

ASSESSMENT OF THE TRAITS OF EPILEPSY IN CEREBRAL PALSY CHILDREN IN THE IN THE OUTPATIENT NEUROLOGY CLINICS IN MAKKAH, AT SAUDI ARABIA 2019

Hani Ahmed Alhazmi¹, Anas Mohammed Alodhaibee², Fatima Gayeb Aldajani³, Emad Omar Dahlawi⁴, Najwa Shaker Allhyani⁴, ShikhahGayeb Aldajani⁵, Majed Mohammad Mousa Mokhtar⁶, Salman AbdulrahimDakhilallah Almalki⁶, MatoqHasan Noah⁷, Rania Oudah alobairi⁸, Abdulmohsenmusleh alsokheri⁹

¹Nursing technician, Department of Quality and Patient Safety, Department of Public Health, Saudi Arabia.

²X-ray technician, MOH MAKKAH, Saudi Arabia.

³Midwife, MOH MAKKAH, Saudi Arabia.

⁴Technician-Nursing, MOH MAKKAH, Saudi Arabia.

⁵Pharmacist technician, MOH MAKKAH, Saudi Arabia.

⁶Pharmacist, MOH MAKKAH, Saudi Arabia.

⁷General physicians, PHC of Al Otaibia, MOH MAKKAH, Saudi Arabia.

⁸Social workers, MOH MAKKAH, Saudi Arabia.

⁹Physician, MOH MAKKAH, Saudi Arabia.

Abstract:

Background: Epilepsy is the most prevalent neurological condition and is one of the most prevalent non-infectious diseases in the world. It has been reported that epilepsy is the commonest disorder encountered in most pediatric neurology clinics in the developing world. Epilepsy is a neurological disease characterized by two or more unprovoked seizures. It is an abnormal electrical firing of neurons. The morbid fear of having an unpredictable seizure not only affects the patients' physical function, but also emotional well-being, cognitive function, and social function. Epilepsy is a category of progressive and complicated neurological diseases characterized by epileptic seizures of an intermittent and crippling nature. It is the most prevalent non-infectious, neurological condition in the world. It has been reported that epilepsy is encountered in most pediatric neurology clinics, especially in the developing world. It is characterized by various neurological abnormalities, one of them is epilepsy. Epilepsy is difficult to control, as it is able to aggravate motor disorders and disrupt cognitive function, ultimately worsening the long-term outcome.

Aim of the study: To Assessment of the traits of Epilepsy in Cerebral Palsy Children in the in the outpatient neurology clinics in Makkah, at Saudi Arabia 2019.

Method: A cross-sectional study has been conducted using snowball sampling strategy. A self-administered questionnaire was designed and will be sending to the study participants through social media platforms and email. Study participants will be recruited across in the outpatient neurology clinics in Makkah in Saudi Arabia about awareness of the epilepsy in Cerebral Palsy Children and association with socioeconomic status in KSA. Our total participants were (120).

Results: In our study showed that the only (44.00%) of the participated were (25-35) years while (33.00%) were (<25) years, regarding the Education the majority of the participated school were (47.50%), the majority of the participant were Saudi (65.00%) while non-Saudi were (35.00%). The majority of the participated the family monthly income < 5000 SAR were (68.33%), followed by 5000 to 10000 SAR were (16.00%).

Conclusion: the geographic variables were significantly associated with the risk of epilepsy in children with CP. Patients with epileptic CP had a higher odds ratio of several neuropsychiatric diseases, including mental retardation, ophthalmologic problems, hearing impairment, and hydrocephalus.

Keywords: Assessment, Traits, Epilepsy, Cerebral Palsy, Children.

