tables and charts for clarity.

Results

This section presents the findings of the study evaluating the effectiveness of a nurse-led interactive video education program on reducing stigma and enhancing seizure first aid knowledge and practices among mothers of children with epilepsy.

Table (1): shows that the mean age of mothers was 30.93 ± 0.83 years, with most residing in urban areas, 61.9%. Regarding educational background, 44.8% of mothers had a secondary education, while 34.3% were university graduates. In terms of employment, 59% of mothers were employed, while 41% were homemakers.

Most mothers 61% reported having two to three children, and 51.4% of their children with epilepsy were aged 5 to 10 years. Males accounted for 57.1% of the affected children, and more than half 56.2% had been diagnosed with epilepsy for a significant 1 to 3 years, highlighting the need for long-term care and support.

Table (2): demonstrate a significant improvement in mothers' knowledge related to epilepsy and seizure first aid following the nurse-led interactive video education program. The mean scores increased across all measured domains. Notably, knowledge about epilepsy treatment and management showed the most significant gain, rising from baseline score (2.84 ± 2.31) to (6.85 ± 2.62), with a highly considerable t-value of 12.21 ($p < 0.001$). Similarly, significant improvements were observed in mothers' understanding of seizure symptoms ($t = 2.40$, $p = 0.017$) and causes of epilepsy in children ($t = 7.86$, $p < 0.001$).

Table (3): Shows the intervention led to statistically significant improvements in all measured seizure first aid practices. The greatest improvement was seen in placing the child in a safe position during a seizure, where the mean score increased from 5.12 ± 1.85 to 8.45 ± 1.40 ($t = 10.21$, $p < 0.001$). Other key practices, such as protecting the child's head, avoiding harmful interventions (e.g., putting objects in the mouth), and timing the seizure duration, also demonstrated strong post-intervention gains.

Table (4): Show that there was a statistically significant reduction in all dimensions of internalized stigma among mothers following the nurse-

led interactive video education program. Among the stigma subdomains, the feelings of guilt and shame subscale showed the greatest reduction (t = 8.12), followed by social withdrawal and isolation (t = 7.75). Additionally, perceptions of public judgment and discrimination were significantly lower after the intervention (t = 6.48), reflecting increased confidence and reduced fear of societal stigma.

Table (5): illustrates that a significant increase in both the seizure first aid knowledge score (from 11.20 ± 3.10 to 16.45 ± 2.50, t = 10.54, $p < 0.001$, Cohen's d = 0.85) and the practice score (from 10.75 ± 3.20 to 15.90 ± 2.70, t = 9.78, $p < 0.001$, Cohen's d = 0.80), both with large effect sizes. Importantly, there was also a substantial reduction in internalized stigma (mean decrease = −7.80, t = −8.67, $p < 0.001$, Cohen's d = 0.75), indicating that the intervention was not only educational but also emotionally empowering.

Table (1): Sociodemographic Characteristics of Participating Mothers and Their Children (N = 105)

Items	Number	Precent
Mother age (year)		
20 – 25	11	10.5%
25-30	53	50.5%
< 30	41	39%
Mean±SD: 30.93±0.83		
Residence:		
Urban	65	61.9%
Rural	40	38.1%
Mother education level:		
Illiterate	13	12.4%
Elementary	9	8.6%
Secondary	47	44.8%
University graduate	36	34.3%
Mother job		
Working	62	59%
Housewife	43	41%
Number of children		
One	12	11.4%
Two to three	64	61%
More than three	29	27.6%
Child age with epilepsy		
Under 5 years	20	19%
5 – 10 year	54	51.4%
More than 10 year	31	29.5%
Child with epilepsy gender		
Male	60	57.1 %
Female	45	42.9%
Duration of epilepsy (child)		
1-3 year	59	56.2%
>3 year	46	43.8%

Table (2): distribution Epilepsy Knowledge Scores Before and After Intervention among participant mothers (n=105).

Knowledge Domain	Before Intervention Mean ± SD	After Intervention Mean ± SD	t-test	p-value
Understanding the concept of epileptic seizures	6.23 ± 1.54	8.34 ± 1.20	6.35	<.001*
Knowledge of epilepsy causes in children	4.87 ± 1.84	7.18 ± 1.79	7.86	<.001*
Recognition of seizure signs and symptoms	4.29 ± 2.39	8.25 ± 2.56	2.40	.017*
Awareness of epilepsy treatment and management options	2.84 ± 2.31	6.85 ± 2.62	12.21	<.001*

Table (3): distribution of seizure first aids practices Scores Before and After Intervention among participant mothers (n=105).

Practice Item	Before Intervention Mean ± SD	After Intervention Mean ± SD	t-test	p-value
Placing child in a safe position during seizure	5.12 ± 1.85	8.45 ± 1.40	10.21	<.001 *
Protecting child's head and removing nearby hazards	4.85 ± 2.10	8.10 ± 1.65	9.78	<.001 *
Avoiding putting objects in the child's mouth	3.92 ± 2.30	7.76 ± 1.95	8.65	< .001 *
Timing the seizure duration accurately	2.75 ± 1.98	6.85 ± 1.70	9.33	< .001 *
Seeking medical help appropriately after seizure	6.30 ± 1.60	8.90 ± 1.20	8.88	<.001 *

Table (4): Comparison of Internalized Stigma Dimensions Before and After the Intervention (N = 105)

Stigma Domain	Before Intervention Mean ± SD	After Intervention Mean ± SD	t-test	p-value
Feelings of guilt and shame	13.20 ± 3.10	9.85 ± 2.80	8.12	< .001 *
Social withdrawal and isolation	11.40 ± 2.90	8.60 ± 2.55	7.75	< .001 *
Perceived public judgment and discrimination	9.50 ± 2.60	7.85 ± 2.40	6.48	< .001 *

