

Risk Factors of Seizure Disorders

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Epilepsy is a serious disorder having important medical, social and psychological consequences. The term epilepsy is of Greek origin and means “to be seized by a source from without.” It is a world wide disorder affecting up to 2 percent of the population of 50 million and as per conservative estimate, India has approximately 90 lakh epileptics including children.

Epilepsy and convulsive disorders of non-epileptic nature pose a formidable challenge to the paediatricians. The problem is of prime importance, since over 90 percent of convulsive disorders have their onset in early infancy or childhood. It has been variously estimated that 7 percent of pediatric hospital admissions are for convulsions.

WHO (2003) estimated that 310 per 1000 of the total world population have epilepsy. However, epilepsy is a hidden disorder and many cases go unreported. There may be as many as 40 million epileptics world wide. Epilepsy is also referred to as the seizure disorder.

Achar (2003) stated that convulsions are common among children between the age of six months and five years and in the newborn period. An estimated 4-6 percent of all children have fits sometime or other during their life and 90 percent of convulsive disorders have their onset in early life. One in

15 or 20 children admitted in hospitals give a history of convulsion. Epilepsy is very common affecting 4/1000 of population.

Its prevalence is showing an upward trend in most countries, and for several reasons this trend is likely to continue. With the identification of risk factors, health promotion activities aimed at primary prevention are being increasingly applied in the control of chronic diseases (e.g. elimination or reduction of risk factors, modification of life style patterns).

Objectives

The objectives of the study were to:

1. Find out the incidence of seizure disorders in children.
2. Find out the exposure rate of seizure disorders in case and control groups of children.
3. Find out the association between the risk factors and development of seizure disorders in case and control groups of children.
4. Identify the association between seizure disorders and selected demographic variables.
5. Measure the strength of the association between risk factor and seizure disorders in case and control groups of children.

Assumptions

1. Seizure disorders are caused by multiple factors.
2. Interviewing the mothers

of under-five children with seizure disorders will help identify the associated risk factors.

3. Seizure disorders can be prevented by controlling some of the risk factors.
4. Nurses play significant role in identifying the risk factors of children with seizure disorders.

Conceptual framework : The conceptual model of this study was based on Epidemiological triad by Leavell et al (1965).

Research design : The research design for this study, case control type, is diagrammatically depicted in Figure 1.

Setting of the study : Phase I of the study (cases) was conducted in hospitals such as Dr Vas Hospital, Trichy Speciality Hospital (TSH), RMC Hospital, Neuro Centre, Trichy, Dr Kingsley Kids Clinic, Trichy. As per case control study the cases can be drawn from a single hospital or network of hospitals. In order to get adequacy of sample, the investigator took multiple hospitals instead of a single hospital.

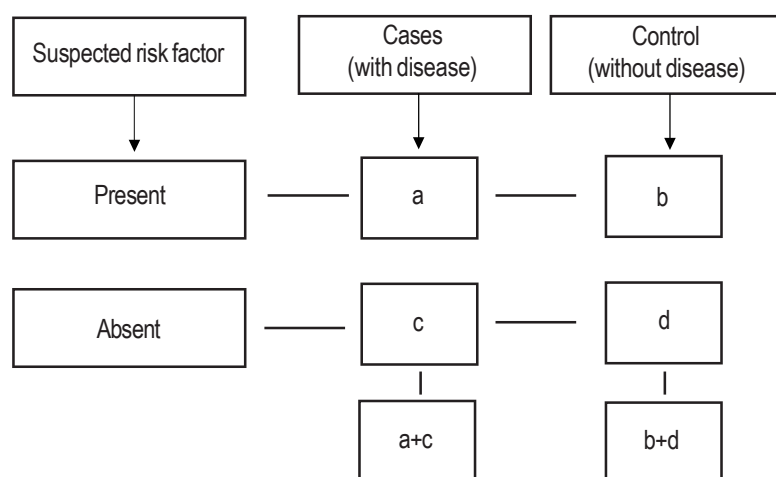
Phase II of the study (control) was conducted in Dr GVN Community Health Centre coverage area.