1. Introduction

Although Quality of life (QoL) has emerged as an important concept in childhood [1] little is known about the QoL of children with disabilities, especially at the more severe end of the spectrum. It is now generally accepted that QoL is a subjective concept and therefore should be self-reported by the individual whenever possible. [2,3] Evidence is accumulating that children can self-report QoL reliably, provided their emotional development, cognitive ability, and reading level are taken into account. [4] However it may not be possible to obtain reliable information from children with severe intellectual impairments or significant communication problems, and the use of proxies (usually mothers) for the assessment of QoL in such children is necessary. [4]

Cerebral palsy (CP) is a chronic disorder of development and posture. It is the consequence of a non-progressive harm of the immature sensory system brought about by a few factors [5] that have happened in pre-birth, perinatal or post pregnancy periods [6]. It can show itself severally, primarily as spastic, a theroic and ataxic paralyzes; in addition, it is quite possibly the most well-known reasons for engine inability in children and much of the time is related with different issues, like mental impediment, sensory deformities and epilepsy [7]

Epilepsy is a frequent chronic illness in children. The psychosocial impact of epilepsy on the child and family's everyday life depends on several factors, including (a) the severity of the epilepsy; (b) the complexity of the clinical management; (c) the meaning of the illness to the child, family, and society as a whole; (d) restrictions in the child's and family's activities; (e) the child's and family's innate coping abilities; and (f) the level of social support and extent of resources available to deal with the epilepsy. Each of these factors contributes to the real or perceived adjustment to this chronic illness. It is clear that epilepsy can have a negative impact on many aspects of the life of the child and his or her family.[8]

Epilepsy and cerebral palsy (CP), basic neurological issues in kids, place a stamped burden on children with such conditions, their families, and society. CP represents a gathering of permanent, non-reformist issues that influence the improvement of movement and posture, in this manner restricting the action of individuals with CP. Since CP is a non-progressive pathology in immature brains [9] and it is related with scarring, some type of brain abnormality, seizures, or epilepsy issues. Plus, CP in children is much of the time comorbid with epilepsy and has been broadly examined[10]. We recently announced that CP is the second most common comorbidity in pediatric epilepsy and has a higher odds ratio (OR) of 91.4 (95% certainty stretch [CI] 65.8–127.0) than everyone.[11]. Epilepsy has been utilized as a marker of seriousness and frequently deteriorates the personal satisfaction of patients with CP[12], furthermore, perhaps more disabling than the original motor disorder. Contrasted and children experiencing epilepsy alone, epilepsy in children with CP is portrayed by a previous time of beginning, a higher frequency of partial seizure, a higher extent of brain imaging with strange pathology, a more noteworthy requirement for polytherapy, and second-line hostile to epileptic medications, and with lower probability of remaining seizure [13,14,15]

The prime reason for epilepsy is unidentified in about 60% of all cases [16]. Genetic and inherited conditions, such as severe brain damage, stroke, and complications arising from prior illnesses, may result in epilepsy, with the involvement of both triggers in many cases [17]. Better comprehension of the interrelationships between actual danger factors and psychological wellness in people with epilepsy in cerebral paralysis is particularly significant during development, on the grounds that the extent of the worldwide illness weight of emotional well-being messes is most elevated among children, adolescents, and young adults.[18]

Children with epilepsy in cerebral paralysis additionally have a more issues with sleep disturbances than typically developing children, which is related with conduct issues and nature of life.[19,20] Individuals with epilepsy in cerebral paralysis reliably report higher torment pervasiveness, going from 33% to 75%, contrasted with the general population.[21] Further, pain is related with mental health messes in children,[22] yet not adults,[21] with epilepsy in cerebral paralysis.

2. Literature review:

Information of mental health disorder issue profiles and hazard factors in children and teenagers with epilepsy in cerebral paralysis would profit the improvement of early rehabilitation and treatment systems to lessen the weight of adverse mental health through the lifespan. [23] The commonness of epilepsy fluctuates by country [24], with a reach stretching out from 0.9 to 58 for every 1000 individuals [25,26]. Assessments for kids range from 5.1 to 7 cases for each 1000 [27] Prevalence will in general be higher in low to center pay nations when contrasted with big league salary nations [28]

There has been restricted investigation of its prevalence in Middle Eastern nations. Notwithstanding, one study recognized a predominance of 6.5/1000 for Saudi Arabia [26]. The information on pediatric epilepsy are significantly more restricted, with one study from 1998 assessing commonness at 2.5/1000 [29] In Arab populations, patients with epilepsy experience raised degrees of gloom and tension, intellectual weakness, conduct issues, sexual brokenness, and underemployment [30]. Quality of life appears to be similarly impaired in both European and Middle Eastern samples [28]. Feelings of anxiety are often high in caregivers of patients with chronic sicknesses like epilepsy, which can prompt lower parent–kid relationship quality, a higher danger of sadness in moms, and problems with family working [31]

