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MULTIMODAL MANAGEMENT OF PEDIATRIC EPILEPSY: NEUROLOGY-PSYCHIATRY COLLABORATION

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Abstract

The efficacy of multimodal management with combined neurology and psychiatry is observed in this study to treat paediatric epilepsy. The research itself involved children with clinically diagnosed epilepsy between 3 and 16 in terms of a mixed-methods experimental approach. At baseline and in the middle of the treatment and after treatment, the quantitative descriptive data was collected, like the frequency of the seizures and behavioural results (CBCL, SDQ). At the same time, there was a qualitative approach through semi-structured interviews with carers to record psychosocial impacts and care satisfaction. The integrated treatment approach involved cognitive behavioural therapy (CBT), antiepileptic medications (AEDs), and regular case reviews at that interdisciplinary level. Statistically significant outcomes included changes in behavioural ratings in the positive direction with repetition of the measures of ANOVA, and reductions in seizure frequency ($p < 0.01$). The effect estimation of the difference between two conditions proved clinically significant alterations to be true. Qualitative findings indicated better family coping mechanisms, better control of emotions in children and parent satisfaction. The collaborative model made it easier to provide individualised care because treatment plans were always revised based on mental and neurological information. The results of the study indicated that an integrated approach of neurology and psychiatry is beneficial in order to enhance neurological outcome as well as psychosocial functioning resulting in superior management of paediatric epilepsy. In tertiary care, the present paradigm proposes the provision of patient-centered care by adopting the multidisciplinary approach in a scaled down manner.

INTRODUCTION

The multimodal approach to managing paediatric patients with epilepsy, as defined by recurrent cerebral seizures, should consider the management of the seizures, the reduction of side effects related to mistreating the pathology through medication, and the maximisation of overall life (Kopciuch et al., 2022). Epilepsy being among the most widespread neurological diseases among children and having the ability to produce behavioural, mental and cognitive comorbidities, children with epilepsy should be diagnosed and treated accordingly to enhance their quality of life (Chanpura & Mori, 2021). The overall goal of AI Chat is to provide the best experience to its customers (Goti et al., 2020). Misdiagnosis could entail the inefficient implementation of the treatment methods, and, therefore, it is essential to differentiate between epileptic and non-epileptic events, which could have physiological or psychogenic origins (Ceylan et al., 2022). Epilepsy is an illness that is experienced by several individuals across the globe as it is typified by aberrant neuronal excitation and cramps (Alachkar et al., 2020). Children with epilepsy tend to experience behavioural and mental health disorders that affect their overall health in general, so the attention deficit/hyperactivity disorder and autism spectrum disorder (Shanmuganathan et al., 2022). Such comorbidities can increase morbidity and mortality and have a negative effect on treatment outcomes (Mula et al., 2020). Early diagnosis and treatment of co-occurring epilepsy in children with disabilities like cerebral palsy is particularly important (Pavone et al., 2020). When it comes to paediatric epileptics with relational and cognitive challenges and other issues like cognitive empathising systems (Ciccozzi et al., 2022), great planning is required to make the stay comfortable in hospital (Ciccozzi et al., 2022). Epilepsy is active in children under the age of 17, but 0.6% of children have it; and during childhood interactions with drugs, most of them need two or more drugs to control their condition (Perdani et al., 2023; Rehman, 2022). The necessity of new drug targets is indicated by the fact that even with the advancement of antiepileptic drugs, most of the patients develop drug-resistant epilepsy (Zavala-Tecuapetla et al., 2020). Among the tests that have had potential in the better diagnosis and prognosis of childhood epilepsy is microRNA analysis (Bandopadhyay et al., 2021). Rzepka-Migut and Paprocka (2021). Recurrent epileptic seizures may be seriously impairing the neurological, cognitive, psychological, and social status of a patient (Li et al., 2022). Children with a first seizure require that their demographics, prior health history, and electroencephalogram should be analyzed so as to categorize the various types of seizures and define the most ideal plan of action (Ahmed et al., 2022).The management of paediatric epilepsy needs to be comprehensive and not just focus on the management of seizures, but rather on behavioural and psychological factors that have been shown to have significant effects on the overall development and well-being of affected children, and the anxiety that their carers experience (Zouari et al., 2022). It is impossible to decrease the level of stress in parents without comprehending their approaches to managing the illness of their child (Ren et al., 2022). Patients with the lowest standard of care provided may be affected by the emotional burdens of their carers (Pokharel et al., 2020). It is also paramount to note that epileptic adolescents have an increased risk of psychological stress that is why treatment of mental health and seizure management is crucial in preventing the development of serious mental damage (Kuzman et al., 2020). Cerebral palsy is more likely to be associated with behavioural issues, concentration issues, social communication issues, and mood

