

# Knowledge, attitude and practice (KAP) among pediatricians about gastrostomy tube feeding in cerebral palsy children

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## Contributions

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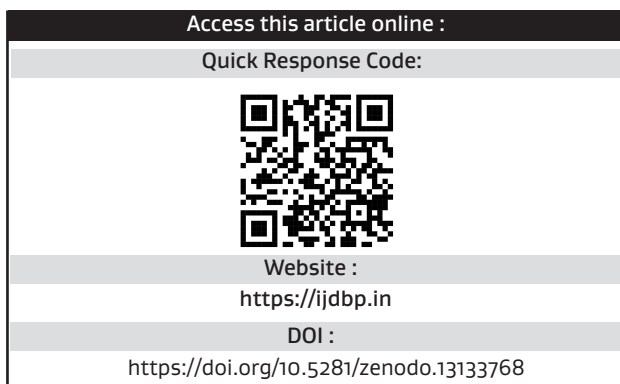
## Abstract:

The report a longitudinal, prospective, multicentre cohort study designed to measure the outcomes of gastrostomy tube feeding in children with cerebral palsy (CP). Knowledge, attitude and practice method of tube feeding is based on the likely timespan that is needed for tube supplementation, the availability of an experienced surgeon, recommendations by the treating doctor, and specific symptoms of the child.

**Keywords :** cerebral, gastrostomy, rehabilitation, nutritional

## Introduction :

Feeding problems are very common in children with cerebral palsy. About 30 – 80% of disabled children feed with difficulty because they are at risk of oral, pharyngeal, or oesophageal dysplasia due to oral motor dysplasia [1-3]. So nutritional rehabilitation is of prime importance in these children, as failure to do so may result in poor nutritional status, growth failure, chronic aspiration, esophagitis, and respiratory infections [1,2]. Multiple approaches such as sensorimotor stimulation, positioning, food thickness, and



caloric supplementation have been used in children with growth failure [4]. For children with moderate to severe aspiration, malnutrition-related oral pharyngeal dysplasia, and GER, surgical interventions with a gastrostomy tube or jejunostomy tube may be necessary to improve nutritional status and reduce the risk of chronic aspiration [5,6]. The method of tube feeding is based on the likely timespan that is needed for tube supplementation, the availability of an experienced surgeon, recommendations by the treating doctor, and specific symptoms of the child.

Gastrostomy tube feeding has been used increasingly to overcome oromotor dysfunction in children with severe neurological disabilities

by providing nutrients, medications, and fluids directly into the stomach. It has been a standard of care for children with neurological diseases, especially cerebral palsy, for nutritional rehabilitation in Western countries with incidence ranging from 6%-22% [7]. However, this modality is underutilized in India for nutritional rehabilitation of children suffering from cerebral palsy. So this study was conducted to assess knowledge, attitudes, and practices among pediatricians/ Pediatric neurologists for gastrostomy tube feeding of CP patients and to understand the hindrances in this practice.

**Materials & methods:**

A cross-sectional, descriptive study was undertaken. 500 pediatricians, through Indian Academy of Paediatrics mailing lists, were approached for the study through emails, calls, and messages. KAP toward G tube feeding in CP patients was assessed using a pre-validated questionnaire. A self-administered 21-item questionnaire was used for data collection. In addition to the 7 questions on demographic data, 6 questions explored the knowledge towards G tube, 4 questions focused on attitude, and 4 questions addressed practice towards G tube feeding in CP patients. The questionnaire was pre-validated through 50 participants. Responders were asked to answer in multiple choice questions format in Google Forms. The choices for answering questions about knowledge, attitude, and practices were according to the Likert scale as given below:

1. Strongly disagree
2. Disagree
3. Neither disagree nor agree
4. Agree
5. Strongly agree

**Statistical Analysis:**

Descriptive statistics were used to illustrate demographic characteristics. Categorical variables were measured as percentages and was analyzed using the chi-square test/fisher exact test while continuous variables were expanded as mean and analyzed using student t-test. SSPS v.16.0 was used for data analysis.