Nonetheless, later investigation is warranted. Lamentably, hardly any investigations have been completed respect into describe epilepsy in Cerebral Palsy Children and relationship with socioeconomic (SES) in KSA. Coming up next is synopsis of as of late done studies in this regard A populace based study including 139 children for Iceland showed a higher decline in the extent of kids with CP and epilepsy more than time, from 38% for kids brought into the born in 1990e1996 to 15% for those brought into the born in 1997e2003.[32] The recurrence of epilepsy in kids with CP announced here is consistent with studies performed in other. [33,38 4,35]

Before the finish of 2003 investigation was done to dispersion of different kinds of epilepsy in Cerebral Palsy Children those by others from India.[36] The rate of epilepsy in cerebral paralysis has been variably reported from 33 to 41.2%.[38] In this investigation, around 33% of youngsters with cerebral paralysis had epilepsy. This is for the most part the experience of others.[34]. The frequency and type of epilepsy shift as per the kind of cerebral paralysis. We discovered epilepsy to be most common in hemiplegia (65.9%) and in quadriplegia (42.6%), which perhaps related with the cortical association and seriousness of mind harm in these cases. Epilepsy was least regular in diplopia (15.8%), possibly because the brain damage in these cases is mostly periventricular. Another study

reported epilepsy in almost half of their patients with quadriplegia and hemiplegia.[37] Others have reported figures of 54% in quadriplegia, 34 to 60% in hemiplegia, 27% in diplegia, and 23 to 26% in dystonic cerebral palsy.[35]

Kulak et al.[37] showed that low birth weight was related with expanded danger of epilepsy while gestational age had no effect. On the other hand, Zelniket al.[35] detailed that kids brought into the born at term were at expanded danger. The relationship between gestational age or birth weight and epilepsy in kids with CP is conflicting between studies[33,35] This is probably going to be identified with the transcendence of white matter lesions in preterm children,[34] as these are less inclined to lead to epilepsy than sores of the grey matter, all the more generally found in term kids with CP.[32]

Rationale:

Information of mental health disorder issue profiles and hazard factors in children and teenagers with epilepsy in cerebral paralysis would profit the improvement of early rehabilitation and treatment systems to lessen the weight of adverse mental health through the lifespan. researcher knowledge of , there was no study on the common physical disability of childhood and to Assessment of the traits of Epilepsy in Cerebral Palsy Children in the in the outpatient neurology clinics in Makkah, at Saudi Arabia 2019.

Aim of the Study

To Assessment of the traits of Epilepsy in Cerebral Palsy Children in the in the outpatient neurology clinics in Makkah, at Saudi Arabia 2019

Objectives:

- The primary objective of this study was to describe epilepsy in Cerebral Palsy Children.
- The secondary objective was to a assessment of the traits of Epilepsy in Cerebral Palsy Children in the in the outpatient neurology clinics in Makkah, at Saudi Arabia 2019

Methodology:

Study design: Cross-sectional study.

Study setting / study area

We recruited a total of 120 of children with physician-diagnosed epilepsy at outpatient neurology clinics in Makkah Saudi Arabia to be included in the study, children has been between <3 and >10 years old, have had a seizure epilepsy in Cerebral Palsy in the past 8 months, diagnosed with Epilepsy by a pediatric neurologist, and the mothers has been taking care of the child for the past 6 months at a minimum. We did not include fathers of children with epilepsy as mothers are more often the primary caregiver.

Study population:

The researcher select children with physician-diagnosed epilepsy at outpatient neurology clinics in Makkah in Saudi Arabia children has been between <3 and >10 years old, has be a seizure epilepsy in Cerebral Palsy in the past 8 months, diagnosed with Epilepsy by a pediatric neurologist, and the mothers has been taking care of the child for the past 8 months at a minimum.

Inclusion Criteria:

- All children with diagnosed with Epilepsy by a pediatric neurologist at outpatient neurology clinics in Makkah
- Had to be between 3 and 10 years old
- Have had seizure epilepsy in Cerebral Palsy in the past 8 months
- Mothers are more often the primary caregiver but the mothers must have been taking care of the child for the past 8 months at a minimum

Exclusion Criteria :

- All the children with missing information for epilepsy in Cerebral Palsy were excluded.

