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IMPACT OF PLANNED FEEDING INTERVENTIONS ON NUTRITIONAL STATUS, AMONG CHILDREN WITH CEREBRAL PALSY HAVING FEEDING DIFFICULTIES.

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Abstract:
Children with cerebral palsy who have feeding problems are at risk of aspiration and malnutrition. The study examined the effects of Planned Feeding Interventions on Nutritional Status among Cerebral Palsy children with feeding difficulties. This study used Weidenbach's Theory modified. Study methodology was evaluative. The current study used a prospective and quasi-experimental pre-test and post-test design. Prospective quasi-experimental studies use baseline measurements calculated prospectively, then implement an intervention and collect more measurements. Purposive sampling was used to select 100 children with cerebral palsy from 3 to 12 years old who were attending paediatric and physiotherapy OPD or admitted to paediatric wards The tool has five sections. demographic data, detailed medical history and clinical findings, observation checklist for feeding difficulties, anthropometric measurement, observational checklist for feeding practices (eating and drinking skill), and the Caregiver Priorities questionnaire tool. Research requires data collection. Data was collected for one year with written permission from the Medical Director and consent from all participants' parents/caregivers. The study guaranteed data confidentiality. 100 purposively sampled participants who met the selection criteria were divided into 10 batches for data collection. Data was collected from 9am to 4pm. The researcher explained the study's purpose to parents and selected children with various forms of cerebral palsy aged 3 to 12 old. The investigator collected demographic data and child training assessment data from records and parents. (Detail history was collected), Initial Assessment of feeding difficulties and their causes, Nutritional Status, and Lifestyle pattern. The training programme was administered two days a week for eight 45-minute sessions. Care givers were instructed to follow module information on child positioning, eating and drinking skills, menu-planning, oral motor exercise, and more. Post-test data (Interventional efficacy) after 40 days. 3 months, 6 months, and 1 year were analyzed to determine the intervention's. Demographic, medical condition, and CP type analysis was used frequency, percentage, mean, and standard deviation. Mean and standard deviation of feeding difficulties and feeding practices of CP children before and after planned feeding interventions. Chi square test was used to analyse the relationship between pre- intervention nutritional status with selected demographic variables.
Result: Reveals repeated measures of post-test follow up of level of nutritional status of CP children. It clearly shows steady progress in the anthropometric measurement of CP children over a period of one year. The repeated measures analysis prove that all variables are significant . Hence, it also proves that planned feeding interventions were effective among CP children. Hence $H0_1$ is rejected.
Conclusion: By addressing the underlying causes of feeding difficulties, such as poor oral motor control or swallowing difficulties, these interventions can help to increase the child's intake of nutrients, leading to improved nutritional status and overall health. Therefore, it is recommended that children with cerebral palsy and feeding difficulties receive a comprehensive evaluation by a multidisciplinary team and a tailored feeding intervention plan to optimizetheir nutritional status.

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INTRODUCTION

"**Their ability is stronger than their disability"**

Cerebral palsy, a major childhood disability, is a non-progressive disorder that results from damage to parts of the immature brain that affect purposeful movement and coordination.

The incidence of cerebral palsy is about 1.5 to 4 per 1000 live birth. It is estimated that in Ireland approximately 1 in 546 children are born with Down syndrome. Up to 50% of typically developing children and up to 80% of those who have developmental disabilities have feeding problems. These may evolve into a feeding disorder, with potential effects on psychomotor and neurologic development.

Children with cerebral palsy often smaller than normal children their age, this is related to chronic malnutrition, so it is important to individual determine their needs based on their growth parameter, activity type of cerebral palsy and other conditions such as feeding difficulties, grooming, toilet training and illness.

This is a condition that lasts a lifetime, but with proper treatment, education, and access to technology, each child's potential may be maximized by increasing their functional capabilities and their overall quality of life. It is essential for families to have an understanding of the wide range of cerebral palsy and how to help their children overcome the common functional challenges they face in gait, posture, and most importantly, feeding. These challenges have a direct impact on the children's nutrition, growth, and improvement in lifestyle during their formative years.

During clinical practice the researcher has found that mother's knowledge regarding feeding pattern of disabled children was inadequate. The researcher noticed the anguish of a close relative's kid with cerebral palsy and the challenges that child's parents had while feeding their son. As a result, the researcher decided to perform a study on customized intervention options and to evaluate their outcome measures in terms of nutrition, growth, and lifestyle improvement in children with cerebral palsy. It helps nurses to know in which area of feeding problems or difficulties, so that more importance can be given to those area.