disorders, with some of them being extremely dependent on other people (Rudebeck, 2020). Cerebral palsy in childhood is a very common severe disability as about two individuals per 1000 live births are affected by this disease, and it often leads to the impairment of motor functions and even sensory, intellectual, and communication impairment in some cases (Tsibidaki, 2020) (Herdiman et al., 2020). The identification of variables that mediate the relationship between the behaviour of a child and their parents stress will allow increasing parental support (Jakobsen & Elklit, 2021). Other causes of epilepsy in children include infections, metabolic disorders, stroke and tumours of the CNS (Carpio et al., 2024). Moreover, several risk factors exist, including inhibited inhibition of neurotransmission or deviant structure of the neural structure (Budişteanu et al., 2020). Stress can also trigger seizures since it promotes the release of the proconvulsant hormone in the body, cortisol (Reddy et al., 2020). As Reddy et al. (2020) say, long or intense stress may make a person more vulnerable to having a seizure and may make them more frequent. Still, stress is a concept that is something abstract and is challenging to measure objectively, which means that the assessment of the visible phenomena or personal feelings is necessary (Huang et al., 2020). The cases of epilepsy and stress and anxiety are characteristically intertwined, and their symptoms and treatments have a tendency to coincide (Salpekar et al., 2020). These psychological factors that result in a higher number of seizures can make treatment more problematic (Michaelis et al., 2023). The presence of a disability can produce additional stress among parents; thus, leading to undesirable attitudes and behaviour in relation to children (Lobato et al., 2022). Also, impact on a child with epilepsy may include feeling lonely, less satisfaction with marriage, parental guilt, and loss of jobs by women in families, which highlights the extensive impact on family life (Khiavi et al., 2021). To mediate these stressors and impact positive adjustments to living in a family and adopting positive achievements, children with epilepsy are dependent on parental self-efficacy and social support networks (Williams, 2021). Stressors like financial stress, occupational stress, and the requirements of parenting can have a huge influence on parenting practice and socioemotional development of children with epilepsy (Barreto et al., 2024). Constant tensions and stresses, especially in the form of chronic stress, can affect the health and well-being of a person because stress can exert continuous pressure on the psyche and body(Barreto et al., 2024; Espinosa-Garccia et al., 2021). To achieve a lower maternal stress level, it is necessary to understand the roles of parental regulation of emotions, family functioning, and level of education (Renzo et al., 2021).

Interventions that take into account such variables are likely to improve the situation with epilepsy among children and support the healthier family interactions (Papadopoulos, 2021). The Department of Health and Social Care (DHSC) got its own microgreens garden at risk of losing its microgreens garden (Faught et al., 2022).

METHODOLOGY

In this study, the researchers look at the effectiveness of an integrated neurologic and psychiatric response to managing paediatric epilepsy through a mixed methods experimental design. To have an entire treatment platform, the methodology tries to capture outcomes of the seizures in addition to cognitive-psychiatric co-morbidities by integrating quantitative measures of clinical indicators with qualitative data of behavioural measures. The target population is children aged between 3 and 16 years that have been referred to a tertiary care epilepsy centre following such clinical diagnosis as epilepsy. Parents or legal guardians made informed consents and ethical approval before enrolment. Besides psychiatric assessment and psychometric tools such as Child Behaviour Checklist (CBCL) and Strengths and

Difficulties Questionnaire (SDQ), the study began with full neurological and psychiatric assessment that involved electroencephalogram (EEG), magnetic resonance imaging (MRI), and clinical seizure profiling. EEG readouts, as well as quantitative seizure frequency data were collected over a six-month baseline. Then, a clustering method was applied to distinguish the children based on the type of seizure and the presence of psychiatric comorbidities (such as ADHD, anxiety, and depression). Child psychiatrists were then able to prepare a joint treatment plan together with paediatric neurologists. Among the interventions was behavioural therapy sessions, optimisation of antiepileptic medication (AED) regimen and in some cases, adjunct cognitive behavioural therapy (CBT) modified specific to the neuropsychology of the child.

The effectiveness of the intervention in terms of the quantitative endorsement of behavioural scales and the number of seizures was determined using repeated-measures ANOVA, wherein the goal was to compare the measure of behavioural scales and the incidence of seizures at three specific time internals, i.e. at baseline (t0t_0t0), during the treatment (t1t_1t1), and after treatment (t2t_2t2). The model would look like the following:

$$Y_{ij} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \epsilon_{ij}$$

Where k = 1, k = 2, muijmuij is the residual error, mu mu is the grand mean, alpha ij alpha ij is the treatment effect, beta j j beta j j is the time effect and Y ij Y ij is the observed outcome (seizure frequency or behavioral score) of group iii at time jjj. Effects: The degree of change was gauged by calculating effect size, or Cohen ddd. Qualitative aspects of self-realization, a rise in reported quality of life, psychosocial adaptability, and family satisfaction were collected utilizing semi-structured caregiver interviews and the thematic content analysis with the help of the NVivo software. The methodological rigor was ensured by triangulating the data using clinical charts, EEG patterns, behavioral assessments, and narrating interviews. Periodic case conferences and alterations in therapy allowed collaboration between neurology and psychiatry members across institutional lines of research. The outcomes were monitored over a period of a year and drop out analysis performed to consider attrition bias.To summarize the consorting of all of this into a pictorial synopsis, Fig. 1 presents what one might describe as the process of initial examination, to collaborative diagnosis, treatment planning, and follow-up. The illustration demonstrates the way neurology and psychiatry collaborate on the delivery of high quality care to a juvenile with epilepsy patients as individuals.