Sample size:

The researcher select children with physician-diagnosed epilepsy at King Abdul-Aziz University Hospital(KAUH) Jeddah in Saudi Arabia Then, has been final calculated sample size through the epi program was recruited a total of 150 of children with 95% confidence level.

Sampling technique:

The researcher has been use simple random technique. The researcher get approval from the Saudi pediatric program administrator, After that, The researcher get Permission from the regional Research and Ethical Committee to be given to hospital. The researcher has been meeting a head of department to collect the total number of select children from hospitals which are participating voluntarily in our study.

Study field:

Study has been conducted over two month period starting from the first February to the end of march 2021.

Characteristics of the children

Epilepsy was defined as a history of two unprovoked seizures after the neonatal period, (i.e. after 28th day of birth), but before CP registration. Febrile seizures were excluded. Epilepsy was considered active if the child was

on medication at time of registration. The way the information on diagnosis of epilepsy was obtained depended on the ascertainment method of the register. Indeed, SCPE is a network of registers with different ascertainment methods. In several registers, data are abstracted from medical records (in which the word epilepsy and/or seizures and/or names of anti-epileptic treatment are present), in other registries, it is the pediatrician in charge of the child who confirms the diagnosis of epilepsy and provides information directly to the register, using a data collection preforms.

Data collection tools:

We used the "Impact of Pediatric Epilepsy Scale" (IPES), an epilepsy-specific self-administered questionnaire. The researcher has been used a questionnaire covering socio-demographic data and Patient Health the IPES is an 11-item scale that assesses the impact of epilepsy on health, relationship with siblings and partners, participation in social and family activities, child's academic achievement and self-esteem, and caregiver's hopes for their child's future. Each item is rated on severity between 0 (not at all) to 3 (a lot), with higher scores indicating a higher impact of that item. The highest possible score was 33. We categorized IPES score below the median as "low impact"; and equal or above median and "high impact". We conducted a forward-backward translation of the questionnaire and pre-test to develop an Arabic version of IPES. While we did not seek to validate the Arabic version of the IPES, the IPES has been validated and is used extensively to measure the impact of epilepsy on family life. Finally, we collected data on child's age, gender, nationality and cognitive ability, mother's education, family monthly income, the frequency of seizure and cause of the seizure. The time required for administration is 15 to 20 minutes.

Data management and statistical analysis :

Collected data has been processed using SPSS v.24 software. Descriptive statistics has been performed. Percentages have been given for qualitative variables and Mean (SD) has been given for quantitative variables. The primary study outcome for analyzing trend in prevalence was $p < 0.005$ for overall prevalence. The threshold for other analyses was $p < 0.05$. Statistical analyses were performed using Statistical software. Will be presented as percentage and 95% CI .

Ethical consideration :

- Get approval from Saudi pediatric program .
- Permission from the regional Research and Ethical Committee to be given the outpatient neurology clinics in Makkah to conduct our study .
- All the subjects have been participating voluntarily in the study.
- Privacy of physician information and confidentiality has been maintained .
- Signed informed consent was obtained from all subjects who participated in this study.

Budget: Self- funded

3. Results

A total of (120) child with Epilepsy in Cerebral Palsy participated in the study out of invited 120 (response rate: 100%) The researcher selected children and mother at Primary Health Care in Makkah, 2019

Table 1 Descriptive characteristics of study participants (mother's demographic data) .(Age, Gender, Nationality, Mother Education, Family monthly income)(mother's demographic data)

n=120		
mother's demographic data		
age		
<25		.00
25-35		.17
>35		.83
education		
Illiterate		.00
School		.50
University		.50
nationality		
Saudi		.00
Non-Saudi		.00
family monthly income		
< 5000 SAR		.33
5000 to 10000 SAR		.67
10000 SAR		.00
number of children		
1		.67
2		.17
3 or more		.17

Child Age		
<3years		.00
3-6.		.33
6-10.		.83
>10		.83
Child Gender		
Male		.83
Female		.17

In our study showed that the only (44.00%) of the participated were (25-35) years while (33.00%) were (<25) years, regarding the Education the majority of the participated school were (47.50%), the majority of the participant were Saudi (65.00%) while non-Saudi were (35.00%). The majority of the participated the family monthly income < 5000 SAR were (68.33%), followed by 5000 to 10000 SAR were (16.00%). Approximately more than half of mothers of the participant number of children 3 or more (69.17%) and the majority of child age were (38.33%) (30.0%) in range 3-6 years and child gender 65.83% was male.

