Frequency and factors of malnutrition in children with cerebral palsy presenting in a tertiary care hospital

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Abstract

Background: Cerebral palsy (CP) is one of the common causes of physical disability in children. The worldwide prevalence of CP is approximately 2–2.5 per 1,000 live births. Malnutrition is common in cerebral palsy patients.
Objective: To determine frequency of malnutrition in children with cerebral palsy, and factors leading to malnutrition in these children.
Methodology: This cross sectional study was conducted at pediatric department of the Sheikh Zayed Hospital from 1st January 2017 to 31st December 2018. Patients with age of 1-15 years of either gender and having cerebral palsy as per operational definition were included and children with other congenital malformations were excluded. The was entered and analyzed by using SPSS version 17.
Results: In our study, mean age was 9.53 ± 3.64 years, with 64.8% male. Frequency of malnutrition in children with cerebral palsy was 73.2% while frequency of factors leading to malnutrition in children with cerebral palsy were recorded as 72.13%, drooling 77.05% swallowing difficulty 53%, speech and communication 20.22%, vomiting and choking with food 56.28%.
Conclusion: The frequency of malnutrition is high among children with cerebral palsy. So, it is recommended that children, who present with cerebral palsy, should have early detection and intervention to prevent all the complications of malnutrition.
Keywords: Cerebral palsy, Malnutrition, children

Introduction

Cerebral palsy (CP) is described as a group of disorder of the of movement and posture, that are attributed to non-progressive lesions to developing brain (fetal or infant).[1] It affects 2.27/1,000 children.[2]

Malnutrition is a major problem in cerebral palsy children. Frequency of malnutrition in cerebral palsy patients in our country is 85%[3] but in other countries 35%.[4,5] Malnutrition has a great impact on health of these patients; including psychological and physiological function, their utility in society in a better way.[6] This fact is well established that malnutrition has an effect on the health of these children at an early stage of their development.[5]

Malnutrition in children with cerebral palsy is usually due to feeding problems and less nutrient in diet. Pravelence of feeding problems is high in these children, out of which oromotor dysfunction occurs in 75% of cases. The commonly observed oromotor dysfunction are drooling, swallowing difficulty, and speech problems. Other causes of malnutrition in such children include constipation, aspiration pneumonia, prolonged feeding times (3h/day), vomiting, choking with food, feeding as stressful and unenjoyable.[3] There is higher incidence of malnutrition in the lower socio-economic class.[7] The severity of malnutrition is proportional to severity of cerebral palsy in children.[6]

Rationale of this study was that data showed variability regarding frequency of malnutrition in cerebral palsy children. Moreover, in developed countries, early recognition of the risk factors results in early intervention that ultimately improve nutritional status, but in developing countries a very little attention is given to these children and their problems. This study will help to find out the frequency of malnutrition and contributing factors in children with cerebral palsy, and help in early detection of these problems and ultimately help to improve health status of these children.

The objectives of study were to determine frequency of malnutrition in children with cerebral palsy and factors leading to malnutrition in these children.

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Methodology

This cross sectional study was conducted at department of the Paediatrics, Sheikh Zayed Hospital from 1st January 2017 to 31st December 2018.over all 250 patients were enrolled as per inclusion criteria by Non-probability purposive sampling.

Inclusion Criteria: All children with cerebral palsy as per operational definition, age between 1 to 15 year, both gender.

Exclusion Criteria: Patients having history of congenital malformations that would independently affect food intake e.g. cleft lip, cleft palate, spina bifida.

Cerebral Palsy: It was labelled on the basis of any history of brain insult either before or during the time of birth or during first 2 years of life and on examination with delayed motor development, altered tone (hypo or hyper), exaggerated deep tendon reflexes and Babinski sign.

Malnutrition: It was defined as weight less than 90% of expected for that specific age (as per modified Gomez classification)

Factors Leading to Malnutrition
Drooling: It is the unintentional dribbling of saliva from mouth.

Swallowing in coordination: Difficulty in closing the mouth, moving the tongue to control or push food from the front to the back of oral cavity. Weak muscles of the face allow food to collect in the oral cavity.

Speech and communication problems:
Problems of expressing or describing thoughts, feelings and inability to understand instruction.

Vomiting: History of expulsion of the contents of stomach through the mouth and sometimes the nose at least twice in a day.