Need of the study: The cerebral palsy is the most frequent permanent physical disability of childhood. Its incidence is estimated to be 3.3 / 1000 live birth. 10% of infants have neurologic defects. The incidence of cerebral palsy among all premature infant varies but approximately 5 to 10 %.[11]

In United States, approximately 10,000 infants and babies are diagnosed with cerebral palsy each year and 1200-1500 is diagnosed at preschool age. Prevalence of cerebral palsy is best calculated around the school entry age of about 6 yrs, the prevalence in United States is estimated to be 2.4 out of 1000 children The Centers for Disease Control and Prevention's (CDC) National Center on Birth Defects and Developmental Disabilities (NCBDDD), is conducting a public awareness campaign called "Learn the Signs. Act Early." The campaign aims to educate parents about childhood development, including early warning signs of autism, cerebral palsy, and other developmental disorders, and encourages developmental screening and intervention

Magnitude of the problem in India

The incidence of cerebral palsy is 2-2.5 cases per 1000 live births.[7]

There are an estimated 25 lakhs children and people in India with cerebral palsy, making it the commonest cause of disability.

Children with cerebral palsy have multiple feeding problems both due to physical and functional, disabilities with child as well as due to lack of awareness on the part of parents. Therefore, caloric intake and anthropometric indicators of these children are significantly lower than normal children. There has been no significant study available in medical literature in this aspect for which the present study has planned.

PURPOSE OF THE STUDY

Children with cerebral palsy have many feeding challenges owing to physical and functional limitations in the children as well as a lack of parental awareness. As a result, these children's caloric intake and anthropometric markers are much lower than those of typical youngsters. There has been no substantial investigation in the medical literature in this issue, which the current study intends to address.

OBJECTIVES

1. To identify the causes of feeding difficulties among children with cerebral palsy.
2. To strategize planned feeding interventions according to the individual functional feeding difficulties.
3. To assess and compare, selected parameters of nutritional status among children with cerebral palsy before and after planned feeding interventions.

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HYPOTHESES:

Null hypothesis

- $H0_1$: -There will be no significant difference between before and after the planned feeding interventions regarding nutritional status among children with cerebral palsy having feeding difficulties.

LACUNAE (RATIONALE) IN OUR UNDERSTANDING IN THE RELATED SUBJECT:

Very few study is available on feeding dysfunctions and their individualized causes among children with cerebral palsy in this part of country, with special focus on individualized intervention strategies and to assess their outcome measures in term of nutrition and growth.

EXPECTED OUTCOME:

The investigator of the current study will determine the magnitude and nature of feeding difficulties as well as their individual causes in children diagnosed with cerebral palsy. Additionally, the investigator will evaluate individualized intervention strategies to assess the children's outcome measures in terms of nutrition, growth development, and lifestyle improvement.

RESEARCH METHODOLOGY

In the present study Research Approach used was Observational cum interventional approach.

Research Design: Prospective and one group pre-test post-test design. The **Setting of the was at** Pediatric and physiotherapy OPD or pediatric wards of selected hospital, The investigator had adopted a Non-probability purposive sampling. The sample consisted of 100 Children with CP from 3-12 years of age. Those who fulfil the criteria for inclusion in the study.

Inclusion criteria: Children with CP from 3-12 years of age and Informed consent of care givers/ parents.

Exclusion criteria were: children with serious sickness or active infectious diseases, children with any major congenital malformations.and Spinal muscular atrophy, Myopathies, Chromosomal anomalies, Mental retardation, recent head injuries. The tool includes **six** sections. i.e**.**

Structured interview schedule had the following sections. Bio data of the child & Socio-demographic data Medical history and examination & Functional class of Cerebral Palsy, Neurological deficits recorded in patient's file, Diagnostic test done if any and its report. 'Conforming' diagnosis of cerebral palsy. Observation checklist related to feeding difficulties Anthropometric Measurement Observational Checklist For Feeding Practices Data collection strategy Formal administrative permission was obtained from the Medical Director

i. Permission from the institutional research committee and ethical committee.
ii. Participants was selected according to the selection criteria.
iii. Informed consent was taken from each parents.