**Results:**

A total of 70 pediatricians out of 500 participated in our study. Out of this, 51(72.9%) were females and 49(27.1%) were males with the majority (70%) belonging to the age group of 26 to 40 years. 34(48.6%) of the participating pediatricians had an experience of less than 5 years while 11(15.7%) had an experience of above 20 years and of these, the majority had no fellowship in neurology (81.5%). (Table 1)

**Table 1: Demographic characteristics of participating paediatricians.**

Gender	Frequency (%)
Males	29 (41.4)
Females	41 (58.6)
Age range	Frequency (%)
26-40 years	49 (70)
40-55 years	13 (18.57)
>55 years	8 (11.43)
<b>Mean age (years)</b>	<b>39.04±11.27</b>
Speciality	Frequency (%)
Pediatric neurology	13 (18.5%)
None or others	57 (81.5%)

Setting of practice	Frequency (%)
Urban	67 (95.7)
Rural	1 (1.4)
Others	2 (2.9)

In this study, it was found that the majority

(58%) of these pediatricians attended less than 10 children with cerebral palsy while 9% attended more than 50 such children in a month.

<b>Table 2: Data of pediatricians practicing as CP physicians.</b>	
<b><u>Distribution of practicing years as an attending physician specifically for CP children</u></b>	
Years of practice	Frequency (%)
<5 years	40 (57.14)
5-10 years	12(17.14)
10-20 years	7(10)
>20 years	11(15.72)
<b><u>Distribution of CP children attended in a month</u></b>	
CP children in a month	Number of pediatricians (%)
<10	41(58.57)
10-20	16(22.86)
20-50	4(5.7)
>50	9(12.87)

<b><u>The frequency at which pediatricians attended a CP patient</u></b>	
	Number of pediatricians (%)
As needed	32(45.71)
Once per year	3(4.29)
Twice per year	12(17.14)
>twice per year	23(32.86)
<b><u>Age at which CP children are referred:</u></b>	
Age range	Number of paediatricians (%)
<2 years	36(51.43)
2-5 years	33(47.14)
6-10 years	01(1.43)
>10 years	00