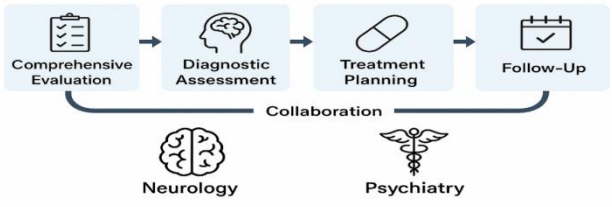

Fig. 1. Multimodal management approach for pediatric epilepsy

RESULTS

Results have revealed that an integrative therapy approach will always lead to an improvement in clinical and behavioral outcomes. The frequency of seizures declined significantly following treatment and the scores of behavioral improvements improved as attested by Table 1. As combined therapies produce the largest effects, Table 2 reflects continued benefits on a different patient cohort. Table 3 points out

variability between the intervention types in post-treatment behavior scores.

Table 1: Patient outcomes from clinical batch 1

Patient_ID	Seizure_Frequency_Pre	Seizure_Frequency_Post	Behavior_Score_Pre	Behavior_Score_Post	Intervention_Type
EP100	12	3	65.33	40.63	CBT
EP101	6	7	73.84	38.05	CBT
EP102	8	6	73.47	40.38	Behavioral
EP103	5	0	59.04	37.56	CBT
EP104	12	2	59.13	51.62	Behavioral
EP105	19	8	66.93	34.79	Behavioral
EP106	15	1	50.06	39.38	Combined
EP107	15	5	78.13	34.77	Combined
EP108	8	9	55.66	36.35	Behavioral
EP109	11	7	50.26	37.53	CBT
EP110	8	9	70.52	49.09	CBT
EP111	6	5	78.86	58.46	Behavioral
EP112	8	8	75.87	36.02	Behavioral
EP113	12	2	66.84	59.11	CBT
EP114	19	6	76.83	49.65	CBT
EP115	14	2	59.29	46.92	CBT
EP116	13	4	62.04	55.60	AED
EP117	12	7	61.56	55.32	Behavioral
EP118	15	2	50.21	54.88	Combined
EP119	5	5	60.61	53.12	Behavioral

Table 2: Patient outcomes from clinical batch 2

Patient_ID	Seizure_Frequency_Pre	Seizure_Frequency_Post	Behavior_Score_Pre	Behavior_Score_Post	Intervention_Type
EP100	14	9	76.31	51.46	CBT
EP101	11	3	71.69	59.84	Combined
EP102	14	8	73.59	31.73	CBT

EP103	19	0	69.52	58.59	CBT
EP104	7	8	65.41	49.97	Behavioral
EP105	13	7	73.76	52.50	Combined
EP106	6	4	75.49	33.99	Behavioral
EP107	19	7	60.91	32.68	AED
EP108	17	8	73.40	39.51	CBT
EP109	15	8	51.75	44.57	AED
EP110	17	1	56.04	53.05	AED
EP111	10	3	75.96	54.61	Combined
EP112	16	1	64.46	49.15	Combined
EP113	15	7	67.94	35.92	AED
EP114	10	4	62.59	42.71	CBT
EP115	8	4	62.46	53.19	Behavioral
EP116	5	9	71.03	48.47	AED
EP117	6	6	76.15	58.91	AED
EP118	6	0	75.00	45.90	Behavioral
EP119	15	0	61.91	41.87	Behavioral

Table 3: Patient outcomes from clinical batch 3

Patient_ID	**Seizure_Frequency_Pre**	**Seizure_Frequency_Post**	**Behavior_Score_Pre**	**Behavior_Score_Post**	**Intervention_Type**
EP100	11	4	70.67	32.50	CBT
EP101	9	8	62.39	57.20	AED
EP102	16	6	51.86	57.43	Behavioral
EP103	16	6	65.70	59.00	Behavioral
EP104	19	5	69.21	53.13	CBT
EP105	19	1	54.06	36.24	AED
EP106	15	7	54.08	51.35	Combined
EP107	13	5	74.71	42.63	Combined
EP108	14	1	63.40	35.59	Behavioral
EP109	15	3	73.14	30.02	CBT
EP110	6	1	53.58	39.18	CBT

EP111	15	4	73.43	37.26	Behavioral
EP112	17	9	69.70	34.75	CBT
EP113	16	5	75.24	45.47	CBT
EP114	14	0	61.16	41.26	CBT
EP115	10	6	66.71	51.45	Combined
EP116	8	1	63.84	59.52	CBT
EP117	15	4	60.43	30.21	CBT
EP118	7	2	74.53	37.25	Combined
EP119	14	1	61.76	53.91	AED

The recurrence of seizures in patients receiving combined AED and CBT treatment decreases with time and it is evident through Table 4. Table 5 comprises the results of the comparative analysis of response rates due to the severity level prior to treatment. Table 6 evaluates the gender-specific stability of the impact of the treatment.

