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PREVALENCE OF SLEEP DISORDER IN ATYPICAL CHILDREN BY USING CHILD SLEEP HABIT QUESTIONNAIRE-A CROSS SECTIONAL STUDY

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ABSTRACT

BACKGROUND: Sleep cycle is regulated by brainstem and hypothalamus promotes wakefulness by sending arousal signal to the cerebral cortex. These signals come in the form of chemical called neurotransmitters. When neurons in the arousal area are active, the cortex -remain activated and we stay awake. The average sleep requirement of a child ranges from 16 to 18 hours during the first year of life and gradually decreases to 10 hours per night during childhood and adolescence. Adequate sleep is increasingly recognised as an importance determinant of child and adolescent health, for inadequate sleep may impact daytime cognitive function, academic performance, behaviour, emotional regulation, weight and the risk of accidental falls. Atypical children can be physical delayed, such as a delay in gross motor skills, dysfunction such as an inability to focus attention. In children, sleep disturbances may present as poor growth, Persistent fussiness or inconsolability, and increase oppositional behaviour. School-aged children may exhibit suboptimal academic performance, inattentive or hyperactive behaviour or appear to be daydreaming and it get worse in adolescents may fall asleep in class or present with affective symptoms.

Materials and Methodology: 160 subjects were participated in this study. Their parents were given consent form and their sleeping disorder was taken by using CSHQ.

Result: Prevalence of sleeping disorder in atypical children was 30% -40%, highest sleeping disorder was founded in Autism Spectrum Disorder which was 55%.

Conclusion: Prevalence of sleeping disorder are maximum in Autism that 55%, and also in cerebral palsy, developmental delay, down syndrome, it is 48%, 38%, 20%, respectively.

Keywords: Sleeping Disorder, Atypical children, Children sleep Habit Questionnaire.

1. INTRODUCTION

Sleep cycle regulated by brainstem and hypothalamus, cerebral cortex carry arousal signal and promote in wakefulness. These signals come in the form of chemical called neurotransmitters. When neurons in the arousal area are active, the cortex remain activated and we stay awake.¹



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Sleep is classified as unitary state, as NREM and REM. Non rapid eye movement is divided in to four phase and phase 1 is called N1 and phase 2 is called N2 and phase 3 and 4 is known as N4 phase.²

When children entering to sleep at that time alpha wave are active, in N1 stage theta wave are active and N3 delta wave are active and in Rapid eye movement beta wave are active it is last stage of cycle it is also known as paradoxical sleep. In whole cycle of sleep there is 70 to 75 % non-rapid eye movement and 20 to 25 % rapid eye movement cycle.²

Average sleep cycle is 16 to 18 hours but it is gradually decrease from infancy to adulthood.²

Adequate sleep is increasingly recognised as an importance determinant of child and adolescent health, for inadequate sleep may impact daytime cognitive function, academic performance, behaviour, emotional regulation, weight and the risk of accidental falls.³

Children sleep problem may effect on parents sleep quality and daytime functioning.³

Parent reports sleep difficulties in 10-75% of children worldwide, ranging from transient benign behavioural problem to more persistent and severe conditions such as the sleep apnoea syndromes.³

Sleep disturbance during infancy and early childhood are very common and rarely recognised in clinical practice. These are mostly related to the initiation and maintenance of night-time sleep.⁴

Children need at least 9 hour of sleep every night and lack of sleep can have negative effects on children's performance and it will cause Behaviour problem, Mood disorder, Performance problem, Impulsive behaviour, and accidents and injuries.⁴

Multicultural families effect on level of performance on overall development of children than typical families.⁵

Sleep is essential part of human biology and any problem occurs in sleep it will directly affects the cognitive, emotional, and physical well-being of the individual. Diagnosis and treatment of sleep disorders are challenging, especially in the paediatric population.⁶

In some neurodevelopment disorder there is deficiency of sleep balancing hormone which effect children sleep habit so that atypical development and their comorbidity which create more impact on their social as well behavioural.⁶

Atypical developmental is defined as the occasionally development does not follow the usual pattern or development which is not typical of the human species.⁷

Atypical development of a child may have many problems like poor achievement of milestones, inability to focus etc.⁸