Choking with food: History of violent and involuntary cough, gurgle, vomiting or limited ability to speak during feeding or eating at least twice in a day.

Data Collection Procedure: A total of 250 patients fulfilling the inclusion and exclusion criteria presenting to pediatric unit were enrolled in this study. After taking informed consent from parents demographic data including name, age, gender, address of the patients were noted. Weight of all patients were recorded and labeled as malnourished fulfilling operational definition.

Detailed history was taken to evaluate the underlying risk factors responsible for malnutrition like drooling, swallowing difficulty, speech and communication problems, constipation, admission with aspiration pneumonia, vomiting, and choking with food. All this information was taken on a pre-designed proforma.

The collected data was entered and analyzed by using SPSS version 17.0 software package.

Results

In this study, mean age of patients was 9.53 ± 3.64 years, and 64.8% were male. Age distribution of the study showed that 162(64.8%) were all 11-15 years, 35 (14%) was in age group 6-10 years and 53 (21.2%) were in age group 1-5 years.

Frequency of malnutrition in children with cerebral palsy is shown in figure 1.

Figure I: Frequency of malnutrition in children with cerebral palsy.
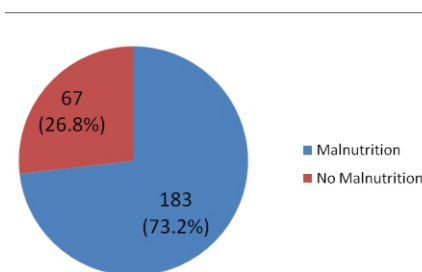
Frequency of factors leading to malnutrition in children with cerebral palsy were evaluated and recorded in Table 1.

Figure I: Frequency of malnutrition in children with cerebral palsy.

Factors	No. of patients	Percentage
Drooling	132	72.13
Swallowing difficulty	141	77.05
Speech and communication	97	53
Vomiting	37	20.22
Choking with food	103	56.28

(**Note:** Children had co risk factors also.)

Discussion

Cerebral palsy (CP) is amongst the common causes of physical disability in children. The prevalence of Cerebral Palsy is 2–2.5 per 1,000 live births worldwide.[8] Cerebral palsy children have many issues and one of the major issues is malnutrition [9]. In severe forms of cerebral palsy, nutritional risks are well described fact. Initially it was accepted by authorities that every cerebral palsy child has small size and low weight. But now it is very clear that poor nutrition is a feature of CP that can be altered and patients can get improvement in this aspect. In our study, mean age was calculated as 9.53 ± 3.64 years, 162 (64.8%) male and 88 (35.2%) were females, frequency of malnutrition in children with cerebral palsy reveals 183 (73.2%) while 67 (26.8%) had no findings of malnutrition, while frequency of factors leading to malnutrition in children with cerebral palsy were evaluated and recorded as 132 (72.13%) had drooling, 141 (77.05%) had swallowing difficulty, 97 (53%) had speech and communication, 37 (20.22%) had vomiting and 103 (56.28%) had choking with food, during this study we recorded that children had >1 risk factors also for malnutrition.

Our study results showed frequency of malnutrition in CP is 73.2% which is comparable to another national study showing this frequency in 85%.[3] Regarding the factors that lead to malnutrition in CP patients are comparable with Malik BA[3] study who described drooling 79%, swallowing difficulty 73%, and speech problems in 44%, vomiting 22%, choking with food 56%.[3]

In developed countries, many interventions are available, ranging from feeding with gastrostomy tube to training of caregiver training. In resource-deprived countries ours Pakistan both above mentioned options are not viable as not commonly available and effectiveness not properly evaluated.[10] Identifications of factors that contribute to malnutrition can help in better management and ultimately prevention of malnutrition.

Conclusion

The frequency of malnutrition is very high among children with cerebral palsy. So, it is recommended that every setup should have surveillance in order to know the frequency of the problems, sort out for malnutrition, and sort out for factors leading to malnutrition.

Authors Contribution: ZM: Conception of work, revising and final approval. **MS:** Interpretation of data, drafting and final approval. **RI:** Conception of work, drafting and final approval. **MAZ:** Conception of work, revising and final approval. **ZMB:** Acquisition of data, revising and final approval. **RA:** Design of work, revising and final approval.
All the authors gave final approval for publication and agreed to be accountable for all aspect of work.

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