Population

Population for Phase I of the study (cases): The under-five children with seizure disorders. For phase II of the study (con-

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Figure 1. Schematic representation of case control



trol): the under-five children without seizure disorders.

Sample

Sample for Phase I of the study (cases): The under-five children with seizure disorders in five hospitals were selected. For the Phase II of the study (control): Children who were residing in Dr GVN Community Health Centre coverage area.

Sample size

The total sample size for the study was 90 children. For the case, 30 under-five children with seizure disorders were taken. For the control, a sample size of 60 under-five children without seizure disorders was taken. As per case control study, if the study group is small (less than 50) as many as 2, 3 or even 4 controls can be selected for single study subject.

Sampling technique

Simple random sampling (Lottery method) technique was adopted for this study.

Selection of cases

All the cases of children with seizure disorders from the

hospital-based registry in year 2006-2007 were taken into account. From the list of the sample, 30 cases were selected by simple random sampling (Lottery method). The selected cases were then studied in the hospital and at their residence directly by using address given in the register.

Selection of control

Selection of controls was obtained from Dr GVN Community Health Centre by using a simple random sampling (Lottery method); the mothers of under-five children without seizure disorders was selected.

Criteria for selection of cases

1. *Diagnosed criteria:* The children suffering from seizure disorders with episode of convulsion.

2. *Eligibility criteria:* All new cases of under-five children with seizure disorders in the year of 2006-2007.

Criteria for selection of control

The under-five children without seizure disorders.

Exclusion criteria

The under-five children who have been diagnosed as having febrile convulsion.

Tools and techniques

Technique: interview.

Tool: The risk assessment tool to analyse the risk factors of seizure disorders was developed. Maternal factors consisted of genetic factors, personal history, obstetrical history, maternal infection, and high risk pregnancy.

Child-related factors consisted of birth history, congenital malformations, chromosomal abnormalities, infectious diseases, disorders of children with mental health problems, drug withdrawal, brain injuries, and any surgery in the cranium. Presence of each risk factors of seizure disorders was scored as T and absence of each risk factors was scored as '0'. The tool was validated by five experts in the field and reliability assessed by test-re-test method ($r=0.9$) and it was reliable.

Pilot study : It was conducted among five children with seizure disorders and ten children without seizure disorders to find out the feasibility relevance and practicability.

Data analysis

The following plan of analysis was undertaken. A master data sheet was prepared with responses given by the participants. Risk status was presented in frequency and percentage, chi-square, relative risk (risk ratio) odds ratio, and chi-square was computed to find out the association between the risk factors and sei-

zure disorders. The level of significance set for the study to test the hypothesis was 0.05 level.

Major Findings

1. The mean incidence of seizure disorders at selected hospitals was 2.64 percent.
2. High exposure rates were found for maternal factors such as history of abnormal delivery (58.3%) prolonged labour (30%), family history of seizure disorders (23.3%), and pre-eclampsia (15%).
3. High exposure rates were found for child-related factors such as birth asphyxia (71.7%), mental retardation (66.7%), cerebral palsy (45%), lack of breast feeding (43.4%), history of febrile convulsion (38.3%), low birth weight (21.7%), history of childhood accident (18.4%), autism, jaundice, and pre-term (8.4%) respectively.
4. There was a significant association ($p < 0.05$) between maternal factors and seizure disorders such as family history of seizure disorders, prolonged labour, history of abnormal delivery, pre-eclampsia, and diabetes mellitus.
5. There was a significant association ($p < 0.05$) between seizure disorders and child-related factors such as pre-term, birth asphyxia, caput succedaneum, hydrocephalus, microcephaly, brain tumor, juvenile diabetes mellitus, history of febrile convulsion, lack of breast feeding, mental retardation, autism, drug withdrawal, childhood acci-

dents, and any surgery in the cranium.