Atypical development may occurs at various no of reasons causes include genetic influences; the family environment of the home, family structure and dispositional factor, such as child temperament. Particular parenting behaviours, for example modelling aggression and using coercive discipline, have been found to be significant.⁹



A child with atypical development is impulsive and has insufficient control over his/her behaviour, which facilitates aggression and destructiveness to an extent (in intensity and frequency of occurrence) that is quantitatively different from that of typical children.⁹

In atypical development there are severe disability and presence of epilepsy were associated with sleep disorders among children with atypical development¹⁰

Interruption of oxygen supply to the foetus or brain asphyxia was classically considered to be the main causal factor explaining later abnormal development.¹¹

Normal physical growth & psychological health & plays critical role in the neurological development. Various factors contributing to sleep disorders have been proposed including seizure, anti-epileptic medication, obstructive sleep apnoea, restricted movement due to spasticity, dental caries, use of orthotics etc. may increase morbidity & mortality in the atypical development of children.¹²

According to previous study found that gross motor classification of level V or IV, manual ability of level V & presence of epilepsy were associated with sleep disorder. These patients had more severe functional motor limitation often characterized by bilateral spasticity, experiencing stiffness & contractures suggesting that severe disability is associated with sleep difficulties.¹³

The children sleep habit Questionnaire (CSHQ), it is a subjective questionnaire which is used to evaluate sleep cycle pattern. The questions were selected in order to include the symptom presentation of the most common paediatric sleep disorder, according to International classification of sleep.¹⁴

These 33 items structured was validated for the screening sleep disturbance in children's. Reflecting following domains is bed time resistance, Night walking, Parasomnia, Sleep disorder breathing and day time sleepiness.¹⁴

