



‘Perinatal Asphyxia & Attention Deficit Hyperactivity Disorder, A Retrospective Observational Study’

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Abstract

Aim: This study aims to assess whether the children diagnosed with Attention Deficit Hyperactivity Disorder had Perinatal Asphyxia.

Objectives:

1. To assess prevalence of perinatal asphyxia among children with ADHD.
2. To find an association of ADHD with selected demographic variables (gender of a child/place of residence/socioeconomic class).

Method: A Retrospective Observational Study was conducted to find out whether perinatal asphyxia was present among children with ADHD in selected psychiatric hospitals of Kashmir. Purposive sampling technique was used to collect data from 100 ADHD children who fulfilled the inclusion criteria. The diagnosis was based on ICD-10 criteria for different subtypes of ADHD. For perinatal asphyxia in children, self-structured questionnaire was used to collect data. Data of the children including birth history, respiratory problems were collected to facilitate the investigation whether perinatal asphyxia exists among ADHD children.

Results: The presence of perinatal asphyxia at birth was 46% in children having ADHD and 54% of children with ADHD were not having perinatal asphyxia at the time of birth. Some demographic variables did not show significant association like, place of residence (chi-square calculated=1.0673 < chi-square tabulated=3.84) and socio-economic class (chi-square calculated = 2.913 < chi-square tabulated=5.99). The result showed a significant correlation with demographic variable such as gender of child (chi-square calculated=6.711 > chi-square tabulated=3.84).

Conclusion: Based on the findings of the study we have concluded that perinatal asphyxia plays a role in ADHD.



Introduction

Most kids have moments when their actions spiral out of control. They might move quickly, create noise continuously, refuse to wait their turn, and collide with everything in their path. Occasionally, they could appear to be lost in a state of reverie, neglecting to focus or complete tasks that they begin.

These kinds of behaviours, meanwhile, are more than just an occasional issue for certain kids. Youngsters diagnosed with Attention-Deficit Hyperactivity Disorder (ADHD) frequently experience severe behavioural issues that interfere with their ability to lead regular lives. These kids frequently struggle to get along with their siblings and other kids at home, in school, and in other places. People that struggle with focus are typically not good at learning. Some people act impulsively, which could actually put them in danger. Children with ADHD are sometimes called "BAD KIDS" or "SPACE CADETS" because they struggle to control their behaviour. More severe forms of ADHD can cause major, lasting issues like failing grades in school, legal troubles, broken relationships, substance abuse, and job insecurity if left untreated [1]. ADHD was initially noted in 1902, and studies on the condition are still ongoing today [2].

The National Institute of Mental Health describes ADHD as a mental illness characterized by a persistent pattern of hyperactivity-impulsivity and/or inattention that impairs functioning or development [3].

A significant number of children and adults are impacted by the major public health issue known as ADHD. Children with ADHD may experience difficulties with their academic performance, their capacity to establish and maintain friends, and their social interactions [4].

Three to five percent of school-age children suffer with ADHD, one of the most prevalent mental illnesses among children. Boys are at least four times more likely than females to have the disease. ADHD symptoms can last into adolescence and adulthood, despite the fact that they can occasionally go away with age. Up to 2% of adults, according to some estimates, suffer from ADHD [5].

Over time, the standards for diagnosing ADHD have evolved. Different definitions of ADHD have been used by researchers to diagnose the disorder. As a result, estimates of the quantity, traits, and prognosis of kids with the illness varied [4].

The exact cause of ADHD, a neuropsychiatric condition that affects many people globally, is still unknown. ADHD may have perinatal hypoxic-ischemic conditions as a possible aetiology, according to earlier research [6].

It is unknown to scientists what causes ADHD. They did, however, refute a number of previously widely held hypotheses. According to one theory, birth difficulties or mild head injuries may have caused undetectable brain damage caused by infections. When this notion gained traction in the early 1970s, experts referred to ADHD as "minimal brain damage" and "minimal brain dysfunction." The majority of scientists believe that ADHD is a biological condition brought on by anomalies in the brain. Research has indicated that individuals with ADHD exhibit reduced activity in brain regions responsible for regulating attention span and curbing impulsive conduct [5].

Although the exact cause of ADHD is not known, ADHD is often seen in families, and are attributed to a combination of genetic and environmental factors; now, research suggests that

birth injuries (perinatal Asphyxia) may be correlated with the development of ADHD [4].

In general, studies have shown that asphyxia (lack of O_2) may result in compromised O_2 delivery to tissues and cerebrovascular complications which can cause brain damage and this may lead to delay in brain development especially the area that controls attention span and limit impulsive behavior, which collectively contribute to the development of ADHD.