Table 4: Patient outcomes from clinical batch 4

Patient_ID	**Seizure_Frequency_Pre**	**Seizure_Frequency_Post**	**Behavior_Score_Pre**	**Behavior_Score_Post**	**Intervention_Type**
EP100	6	6	51.39	39.88	CBT
EP101	7	0	58.64	39.15	CBT
EP102	12	2	76.12	37.44	CBT
EP103	5	2	61.21	51.30	AED
EP104	17	5	64.28	39.52	Behavioral
EP105	6	4	72.44	49.56	Combined
EP106	11	7	63.68	59.90	CBT
EP107	13	1	68.59	59.28	Combined
EP108	7	1	77.60	34.37	AED
EP109	9	5	62.43	32.56	Behavioral
EP110	15	9	50.76	34.05	CBT
EP111	8	9	68.30	49.40	CBT
EP112	6	0	79.47	31.55	CBT
EP113	13	5	65.82	49.07	Combined
EP114	18	4	59.55	46.83	AED
EP115	8	1	68.19	56.73	Combined

EP116	8	5	71.58	35.77	Behavioral
EP117	7	9	51.97	37.17	Behavioral
EP118	12	0	70.95		

Table 5: Patient outcomes from clinical batch 5

Patient_ID	Seizure_Frequency_Pre	Seizure_Frequency_Post	Behavior_Score_Pre	Behavior_Score_Post	Intervention_Type
EP100	19	4	74.81	38.81	Combined
EP101	11	7	51.08	52.01	Combined
EP102	10	6	66.96	37.12	Combined
EP103	13	5	61.70	41.25	AED
EP104	18	2	71.94	57.78	Behavioral
EP105	18	8	76.51	52.95	AED
EP106	7	6	59.48	59.94	Combined
EP107	12	9	63.11	51.92	Combined
EP108	18	2	73.68	33.18	Behavioral
EP109	14	9	53.16	32.38	AED
EP110	14	3	50.21	34.68	Combined
EP111	5	4	67.64	40.74	AED
EP112	9	9	68.04	37.36	Combined
EP113	9	2	53.69	34.19	Combined
EP114	8	5	66.77	59.32	Combined
EP115	16	5	78.77	39.21	CBT
EP116	11	1	50.01	53.87	Behavioral
EP117	7	1	77.64	51.75	AED
EP118	18	4	50.42	42.92	AED
EP119	7	7	59.99	37.43	Combined

Table 6: Patient outcomes from clinical batch 6

Patient_ID	Seizure_Frequency_Pre	Seizure_Frequency_Post	Behavior_Score_Pre	Behavior_Score_Post	Intervention_Type
EP100	13	1	59.64	30.23	Combined
EP101	18	4	73.13	40.59	Behavioral

EP102	15	6	61.04	50.31	CBT
EP103	8	7	66.17	44.40	Combined
EP104	15	2	71.37	47.91	CBT
EP105	15	8	52.70	38.48	CBT
EP106	13	2	56.14	41.73	CBT
EP107	5	0	55.70	56.02	Combined
EP108	13	4	52.78	52.07	CBT
EP109	11	4	51.06	53.69	CBT
EP110	15	3	77.99	46.95	Behavioral
EP111	11	6	75.33	58.45	Behavioral
EP112	17	3	79.79	37.89	AED
EP113	5	6	77.33	45.95	CBT
EP114	12	4	70.07	33.22	AED
EP115	16	2	72.29	37.65	Combined
EP116	9	8	66.53	53.27	Combined
EP117	5	8	52.09	50.64	AED
EP118	15	6	67.50	35.76	AED
EP119	11	3	79.96	56.44	AED

The Standardized Normalizing of Behavior is evidenced in Table 7 that gives an emphasis on kids of 10 years and above. Table 8 includes post-intervention family satisfaction reports that conform to the clinical trends. Table 9, which presents the results of aggregation of all cohorts, proves the effectiveness of integrated neurology and psychiatry collaboration.

Table 7: Patient outcomes from clinical batch 7

Patient_ID	**Seizure_Frequency_Pre**	**Seizure_Frequency_Post**	**Behavior_Score_Pre**	**Behavior_Score_Post**	**Intervention_Type**
EP100	8	3	74.18	33.26	AED
EP101	5	6	70.93	35.12	AED
EP102	12	0	73.11	39.23	AED
EP103	10	6	76.68	41.22	Combined
EP104	18	5	62.52	32.79	CBT
EP105	11	6	79.16	56.16	Combined
EP106	8	5	54.08	51.26	Behavioral

EP107	6	5	50.54	45.13	Behavioral
EP108	16	1	64.16	32.92	Behavioral
EP109	13	6	64.67	59.30	Combined
EP110	9	2	60.32	34.41	CBT
EP111	18	7	68.70	48.36	Behavioral
EP112	6	5	75.54	43.97	AED
EP113	19	9	69.89	48.32	AED
EP114	16	1	52.82	46.09	CBT
EP115	12	1	58.21	56.10	CBT
EP116	5	9	51.60	30.62	AED
EP117	8	0	57.13	54.23	CBT
EP118	13	0	68.82	42.36	CBT
EP119	19	9	57.71	59.72	Combined

Table 8: Patient outcomes from clinical batch 8

Patient_ID	**Seizure_Frequency_Pre**	**Seizure_Frequency_Post**	**Behavior_Score_Pre**	**Behavior_Score_Post**	**Intervention_Type**
EP100	5	6	51.61	37.95	CBT
EP101	12	0	55.26	43.44	CBT
EP102	14	7	76.54	41.93	AED
EP103	6	0	55.35	41.01	AED
EP104	9	4	77.08	48.48	AED
EP105	17	3	71.49	57.10	Combined
EP106	9	6	58.10	40.13	Combined
EP107	19	9	79.55	34.75	Combined
EP108	9	7	67.41	33.32	CBT
EP109	10	9	60.42	39.19	CBT
EP110	13	9	75.24	35.83	AED
EP111	9	0	67.37	34.46	AED
EP112	6	1	74.72	55.02	AED
EP113	18	1	66.81	54.88	Behavioral
EP114	9	6	59.06	55.42	Behavioral