Result:

Results revealed that that majority of the participants (50%) of the belonged to age group of 7-10 years. Majority of the participants (55%) were males and (45%) were females. Majority of the participants (60%) from Hindu community, regarding types of family majority of the participants (70%) of them belongs to nuclear families. Majority of the fathers (30%) of them were studied up to graduation, majority of the mothers (30%) of them were studied up to graduation, majority of the fathers (41%) of them were skilled workers and none of them were unemployed. Majority of the mothers (29 %) of them were skilled workers. In case of family income, majority of the participants (34%) of family income between 10001-15000. regarding housing majority of the participants (75%) have pacca house. Majority of the participants (48%) were second child, Majority of the participants (70%) were vegetarians and (30%) of the participants were non vegetarians. Majority of the participants (50%) have running tap facility and (13%) depend on water supply through tank. Majority of them (60%) have open drainage All the participants (100%) of them having feeding problem. majority of the participants (98%) of the child need assistant while feeding and only (2%) required no assistance.

Result revealed that majority of the samples (32%), had infection as the reason of the complication of delivery, majority of the sample (77%) majority of the participants had LSCS. (44%) of the participants had prematurity as Complication during delivery. (39%) %) of the participants had a duration of labour of 6 hours, (31%) of the participants had a birth weight between 1.40-1.60 Kg (44%) of the participants had a reason for NICU stay was prematurity and only 17% of the Child not cried immediately after birth. Majority 35% were having seizures, 12%

were having digestive issues. Among all the past medical history. (35%) were having convulsions, (53%) were having spastic cerebral palsy, 19% were having hypotonic, 16% had dystonic, and only 12% had mixed CP.

Out of a total of 100 participants, 64% children had a moderate level of feeding difficulties, It reveals the mean and SD pre-test level of anthropometric measurements of CP children, and the mean height of the children was 112.1 ± 17.6. The mean weight of the children was 17.2 ±6.1, and the mean head circumference was 50.71± 6.90. The mean midarm circumference was 15.8±2.6. The mean knee height was 32.1±6.8, the mean skin fold thickness was 5.3±2.8, and the mean BMI was 13.6±2.8. This data clearly reveals that CP children were malnourished.

Comparing the level of feeding difficulties of children with cerebral palsy before and after planned feeding interventions. The mean value of feeding difficulties before the intervention was 65 with a standard deviation of 13.74. The mean value of feeding difficulties after the intervention was 29, with a standard deviation of 5.78. The value of t that was computed was 7.03. Hence, it proves that planned feeding interventions were effective among CP children.

Demographic variables like education of the father and education of the mother, occupation of the father and occupation of the mother, and family income show that there is a significant association between the pre-intervention level of nutritional status and selected demographic variables, while other variables do not.

The study found that planned feeding interventions improve nutritional status in cerebral palsy children with feeding difficulties. A paediatrician, dietitian, occupational therapist, and speech-language pathologist work together to create an individualized feeding plan.

IMPLICATIONS

Nursing service

Nutritional assessment and monitoring: Children with CP and feeding difficulties are at risk of malnutrition, which can lead to poor health outcomes. It is essential to conduct a nutritional assessment and monitor the child's nutritional status regularly. The nursing service provider can work with a registered dietitian to develop a nutrition plan that meets the child's individual needs.

Feeding interventions: Children with CP and feeding difficulties may require specialized feeding interventions, such as tube feeding or modified diets. Nursing service providers can work with the child's healthcare team to develop and implement a feeding plan that meets the child's nutritional needs.

Oral care: Children with CP and feeding difficulties are at risk of developing oral health problems due to poor oral hygiene and reduced saliva production. Nursing service providers can educate caregivers on the importance of oral care and provide guidance on proper oral hygiene practices.

Education and support: Nursing service providers can provide education and support to caregivers on managing feeding difficulties, improving nutritional status. They can also provide information on available resources, such as support groups and community services, to help caregivers navigate the challenges of caring for a child with CP.

Collaboration with other healthcare providers: Nursing service providers should work closely with other healthcare providers, such as physical therapists, occupational therapists, and speech therapists, to provide coordinated care for children with CP and feeding difficulties. This interdisciplinary approach can help address the complex needs of these children and improve their overall healthand well-being.

Nursing Education

Nutritional status are important factors that affect the health and well-being of children with cerebral palsy (CP) who have feeding difficulties. As a result, nursing education should address the following implications:

Understanding the feeding difficulties of children with CP: Nurses should have a comprehensive understanding of the feeding difficulties that children with CP experience, including their nutritional status.

Knowledge of appropriate feeding techniques: Nurses should have knowledge of appropriate feeding techniques that will assist children with CP in getting adequate nutrition. This may include positioning, selection of food consistency and texture, feeding utensils and adapting their feeding environment.