The results of this study would improve the capacity of public health experts to make the most informed decisions and recommendations regarding prospective public health preventative initiatives. Having a better understanding of those characteristics will aid in planning ways to lower the risk for ADHD.

So, in this proposed study the investigators felt a need to conduct the study among children with ADHD and this is the area, the researcher is interested. Hence the researcher felt that it is essential to determine the link between perinatal asphyxia and ADHD and to know how much perinatal asphyxia contributed to the development of ADHD.

Methodology

The present study is Retrospective observational.

Variables

- Outcome variable: ADHD
- Predictor variable: Perinatal Asphyxia
- Demographic variable: Age, education, occupation, gender.

Research setting

- a) Institute of Mental Health and Neurosciences (IMHANS), Rainawari, Srinagar, Jammu and Kashmir.
- b) Community General Hospital Unit, SMHS, Srinagar, Jammu and Kashmir.

Study population

Male and female children who receive health care services either at psychiatric outpatient department and inpatient wards at selected psychiatric clinics.

Sample characteristics and selection:

• Sampling technique

All male and female children who fulfilled the sampling criteria were selected by Purposive Sampling Technique.

• Sample size

50 male children and 50 female children at Psychiatric OPD and inpatient wards were considered as subjects and chosen by purposive sampling.

• Sampling criteria

- a) **Inclusion criteria**
 - a) Children diagnosed with ADHD, who attend OPD or are admitted in the psychiatric clinic.
 - b) Are willing to participate.
 - c) Age group between 2-16 years.

- d. Both male and female patients.
- e. Samples who can speak English, Kashmiri, Urdu.

b.) Exclusion criteria

- a. Children not diagnosed with ADHD.
- b. Age group below 2 years and above 16 years.

Tools used for data collection

The tools used for the research purpose are:

1. Socio-demographic schedule.
2. Self constructed questionnaire on Perinatal Asphyxia.

- Description of the tool

The tool for data collection consisted of two sections:

- i. Socio-demographic information schedule:
- ii. Age,
- iii. Gender of child,
- iv. Place of residence and
- v. Socio - economic class.

1. Self constructed questionnaire on Perinatal asphyxia.

The questionnaire contains 1 question and 7 sub questions.

- Validity of the tool The prepared tool was sent to 6 experts for establishment of validity. The suggestions of the experts were incorporated into the tool and further modified with the consultation of the guide. The experts were from the nursing department of the Mader-E-Meharbaan Institute of Nursing Sciences and Research, SKIMS, Soura Srinagar, Bibi Halima Nursing College, Shireen Bagh, Srinagar and Govt. College of Nursing, Bagh-I-Dilawar Khan Srinagar.

Data collection method

After getting the permission from the concerned authority, data was collected from the above mentioned settings. The purpose of the study was explained to the respondents and written informed consent was obtained from them. Later, the study subjects were interviewed in OPD as well as in wards. The researchers took all the care to look into their comfort. The patients and their relatives were given freedom of leaving the interview when they felt discomfort. First 10 minutes the researcher spent time for establishing rapport and 3-5 subjects were interviewed per day. Data was gathered by using the English Version of the tool and translated form in Urdu and Kashmiri. The subjects were assured for the confidentiality. Anonymity of subjects and confidentiality of information was maintained. It was ensured that the study would not harm the participants in any way.

Results

The results of the study were divided in four sections:

1. Demographic distribution of subjects.
2. Prevalence of perinatal asphyxia among children with ADHD.
3. Association of ADHD with selected demographic variables.

Table 1: Demographic distribution of subjects:

Variables	Sub-categories	Frequency	Percentage
Gender	Male	50	50%
	Female	50	50%
Place of residence	Urban	60	60%
	Rural	40	40%
Socio economic class	Upper (above 30000/month)	10	10%
	Middle (15000-30000/month)	36	36%
	Lower (below 15000/month)	54	54%

The above-mentioned table reveals that half (50%) of respondents were male and half (50%) were females and also findings revealed that 60% of respondents belonged to the urban areas and 40% of respondents belonged to the rural areas. Furthermore the table depicts that 10% of the respondents were upper class (having above 30,000 monthly income), 36% were from middle class (having 15,000-30,000 monthly income) and 54% were from lower class (having below 15,000 per month).

Table 2: Prevalence of perinatal asphyxia among children with ADHD.

Perinatal asphyxia	
Yes	No
46	54

N=100

Table number 2 reveals that 46 % of sample are having perinatal Asphyxia.

Table 3: Association of ADHD with selected demographic variables.