Table 2 Descriptive characteristics traits of Epilepsy in Cerebral Palsy Children

Frequency of Epilepsy		
Daily		.67
Weekly		.00
Monthly		.33
More than monthly		.00
Frequency of Epilepsy		
Daily or Weekly	2	.00
Monthly and More		.00
Type of epilepsy in Cerebral Palsy Type		
Partial		.83
Generalized		.00
Unclassified		.17
Cause of Epilepsy		
Cerebral palsy		.67
Hypoxic encephalopathy ischemic		.83
Unknown		.50
Seizure etiology		
Head trauma/brain injury		.00
Stroke/brain tumor		.33
Other causes		.17
Unknown		.50
Number of antiepileptic drugs (AEDs) currently taking		
None		.00
One AED		.00
Two AEDs		.00
More than two AEDs		.00
Cognitive disability		
Yes	4	.67
No		.33
School status		
Not yet in school		.33
Daycare		.83
School age		.83
Class type, if in school		
Regular class		.17
Regular + resource		.83
Regular + teacher's aide full time		.67
Special education		.33
Behavior severity (as judged by physician)		
Normal		.00

Mild	.33
Moderate	.83
Severe	.83
neurological abnormality	
Normal	.83
Mild	.33
Moderate	.33
Severe	.33
social functioning (total)	
Ability to join activities with others	.33
Friendships	.33
Engagement in school life	.17

In our study showed that 55.0% suffered from weekly epilepsy and 11.67% reported daily epilepsy. While frequency of epilepsy the majority of the participants daily or weekly were 85.0% . The type of epilepsy in Cerebral Palsy the majority partial type were 70.0% while generalized were 20.0%. In 81.67% of the child with epilepsy, cerebral palsy the as the cause of seizure, and in 10.83% hypoxic-ischemic encephalopathy, was the cause. Regarding Seizure etiology approximately more than half of etiology head trauma/brain injury 60.0% while unknown etiology were 7.0%, regarding the number of antiepileptic drugs (AEDs) the majority currently taking more than two AEDs were 35.0% , regarding the school status the majority of children participant in school age were 45.83% while not yet in school were 38.33.00% regarding the Class type, if in school approximately more than half of children participant in regular class were 64.16% while Special education were 8.33% , regarding the behavior severity (as judged by physician) approximately more than half of children participant in normal were 45.0%, while severe were 10.83% , but regarding the neurological abnormality the majority of children participant in normal were 60.83% while severe were 8.33% . Regarding the social functioning (total) the majority of children participant in ability to join activities with others were 38.33% while the engagement in school life were 29.17% .

Table 3 Distribution of the social challenges faced by parents of children with neurologic disorders (social issue, CP subtype, walking ability)

social challenges faced by parents of children with neurologic disorders.	
social issue	
Can you travel for days leaving the child at home?	.83
Does the condition of the child allow you to engage in social activities?	.50
Have your friends or relatives avoided you due to this problem?	.33
Do your friends play the child when they visit you?	.17
epilepsy on cerebral palsy type and associated impairments	
CP subtype	
Bilateral spastic	.17
Unilateral spastic	.00
Dyskinetic	.50
Ataxic	.33
walking ability	
Alone	.67
With aids	.67
Unable even with aids	.67

Regarding the social challenges faced by parents of children with neurologic disorders. The most of the parents could travel for days and leave the child at home were 60.83% . Approximately more than half of parents answered that they could participate in social activities 52.50% , 33.33% of the parents they were avoiding friends and relatives because of this problem, friends of parents used to play with the child when they visited you were 54.17%

Regarding the epilepsy on cerebral palsy type and associated impairments. The presence of epilepsy was associated with CP subtype, occurring more frequently in children with Unilateral spastic were (50.0%) followed by Bilateral spastic form (29.17%) while a dyskinetic (12.50%). In addition, the inabilities to walk were associated with epilepsy. More than half of the children with epilepsy (71.67%) were able to walk alone while walk unable even with aids were (16.67%). Also in addition,