Collaboration with interdisciplinary teams: Nurses must work collaboratively with interdisciplinary teams, including dietitians, occupational therapists, physical therapists, and speech therapists, to ensure the nutritional needs of children with CP are met.

Assessment and monitoring of nutritional status: Nurses should be skilled in assessing and monitoring the nutritional status of children with

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CP, including weight and height measurements, serum micronutrient levels, and food intake records.

Developing feeding plans: Nurses should be able to develop individualized feeding plans that address the specific needs of each child with CP, taking into consideration their nutritional requirements and feeding difficulties.

Providing education and support to families: Nurses should provide education and support to families of children with CP to promote nutritional status. This providing information on appropriate feeding techniques, nutritional supplements, and referrals to interdisciplinary teams for additional support.

Nursing Administration

Nutritional status are important considerations for nursing administration when it comes to caring for children with cerebral palsy who have feeding difficulties. Some implications of this include:

Collaborating with a multidisciplinary team: Nursing administrators should work closely with other healthcare professionals such as dietitians, speech therapists, and occupational therapists to develop a comprehensive care plan that addresses the child's nutritional needs and feeding difficulties.

Regular monitoring of nutritional status: Nursing administrators should monitor the child's weight, height, and nutritional intake regularly to ensure that they are receiving adequate nutrition. This is especially important for children with cerebral palsy who may have difficulty swallowing or chewing, which can affect their ability to take in enough calories and nutrients.

Implementing individualized feeding plans: Nursing administrators should work with the child's caregivers and healthcare team to develop individualized feeding plans that take into account the child's specific needs and feeding difficulties. This may involve modifications to the texture and consistency of food, the use of feeding tubes, or other feeding techniques.

Educating caregivers: Nursing administrators should provide education and support to caregivers on proper feeding techniques, nutrition, and the importance of maintaining a healthy weight and nutritional status for children with cerebral palsy.

Monitoring and addressing quality of life issues: Nursing administrators should be aware of the impact that feeding difficulties and nutritional status can have on a child's quality of life and work with the healthcare team to address any related issues. This may involve addressing pain or discomfort during feeding, providing support for anxiety or behavioral issues related to feeding, and addressing any other issues that may affect the child's well-being.

Nursing Research

Nutritional status an important factors that can have significant implications for children with cerebral palsy (CP) who have feeding difficulties. As a nurse, here are some research implications to consider:

Conducting a comprehensive assessment: It is essential to conduct a comprehensive assessment of the nutritional status of children with CP who have feeding difficulties. This assessment should include a thorough evaluation of their feeding difficulties, including the type and severity of their difficulties, as well as an assessment of their nutritional status.

Identifying risk factors: Researchers can investigate the risk factors that contribute to poor nutritional status among children with CP who have feeding difficulties. Possible factors that can be explored include the severity of the CP, the type of feeding difficulties, the child's age and gender, socioeconomic status, and access to healthcare.

Developing effective interventions: Research can focus on developing effective interventions to improve the nutritional status of children with CP who have feeding difficulties. Possible interventions can include nutritional counseling, modified feeding techniques, dietary supplements, and multidisciplinary care approaches that involve healthcare professionals from different disciplines.

Examining the impact of interventions: Researchers can evaluate the impact of interventions designed to improve the nutritional status of children with CP who have feeding difficulties. This can involve measuring changes in nutritional status before and after the intervention, as well as assessing the child's overall health and well-being.

Identifying gaps in knowledge: Research can also identify gaps in knowledge regarding the nutritional status of children with CP who have feeding difficulties. This can involve identifying areas where further research is needed to improve our understanding of the underlying causes of feeding difficulties and their impact on the child's health and well-being.

Conclusion

The study concluded that planned feeding interventions appear to be effective in improving

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the nutritional status of children with cerebral palsy who have feeding difficulties. These interventions better to involve a multidisciplinary team approach that includes a paediatrician, dietitian, occupational therapist, and speech-language pathologist to develop an individualized feeding plan.The feeding plan may include modifications to the texture and consistency of food, use of feeding utensils, positioning during feeding, and oral motor exercises. By addressing the underlying causes of feeding difficulties, such as poor oral motor control or swallowing difficulties, these interventions can help to increase the child's intake of nutrients, leading to improved nutritional status and overall health. Therefore, it is recommended that children with cerebral palsy and feeding difficulties receive a comprehensive evaluation by a multidisciplinary team and a tailored feeding intervention plan to optimize their nutritional status

BUDGET (FELLOWSHIP, CONSUMABLES, EQUIPMENTS ETC.): The investigator had its own budget

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