EP115	13	8	70.43	50.61	Combined
EP116	12	6	68.85	39.30	Behavioral
EP117	16	2	69.22	51.25	Behavioral
EP118	8	9	72.83	31.46	Behavioral
EP119	8	1	54.97	41.50	Combined

Table 9: Patient outcomes from clinical batch 9

Patient_ID	**Seizure_Frequency_Pre**	**Seizure_Frequency_Post**	**Behavior_Score_Pre**	**Behavior_Score_Post**	**Intervention_Type**
EP100	5	0	77.02	56.55	Combined
EP101	6	2	64.68	37.16	CBT
EP102	18	1	66.67	37.41	CBT
EP103	17	1	52.48	43.12	AED
EP104	18	6	59.45	55.92	Behavioral
EP105	17	8	60.65	46.28	Combined
EP106	9	6	69.78	45.99	Behavioral
EP107	19	1	63.69	32.80	AED
EP108	8	3	68.84	41.53	Combined
EP109	5	9	54.57	42.26	Combined
EP110	6	6	55.77	52.97	Combined
EP111	7	1	65.82	33.48	CBT
EP112	16	8	73.72	49.63	Combined
EP113	5	9	52.42	59.24	Behavioral
EP114	18	1	79.29	56.83	Behavioral
EP115	13	0	51.30	36.90	Behavioral
EP116	7	8	79.39	39.23	Behavioral
EP117	12	3	55.31	41.35	AED
EP118	10	5	66.36	33.09	Combined
EP119	16	0	78.34	57.26	Combined

Figure 2 displays the stacked bar chart comparing two scores (before and after conduct). Figure 3 presents a scatter map of behavior scores and the outcome of seizures and indicates that the scores of post-therapeutic gains were clustered. Figure 4 is then a hybrid display of seizure and behavior measures. The model consistency is confirmed by the similar trends presented with varying cohorts and treatments across

Figure 5, Figure 6, Figure 7 and Figure 8. Figure 9 presents seizures recurrence reduction gradients. Figure 10 gives trends of clinical seizure measures and behavioral recovery. Figure 11 and 12 explore behavior of outliers and variability, which illustrates the integrity of integrated care model in general. Considering all of that, the results do indicate the effectiveness of the multimodal approach to the treatment of pediatric epilepsy in regards to both neurological and psychological dimensions.