6. There was a significant association between seizure disorders and demographic variables of children such as age, education of the mother, and locality of residence at 0.05 level.
7. Greatest strength of association was found between seizure disorders and maternal factors such as history of abnormal delivery (OR=11), prolonged labour (OR=10.5), pre-eclampsia (OR=9.1), and family history of seizure disorders (OR=7.3).
8. Greatest strength of association was found between seizure disorders and child-related factors such as birth asphyxia (OR = 38.0), mental retardation (OR = 21.0), cerebral palsy (OR = 12.7), childhood accident (OR = 11.8), history of febrile convulsion (OR = 9.1).
9. Additional risk factors identified from the study were brain haemorrhage, agenesis of corpus collosum, premature rupture of membrane, and poly hydramnios.

Recommendations

- A similar study may be replicated with non-probability convenient sampling technique in selected sample on larger population.
- Other qualitative research approach like phenomenology and using grounded theory can be tried out on the same phenomenon.
- Similar study can be replicated in different parts of the country to examine the

variation in the risk factors of seizure disorder.

- A descriptive study can be done on incidence and prevalence of seizure disorder.

Implications for Nurses Nursing Practice

- The present study enlightened the investigator that some of the factors are modifiable.
- The nurse can conduct awareness programme on preventing and controlling seizure disorders. Dissemination of findings of this study can encourage them to initiate necessary prevention activities.
- All the nursing personnel working in the hospital and community health can be made aware about risk factors, and trained to assess risk status of seizure disorders, conduct mass and group health education programme on prevention and control of risk factors of seizure disorders.

Nursing Education

- The nursing curriculum should construct knowledge related to health information including different methods of preventive health strategy.
- Nursing students must be made aware of their role in health promotion and disease preventions.
- The nursing curriculum should give more importance to prevention of the diseases rather than curative aspects.

Nursing Administration

- The nurse, as an adminis-

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5. The Provisional Ballot Paper is published only for the information of the members. A separate Ballot Paper will be provided for voting.
6. Name of contestants who have not given their consent in writing to the Returning Officer will be deleted from the final Ballot Paper.
7. It is expected that the Voters/Members are well versed with the TNAI Rules and Regulations and Byelaws. A copy of the same shall be available with the Returning Officer for ready reference.
8. **As per TNAI Byelaws, Clause 11.1(i):** ... "names of all contestants standing for the President and Vice-President are included, for other offices, the name of three contestants who received the highest nominations or minimum five nominations are included in the final ballot paper".
9. The person so selected for a particular office at branch level shall hold the office for the full term (four years) and shall not contest and cross to another office prior to completion of the term of her/his existing entrusted office.
10. The Returning Officer should be approached for any query or doubt about the election.
11. Any contestant wishing to withdraw from any office of contest should inform the Returning Officer 20 days prior to the election date in writing at the following address: **Ms ZRM Spring, Returning Officer, TNAI UP State Branch Election 2011, Principal, KK Institute of Nursing, KK Hospital, Lucknow.**

**ZRM Spring
Returning Officer**

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trator should plan and organise continuing nursing education programme for the nursing personnel and motivate them to conduct seizure disorders risk assessment programme.

- The administrator should take active part in health policy making, developing protocols, procedure and striking orders related to seizure disorders.
- Facilities would be created in each paediatric hospital OPD to have adequate display materials or museum to educate the mothers of children about seizure disorders on risk factors etc.

Nursing Research

- As non-communicable diseases are gaining importance, there is a need

for early detection and prevention of these diseases. Seizure disorders risk assessment programmes should be conducted by the nursing personnel both in the hospital and in the community areas.

- Evidence-based nursing care can be implemented based on the research findings; group to group technique method of health education can be conducted to create awareness on seizure disorders among public.

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