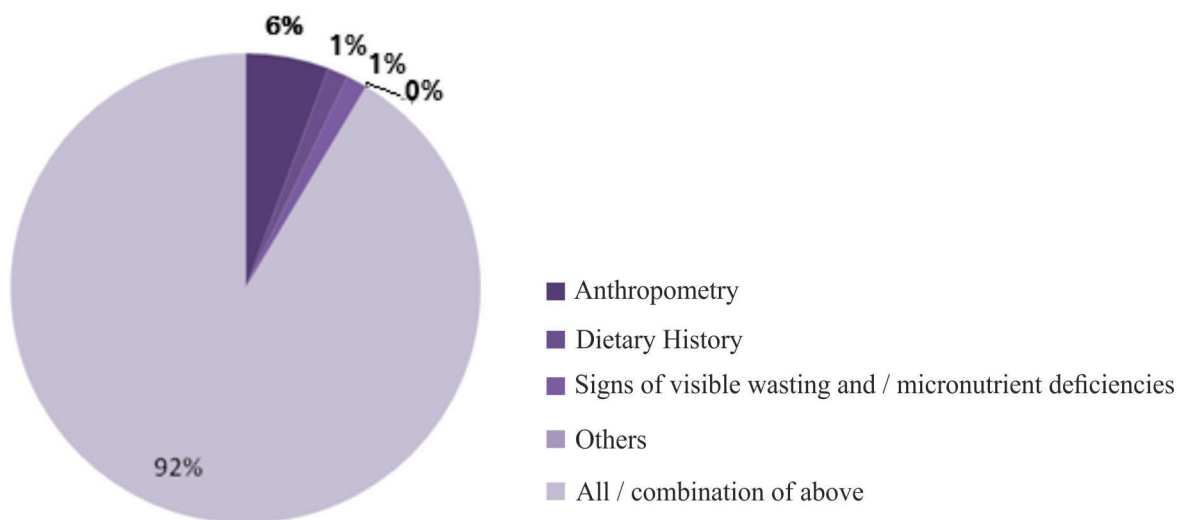


Figure 1: Methods of identifying Malnutrition

**Table 3: Knowledge Question.**

QUESTIONS	Likert rating				
	5.(Strongly agree)	4(Agree)	3(Neither disagree nor agree)	2.(Disagree)	1(Strongly disagreed)
Number of paediatricians (%)					
1. Malnutrition and growth failure further increase the chances of neurodevelopmental disability and mortality in CP children	50(71%)	20(29%)	0(0%)	0(0%)	0(0%)
2. Is Feeding difficulty a common problem in children with Cerebral Palsy?	47(67%)	23(33%)	0(0%)	0(0%)	0(0%)
3. Cause of feeding difficulty in children with Cerebral Palsy					
Sucking and swallowing problems	46(66%)	23(33%)	1(1%)	0(0%)	0(0%)
Oral motor dysfunction	24(34%)	39(56%)	6(9%)	1(1%)	0(0%)
Unable to self-feed due to motor impairment	15(21%)	28(40%)	17(2%)	0(0%)	0(0%)
Others: vomiting, regurgitation, tongue difficulties	39(56%)	15(21%)	12(1%)	4(6%)	0(0%)
4. Do you think the anthropometric assessment is important in CP patients for identifying malnutrition and thus indirectly, feeding difficulty?	30(43%)	27(39%)	12(1%)	1(1%)	0(0%)
5. Do you think gastrostomy tube feeding is important in cerebral palsy children?	23(33%)	26(37%)	15(2%)	4(6%)	2(3%)
1. Out of the following feeding methods rate which do you consider is the most effective mode for feeding in severely disabled child?					
A. Gastrostomy tube feeding	26(37%)	26(37%)	11(1%)	5(7%)	2(3%)
B. Orogastric/nasogastric tube feeding	10(14%)	29(41%)	18(2%)	8(11%)	2(3%)
C. Oral appliances /feeding devices	10(14%)	16(23%)	26(3%)	17(2%)	1(1%)
D. Others oral sensori-motor, neuromuscular electric stimulation, positioning	15(21%)	20(29%)	24(3%)	10(1%)	1(1%)

**Table 4: Attitude Questions.**

QUESTIONS	Likert rating				
	5	4	3	2	1
	Number of pediatricians (%)				
<b>1. Which CP patients would you consider for G tube feeding?</b>					
A. All patients	8(11%)	7(10%)	18(2%)	24(4%)	13(19%)
B. Moderate to severe motor impairment (spastic quadriplegia)	24(34%)	30(43%)	6(9%)	8(11%)	2(3%)
C. Chronic aspiration	28(40%)	29(41%)	4(6%)	4(6%)	5(7%)
D. Malnutrition and/or growth failure	14(20%)	39(56%)	11(15%)	15(21%)	1(1%)
<b>2. Gastrostomy tube feeding can be the better alternative for nutritional rehabilitation in severely disabled CP children with malnutrition</b>	31(44%)	27(39%)	7(10%)	4(6%)	1(1%)
<b>3. What are the hindrances according to you in practicing G tube feeding in CP children?</b>					
A. Parent's denial	26(37%)	33(47%)	7(10%)	2(3%)	2(3%)
B. Nonavailability of pediatric surgeon	10(14%)	18(26%)	14(20%)	23(33%)	5(7%)
C. Nonavailability of G tube	2(3%)	14(20%)	20(29%)	19(27%)	15(21%)
D. Due to the risk of its complications	6(9%)	23(33%)	21(30%)	12(17%)	8(11%)
<b>4. Do you consider gastrostomy feeding in CP children a safe mode of treatment?</b>	15(21%)	38(54%)	14(20%)	3(4%)	0(0%)