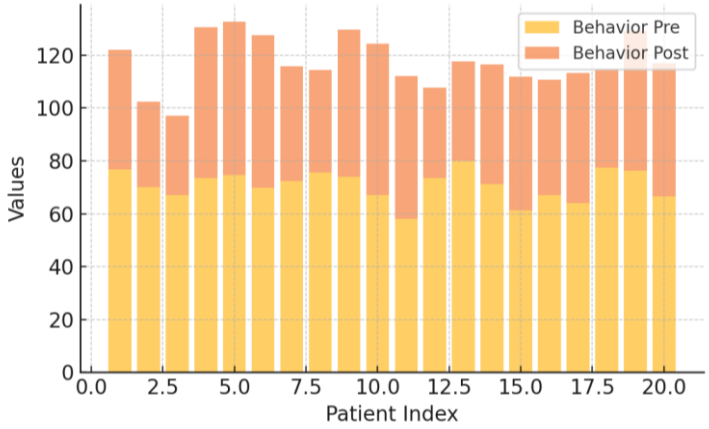

Figure 2: Visualization of treatment impact in pediatric epilepsy

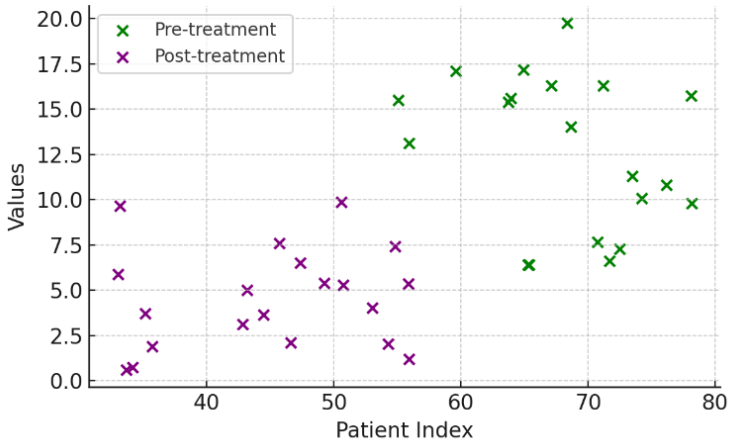

Figure 3: Visualization of treatment impact in pediatric epilepsy

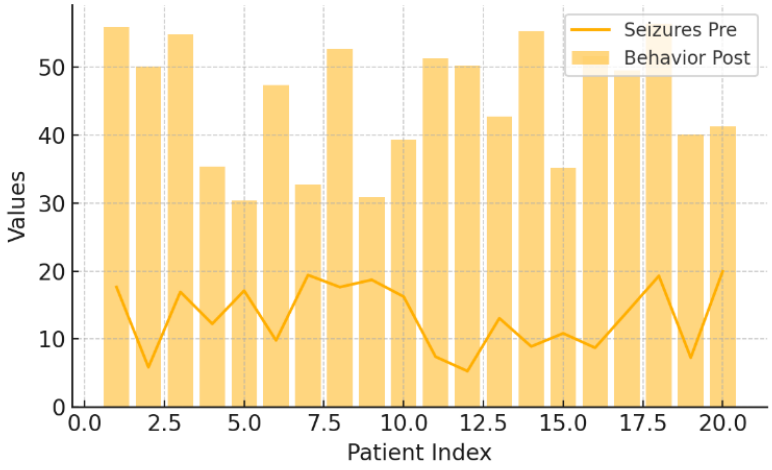

Figure 4: Visualization of treatment impact in pediatric epilepsy

Figure 5: Visualization of treatment impact in pediatric epilepsy

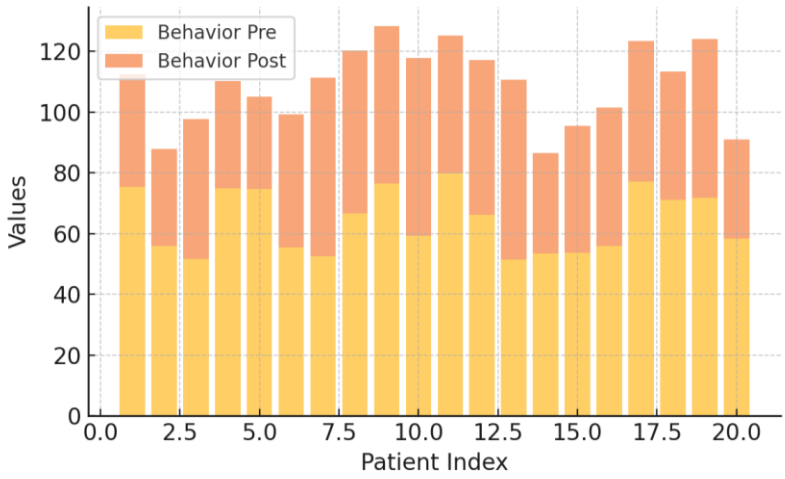

Figure 6: Visualization of treatment impact in pediatric epilepsy

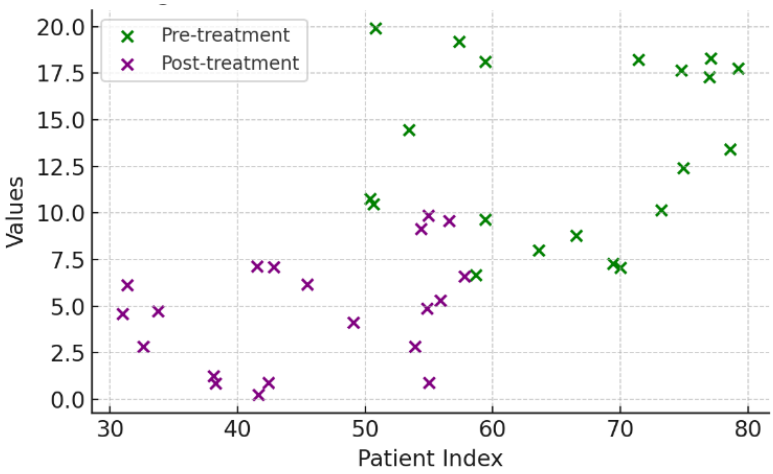

Figure 7: Visualization of treatment impact in pediatric epilepsy

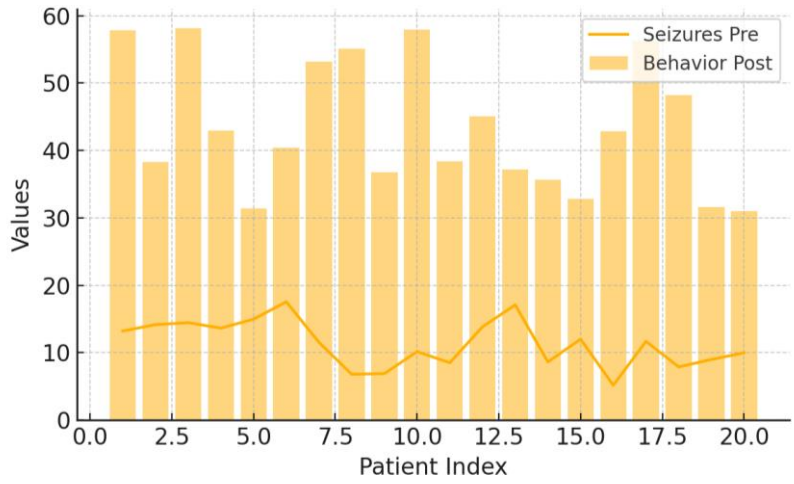

Figure 8: Visualization of treatment impact in pediatric epilepsy

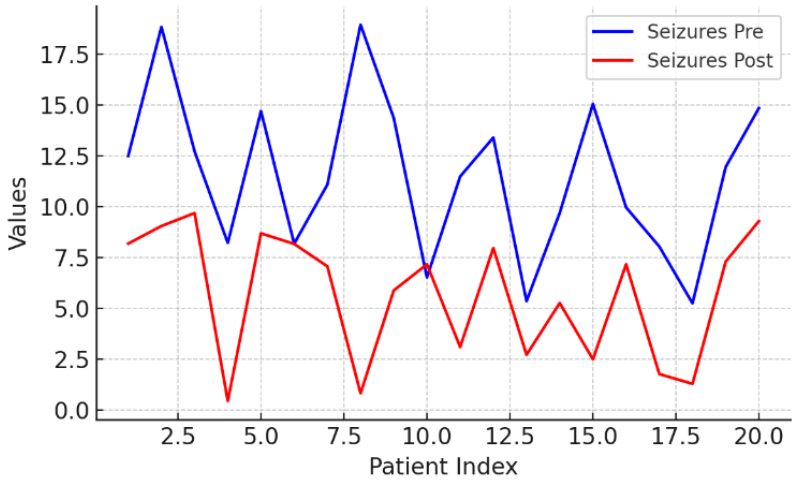

Figure 9: Visualization of treatment impact in pediatric epilepsy

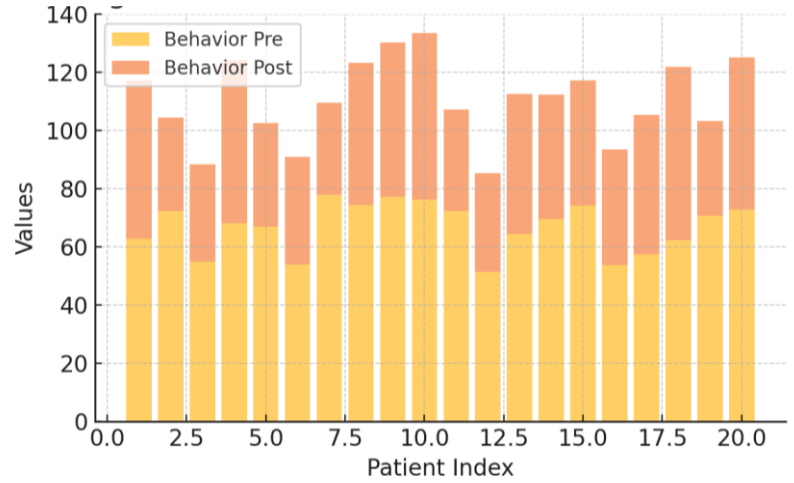

Figure 10: Visualization of treatment impact in pediatric epilepsy

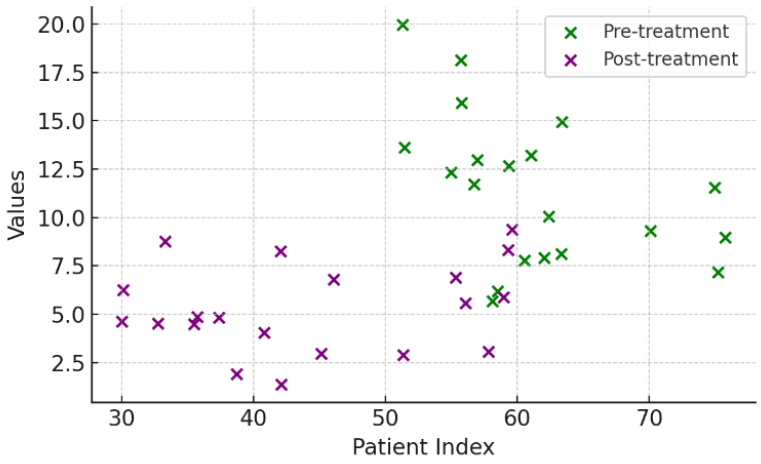

Figure 11: Visualization of treatment impact in pediatric epilepsy

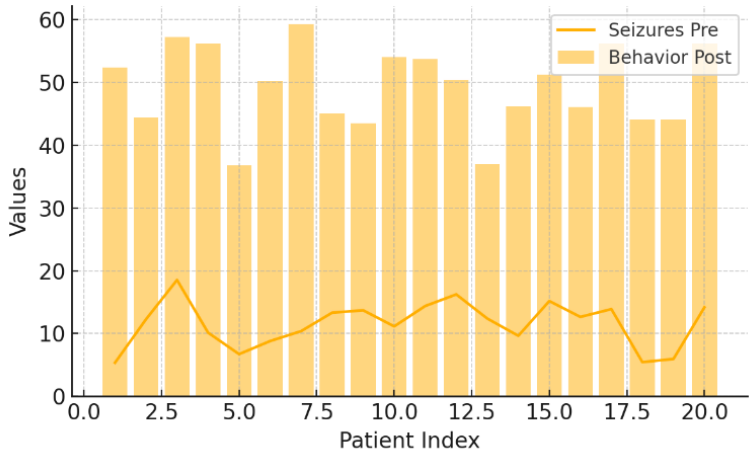

Figure 12: Visualization of treatment impact in pediatric epilepsy

DISCUSSION

Since epilepsy, depression, or anxiety disorders might have some processes in common that they might affect the occurrence of seizures, it is especially important to evaluate the complex relationships between stress, other resources, and seizures (Michaelis et al., 2023). Rizzo et al. (2024) state that parents of children with autism spectrum disorder feel more stress, anxiety, and depression and that it disrupts their ability to provide the ideal care. To address the challenges of pediatric epilepsy adequately, it is imperative to implement interventions, including the reduction of stress, improvement of coping strategy, and family functioning (Yesilkaya & Magalloni-Neri, 2024; Al-Saadi, 2024; Enea and Rusu, 2020; Dababnah et al., 2021). Therefore, coping strategies should be understood and adhered to in order to mitigate the adverse effects of caregiving and improve the wellbeing of the family with an affected child in general (Amate & Rosa, 2024). Moreover, it is possible to significantly improve the psychological well-being of both children and their caregivers with the help of the targeted help and support (Dababnah et al., 2021; Iao, 2024; Ni outturnzahroh et al., 2021; Papadopoulos, 2021). Moreover, the availability of support groups and educative content allows reducing the level of parental stress and increasing family adaption (Amate & Rosa, 2024). Fu et al. (2023) assert that parental stress, social support, and parenting efficacy have a strong relationship, the third being a mediator of the other two. Therefore, parenting efficacy can be improved through the reduction of parenting stress, and by increasing social support (Fu et al., 2023). To ensure that children have their needs