Table (5): Comparison of mothers' knowledge, practice, and stigma scores before and after the intervention (n=105)

Outcome Variable	Before intervention Mean ± SD	After intervention Mean ± SD	Mean Difference	t-test	p-value	Effect Size
Seizure First Aid Knowledge Score	11.20 ± 3.10	16.45 ± 2.50	+5.25	10.54	< .001*	0.85
Seizure First Aid Practice Score	10.75 ± 3.20	15.90 ± 2.70	+5.15	9.78	< .001*	0.80
Internalized Stigma Score	34.10 ± 6.80	26.30 ± 5.90	–7.80	8.67	< .001*	0.75

Discussion

This study evaluated the effectiveness of a nurse-led interactive video education program on improving seizure first aid and practices, as well as reducing internalized stigma among mothers of children with epilepsy. The results strongly support both research hypotheses, revealing statistically significant improvements in maternal knowledge and practical caregiving skills, alongside meaningful reductions in internalized stigma following the intervention. Consistent with earlier findings **(Wang et al., 2025; Mohamed et al., 2025),** the intervention significantly enhanced mothers' understanding of epilepsy, particularly in areas related to seizure recognition, causes, and management. The most pronounced improvement was observed in awareness of treatment and management options, an area frequently overlooked in routine care. This result highlights the effectiveness of visual and interactive formats in correcting misconceptions and reinforcing evidence-based knowledge. Notably, the overall knowledge score improved from 11.20 to 16.45 out of 20, indicating significant cognitive gains as well as the accessibility and cultural relevance of the nurse-led video content. This finding aligns with previous research that emphasizes the benefits of educational tools combining audiovisual elements, peer experiences, and practical demonstrations to enhance long-term knowledge retention and engagement **(Lopez et al., 2025).** Additionally, a study conducted in Egypt by **Elshafie et al., (2021)**

demonstrates that multimedia-based education for mothers positively impacts their knowledge and practices regarding first aid management of convulsions.

In terms of practical caregiving, mothers showed significant improvements in applying safe seizure first aid techniques. The most notable advancements included placing the child in a safe position, avoiding inserting objects into the mouth, and seeking appropriate medical help key indicators of real-world readiness to manage seizures. These improvements are consistent with recommendations by **Sun et al. (2025)** and reflect the value of interactive education in enhancing critical behavioral responses. and underscore the importance of interactive learning in fostering critical behavioral responses. The findings of an Egyptian study by **Shasha et al. (2022)** are consistent with our own, which indicate that interactive learning significantly contributes to improved practices because it is grounded in lived experience.

The impact of the intervention was far-reaching, going beyond the mere acquisition of knowledge and skills. The study also documented a significant decrease in participants' internalized stigma. The total stigma score decreased from 34.10 to 26.30, with substantial improvements in guilt, social withdrawal, and perceived overall judgment. These findings underscore the potential of psychoeducation to alleviate the emotional burden that stigma places on caregivers, especially mothers, as highlighted by **Keshk et al. (2024)** and **Kashan and Sakiz (2025)**. This potential was further confirmed by **Ibrahim and Shata's (2017)** study, which found that improvements in knowledge and practices regarding epilepsy and its first aid led to a reduction in stigma. This inspiring potential of psychoeducation should motivate further research and interventions in this area.

The success of the intervention in reducing stigma may be attributed to its emphasis on emotional empowerment, normalization of caregiving experiences, and exposure to peer narratives. However, it's important to recognize the integral role of our audience in this success. By creating a safe, supportive learning environment, the program ensures that participants feel secure and valued. This, along with presenting mothers as capable and valued advocates for their children, fosters a sense of confidence and agency. This approach is consistent with the empowerment model described by **Abdelgawad et al. (2025),** which

highlights the importance of caregiver role. This emphasis on role is designed to make our audience feel recognized and appreciated, promoting sustained behavior change.

When viewed collectively, these findings affirm that nurse-led interactive video education is a highly effective, scalable, and culturally adaptable strategy for empowering caregivers of children with epilepsy. The observed improvements in knowledge outcomes and first aid practice highlight the dual benefits of this intervention: as an educational tool and a means of reducing social stigma. The findings are consistent with the **2024 study by Manzanares et al.,** which found that increased health education about epilepsy improves emotional well-being and increases satisfaction with the child's health.

Study limitations:

While the findings are promising, several limitations should be acknowledged. The study was conducted in a single geographic and cultural context, which may limit generalizability to other populations or regions. The use of interview questionnaires may be subject to response bias or overestimation of knowledge and practice improvements. Outcomes were measured shortly after the intervention; long-term retention of knowledge and sustained behavioral changes were not assessed.

Conclusion

This study demonstrated that nurse-led interactive video education is an effective and practical approach for enhancing epilepsy-related knowledge, improving seizure first aid practices, and reducing internalized stigma among mothers of children with epilepsy. The intervention resulted in statistically significant improvements across all measured domains, highlighting the critical role of nurses in caregiver education and support. By combining evidence-based content with culturally relevant visuals and interactive methods, the program empowered mothers not only with knowledge but also with confidence and advocacy skills. These findings underscore the importance of structured, accessible, and emotionally supportive education for caregivers managing chronic pediatric conditions.

Recommendations

Based on the results, the following recommendations are proposed:

-Hospitals and outpatient clinics should incorporate nurse-led interactive video education as part of routine care for families of children with epilepsy.

-Provide periodic refresher sessions or mobile-accessible materials to reinforce learning and maintain practice improvements over time.

-Involve other family members or caregivers in the education sessions to broaden understanding and support within the household.

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