Variable=Gender:				
N	Degrees of freedom	Chi square tabulated	Chi-square calculated	Chi-square cal.>chi-square tabulated (Reject Ho)
100	1	3.84	6.711	Significant difference
Variable=place of residence:				
100	1	3.84	1.0673	No significant association
Variable= Socio-economic Class				
100	2	5.99	2.91367	No Significant association

Table number 3 reveals that there was a significant association with the demographic variable 'gender' and there was no significant association with respect to other demographic variables.

Discussion

ADHD is highly prevalent condition among children. The findings of this study suggests that the Perinatal Asphyxia may contribute to the occurrence of ADHD. So, the children who had experienced perinatal hypoxic conditions (as evidenced by Meconium aspiration, gasping or weak breathing, umbilical cord wrapped improperly around baby, weak cry/absent cry, respiratory distress, neurological problems such as seizures and low heart rate), situations during which the brain is deprived of oxygen were significantly more likely to develop ADHD in life as compared to unexposed children.

This link may be explained by the fact that a baby's pH and blood gas levels are typically affected when they are oxygen-deprived, which increases the baby's risk of cerebral hypoxia and acidosis as well as increased CO₂ into the bloodstream. This

may cause damage to the brain. Additionally, if birth hypoxia results in brain injury during delivery, the infant typically experiences Hypoxic-Ischemic Encephalopathy (HIE) not long after birth. Low oxygen or no oxygen can induce neurological impairments like HIE. One of the main causes of severe deficits that develop after birth, such as ADHD, is HIE.

Further, mild-moderate asphyxia can cause cognitive and behavioural changes during childhood, adolescence and adulthood like hyperactivity, attention deficits.

Our study also reveals that there was a significant association with the demographic variables such as gender of child. The analysis further revealed that there was no significant association with respect to other demographic variables such as place of residence and socio-economic class.

Conclusion

The study revealed that the 46% of children with ADHD were having perinatal asphyxia at the time of birth and 54% of children with ADHD were not having perinatal asphyxia at the time of birth. So having perinatal asphyxia at the time of birth may be one of the causes of ADHD. However, more clinical studies are warranted on a large sample.

Implications of the study:

The researchers derived the following implications from the study.

Nursing administration

Nurses have the major role in managing high risk newborns (perinatal asphyxia) at the time of birth. Hence nurse administrators can encourage the nursing personnels to properly manage the complicated deliveries. Nursing administrators can also help to prepare skilled nurses so that they can effectively utilize the sophisticated equipment necessary for managing high risk newborn.

Nursing administrator should ensure the availability of all the necessary items/equipment at the time of delivery.

Nursing research

There is a plenty of scope for research in the field of ADHD in future.

Various research activities have to be undertaken to know the exact cause or risk factors associated with ADHD.

The present study findings will be the motivating factors for the other researchers to conduct new studies on ADHD with different variables in large scale.

Further research is warranted in this area to identify the exact cause of ADHD and support to families whose children are suffering from ADHD.

The lack of awareness among nursing staff/ nursing students will give rise to newer research for the ways in which the ADHD can be diagnosed.

Limitations

1. The findings could be generalized only to those populations which fulfilled the criteria in the study.
2. The study was limited to a small sample which imposes limits in generalizations.

Recommendations

After the completion of this research project, we came to the point that there is a need that maternal and neonatal health care providers should make exhaustive investment of their efforts for early detection of perinatal asphyxia through strict fetomaternal follow-ups. Besides, the early detection of abnormality should always be accompanied with immediate decision for emergency obstetrics and newborns care interventions.

The hospitals should have a scheduled mix of labour and delivery care providers (midwives and obstetricians) for every laboring mother.

The study recommends that the concerned administration should support the strict and proper implementation of policies and protocols during labour.

The study recommends that strict supervision should be followed for high risk mothers. The study also recommends that further education programs should be started to impart education to health care providers for the management of asphyxiated newborns.

The study also recommends that health education should be given to parents and caregivers regarding the management of children with ADHD and also aware them about various behavioural interventions to make them independent and improve their quality of life.

The study recommends to develop useful information content for nursing students to enhance the information. It also recommends that we should educate our health care professionals about relationship between ADHD and perinatal asphyxia that will help in improving the knowledge to the caregivers.

In accordance to significant results of ADHD and perinatal asphyxia, it is recommended to health care providers to monitor mothers during labour closely to minimize the effects of delayed labour.

The study also recommends that nurses should develop awareness of ADHD among people in order to develop a positive attitude towards ADHD patients, change their behavioral problems which occurs due to ADHD.

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