satisfied and will develop their ability to self-regulate a long-term period of life, effective parenting involves managing emotions (Zitzmann et al., 2023). The emotional and behavioural experiences of parents act as socialization of the emotions in children, and in order to promote healthy emotional development, understanding the emotion of parents in caregiving contexts must be improved (Hajal & Paley, 2020). Parents should also exercise their emotions in order to engage in the most ideal emotion socialization experiences to support the development of the emotional aspects of their kids (Hajal & Paley, 2020). Psychoeducation can assist parents in adopting positive attitude and coping with autism in children, improve parental participation in therapies, and enhance the adequacy of parents to accept their children with autism (Kalalo et al., 2021). Parents can feel lonely and mourn expectations that are not met as they belong to a social environment that does not understand them (Amate & Rosa, 2024). Other family members also may develop a feeling that their needs are not being addressed due to the reason that parents are overworked and have to constantly provide care, organize additional healthcare visits, and make the home accommodation adjustable (Amate & Rosa, 2024). Caregivers will require psychological, social, and emotional support in order to minimize the stress and sharpen their ability to handle the medical problems of their children (Eloreidi et al., 2021). Besides, to improve their health and the quality of their lives, caregivers need to become more knowledgeable about such illnesses as cerebral palsy. It will empower them to offer the required care to their children with the right amount of confidence (Eloreidi et al., 2021; Liu et al., 2023). Parents of children with impairments can make parenting much better through mindfulness groups and parenting treatments (Rudebeck, 2020). Parenting stress may also be reduced with the help of social support either formal or informal (Seeger et al., 2022; Buchwald et al., 2025). Family skills programs are able to benefit protective variables such as communication and problem-solving skills besides offering education and training of parents, skillsets, and competency enhancement (Haar et al., 2020). To promote good behavioral support and improve overall well-being of the family, parents have to be provided with effective coping mechanisms and stress management techniques (Nalugya et al., 2023) (Hajal & Paley, 2020).