4. Discussion

In this study, we estimated the traits of Epilepsy in Cerebral Palsy Children. Epilepsy in Cerebral Palsy is distressing > 50 million persons worldwide (85% of them in developing countries). Many previous kinds of research have argued epilepsy in school-age kids. The worldwide incidence of childhood epilepsy is estimated to be 4-8/1000 inhabitants [38]. We also investigated their characteristics traits of Epilepsy in Cerebral Palsy Children. Patients with CP had a significantly higher risk of epilepsy than their non-CP counterparts.

Population-based studies worldwide have estimated the prevalence of CP to range from 1.5 to more than 4 per 1000 live births or in children of a defined age range [39]. In developed countries, the overall estimated prevalence rate of CP is 2– 2.5 cases per 1000 live births [40], including a multicountries CP collaboration registries data in Europe, the Surveillance of CP in Europe [39]

The prevalence of CP in KSA, as reported in our study, is similar to that reported in other developed countries. Interestingly, our result was very similar to the report of Japan [41] The study estimated CP prevalence per 1000 population aged 5 to 9 years lay in the higher range than other age subgroup, and this gradually declined with age. The prevalence is significantly lower for patients aged 15–19. It was possible due to lower life expectancy of CP population, especially in CP with multiple impairments or with severe impaired mobility [42].

We found the only (44.00%) of the participated were (25-35) years while (33.00%) were (<25) years, regarding the Education the majority of the participated school were (47.50%), the majority of the participant were Saudi (65.00%) while non-Saudi were (35.00%). The majority of the participated the family monthly income < 5000 SAR were (68.33%), followed by 5000 to 10000 SAR were (16.00%). Approximately more than half of mothers of the participant number of children 3 or more (69.17%) and the majority of child age were (38.33%) (30.0%) in rang 3-6 years and child gender 65.83% was male (See table 1). Also another study show the prevalence of children with CP and epilepsy increased between 1976 and 1983 and decreased afterwards. This pattern mirrored that of the prevalence of CP during this time period. The proportion of children with epilepsy among children with CP tended to decrease over the two decades, although not significantly, despite progress in neonatal care.[43] In South Korea's study [44], between 2004 and 2008, the overall prevalence of CP showed an annual increase from 2.2 in 2004 to 3.2 in 2008 per 1000 children, respectively.) (see table 2 and 3). The distribution of various types of cerebral palsy is similar to our studies, and others study from India. 6 the incidence of epilepsy in cerebral palsy has been variably reported from 33 to 41.2%. Similar In our study, [15,38] about one third of children with cerebral palsy had epilepsy. This is generally the experience of others.[38] Others have reported figures of 54% in quadriplegia, 34 to 60% in hemiplegia, 27% in diplegia, and 23 to 26% in dystonic cerebral palsy.[15,9] Strokes were reported to be the cause of epilepsy in 49% of patients included in a study in England [45] and 46% in Sweden [45]. High consanguinity rates between parents in Saudi Arabia were also identified as a risk factor as mentioned above with a percentage of 59% [42] On the other hand we found a higher prevalence of all Cognitive disability disorders and multi morbidity in children with CP. Although the odds of attention deficit disorder/ADHD were no longer significantly increased (i.e. attenuated) after accounting for socio demographic variables, the elevated odds of other mental health disorders and multi morbidity in children with CP persisted. Mental health disorders lead to increased overall disease burden.[43] physical risk factors in children with CP Low physical activity. Our findings of lower levels of physical activity and a higher prevalence of pain in children with CP compared to controls is consistent with previous studies. Neuromuscular dysfunction, weak muscles,[45]

Conclusion :

High incidence rates of childhood epilepsy in Cerebral Palsy were observed in Saudi Arabia. Epilepsy among children with CP is common and the prevalence rate for children born mirrored that of the prevalence of CP. Family History and consanguinity between parents are well-identified risk factors in KSA. We also recommend studied a wide variety of children with varying severity of seizures and associated disorders. We enriched our sample with children with more severe problems to be sure that the IPES reflects the impact of epilepsy across the full spectrum of epileptic disorders in children.

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