2. MATERIAL AND METHODOLOGY

2.1 Study design – Cross sectional study

2.2 Study population – Atypical children

2.3 Study sampling – Convenient

2.4 Total sample size – 160

2.5 Study setting – Tertiary hospital

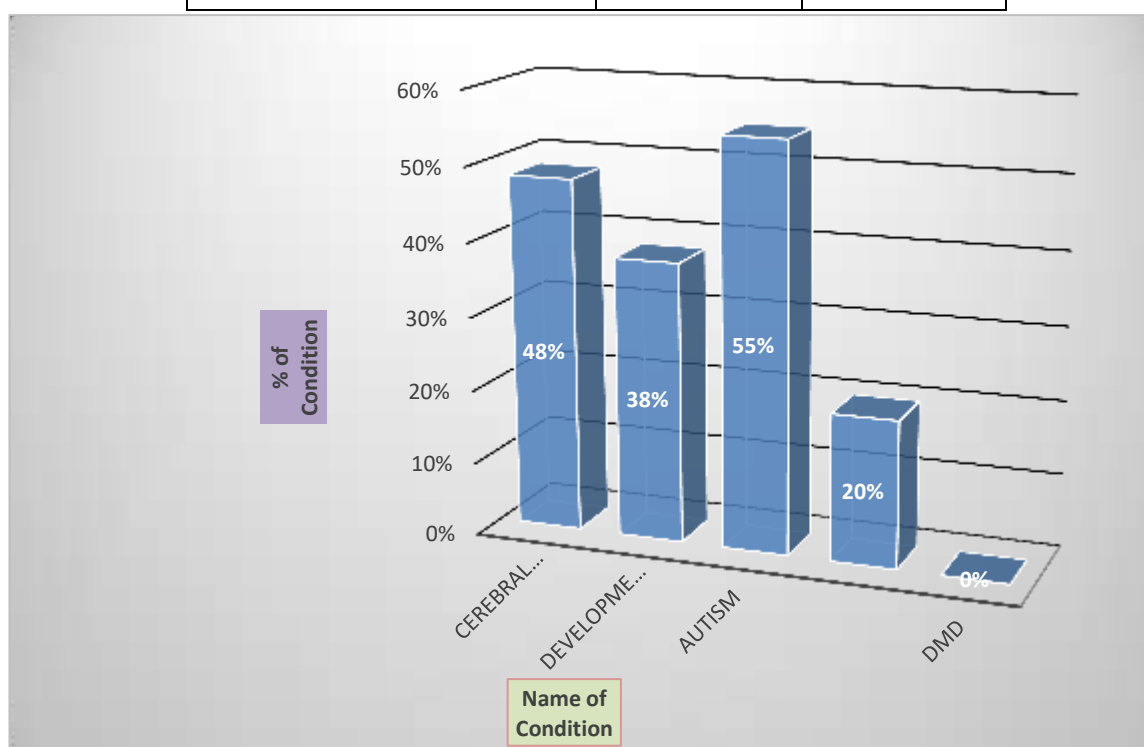
2.6 Study duration – 6 months

Ethical committee clearance was approved by the institutional ethical committee. Participants were selected based on the inclusion and exclusion criteria. Subject included was 160 and analysed according to descriptive analysis. The parents were given the consent form. All procedure was explained to them. Their demographic data and his/her child age and diagnosis was taken. Then all the questions from questionnaire were explained to parent and related domains were asked to parent in their own language then it is marked on the Questionnaire. Then result is calculated according to grading.

3. RESULT



Name of condition	Mean value	Percentage of sleeping disorder
Autism	60	55%
Cerebral palsy	37	48%
Developmental delay	55	38%
Down syndrome	5	20%



4. DISCUSSION

In this present study report sleep screening questionnaire designed primarily for a sleep disturbance in children. It is conducted in 2 to 10 year of age group. In this study 160 children are included out of that 64 children having sleeping disorder.

Out of 160 there is 60 children was autism spectrum disorder, in that 33 children diagnosed sleep disorder and 27 not diagnosed as sleep disorder, there are 37 cerebral palsy children included in study in that 25 children diagnosed sleeping disorder and 12 children are not diagnosed as sleep disorder, 55 Developmental delay children are included in that 21 children diagnosed sleeping disorder and were 34 not diagnosed as sleeping disorder, 5 children of Down syndrome out of that 1 children diagnosed as sleeping disorder and 4 were not diagnosed sleeping disorder. 2 children Duchene muscular dystrophy there was not found sleeping disorder.

By using child sleep health questionnaire all 33 component of scale was marked and result are obtain was there are sleeping disorder in Autism children it is 55% ,in cerebral palsy it is 48% ,and in Down it is 20% , and 38% in Developmental delay and in children Duchene muscular dystrophy it is 0% .

Danial A Rossignol et al, In this study concluded that below average physiological level of melatonin.⁸



In ASD, there is hyperactivity in children, Excessive motor movement and they are easily distracted in all condition so they are facing many challenge in their life and their parent also facing difficulty in their sleep behaviour, They not sleeping at same time, Not taking proper amount of sleep, When he /she wake up at that time he/she having negative mood they took time for activeness. In many studies they mention there is deficiency of Melatonin which effect on sleep cycle.⁸

Pramod Samota et, In this study concluded that sleep disorders are more common in cerebral palsy which adversely effect on quality of life.¹⁴

Zahra Ghorbanpour et al, in this study due to lower family health problem children facing sleeping problem so it is necessity of more attention about sleep disorder.¹⁵

Cerebral palsy children having many problems like poor attention, Poor /absent muscle tone , difficulty in initiating and maintaining sleep, Sleep-wake transition and sleep breathing disorder were the most frequently identified problem. Active epilepsy was associated with the presence of a sleep disorder.²¹

It is necessity of more attention about sleep disorder and family health problem in children with cerebral palsy.¹⁵

Chi-Man Kuok et al, in this study significant interaction between sleep problem and development were noted mostly in the preterm group.¹¹

Michiko Matsuoka et al, In this study children with developmental delay having poor sleep quality which may affect academic to be aware of age-related differences in sleep problem in children with developmental delay.¹⁹

Children with developmental disorder have significantly higher total Children Sleep Habits Questionnaire scores, they are bedtime resistance, and Sleep onset is delay day time sleepiness worsened with increasing age in children with developmental disorder.¹⁴

Chaire A Hoffmire et al. J Clin Sleep Med in this study sleep problem appear to be correlation with comorbidities.¹⁸

In down syndrome, there are differential correlates for the various sleep problem in down syndrome which warrant attention when assessing behavioural problems and in treatment planning for ageing with down syndrome.¹⁶

5. CONCLUSION

Prevalence of sleeping disorder are maximum in Autism that 55%, and also in cerebral palsy, developmental delay, down syndrome, it is 48%, 38% , 20%, respectively.

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7. REFERENCES



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