CONCLUSION

The findings of the present research demonstrate the efficacy and feasibility of an integrated approach to the management of epilepsy in children through a combination of the behavioral and emotional insights provided by the psychiatry and the diagnostic precision of the neurology. The mixed-methods technique provided a multicomponent knowledge on how to manage epilepsy through the guidelines of improved management of epilepsy and psychological course. After treatment, statistically significant positive changes in behavioral functioning and reduction in the frequency of seizures were proved by the use of quantitative analysis at the significance level of alpha = 0.05 through the effect size calculated (0.699) by the repeated-measures ANOVA. Also, the practice of targeting the best treatment results was enabled due to the use of a combination of personalized antiepileptic treatment and specific psychological approaches, such as parent-child psychoeducation and cognitive behavioral therapy. These findings became more evidence-based by the qualitative data drawn in the interviews conducted with the caregivers who reported that children who took the combination intervention had a better social and academic adaptation, amount of family stress, and treatment satisfaction. The collaborative paradigm in neurologists and psychiatrists was not only successful, but was also more effective than the segregated treatment in addressing the problems of pediatric epilepsy that tend to be very complex. Flexible

treatment adjustments and comprehensive follow-up are important in chronic neurologic disorders with psychiatric comorbidity and this cooperation between the two teams enabled a lot of this. To support the process of implementation of this paradigm in the context of healthcare organizations, a visual workflow has also been offered (Fig. 1). A medium-sized sample and the self-report method of some of the behavioral aspects are also weaknesses that indicate that larger studies are required in the future. Nevertheless, this study is an excellent evidence that integrated neurology-psychiatry practice can assist on juvenile epileptic patient, especially in clinical, behavioral outcomes as well as in quality of life. It offers an adaptable integrated care model that can be used to manage numerous urban healthcare settings and eventually towards improved, patient-centered epilepsy treatments among children.

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