**Table 5: Practice Questions.**

QUESTIONS	Likert rating				
	Number of Paediatricians (%)				
	5	4	3	2	1
<b>1. According to you, the most preferred way of Gastrostomy tube placement in CP patients?</b>					
A. Percutaneous endoscopic G tube (PEG)	17(24%)	10(14%)	4(6%)	4(6%)	0(0%)
B. Laparoscopic techniques for G tube placement	6(9%)	15(21%)	9(13%)	3(4%)	0(0%)
C. Open surgical techniques	9(13%)	9(13%)	7(10%)	10(14%)	0(0%)
<b>2. Comment on the complications you think is most important because of gastrostomy tube feeding</b>					
A. Wound infection/ bleeding/peristomal leakage	8(11%)	22(31%)	4(6%)	2(3%)	0(0%)
B. Tube Dysfunction	4(6%)	13(19%)	11(16%)	5(7%)	0(0%)
C. Gastroesophagealreflux leading to aspiration/respiratory complications	3(4%)	7(10%)	7(10%)	15(21%)	3(4%)
D. Others	2(3%)	4(6%)	15(21%)	15(21%)	5(7%)
<b>3. Do you think the outcome of this feeding modality (G tube feeding) is satisfactory in most CP patients</b>	11(16%)	20(29%)	2(3%)	2(3%)	0(0%)

**Discussion:**

A total of 70 pediatricians participated in our study among whom a combination of anthropometry, dietary history, and signs of visible wasting and/or micronutrient deficiencies was used by 91% of participating pediatricians while others used a single parameter out of these (Figure 1).

**M Thommessen et al** used weight for height, triceps skinfold thickness, and energy intake to assess malnutrition and found that 15% of the CP children had feeding problems.<sup>[2]</sup> In our study, 67% of pediatricians agreed very strongly that feeding difficulty is a very common problem in children with CP. Also, 71% of pediatricians very strongly believed that malnutrition and growth failure further increase the chances of neurodevelopmental disability and mortality in

CP children (Table 3). A study conducted by M Thommessen et al also found that 50% of children with cerebral palsy had feeding problems while 48% of them had growth retardation.<sup>[2]</sup> Sucking and swallowing problems were suggested as the main difficulty in feeding by 65% of our participants (Table 3).

About 37% of our participants strongly agreed that gastrostomy is important for feeding children with cerebral palsy while just 3% felt it least important. This might be due to the increasing awareness among pediatricians about these surgical modalities and better accessibility to such pediatric surgeries. In our study, 40% of pediatricians strongly suggested G tube insertion as the most effective feeding method in severely disabled CP children while orogastric/ nasogastric

tube feeding, oral appliances/feeding devices, oral sensorimotor, neuromuscular electric stimulation and positioning were very strongly supported by 14%, 14%, and 21% participants respectively (Table 3). According to a study by Brian Rogers et al, oral sensorimotor therapy may be effective in promoting oral motor function but has not been found to be effective in promoting oral feeding efficiency, pharyngeal phase function, caloric intake, and weight gain.<sup>[9]</sup> In our study, most of the participating pediatricians (40%) recommended gastrostomy tubes for CP children with chronic aspiration while other indications were spastic quadriplegia and malnutrition where the G-tube was very strongly recommended by 34% and 20% of the participants respectively. 20% of the participating pediatricians also think the outcome of G tube feeding is satisfactory in most CP patients (Table 4). A study by Peter B Sullivan et al also observed that among the 46 children with cerebral palsy included in their study, 91% had significant weight gain by 12 months.<sup>[9]</sup>

A major hindrance in practicing G tube feeding in CP children according to our participating pediatricians (37%) was denial by the parents. However, a study by **Brian Rogers** et al indicated that parents are usually highly satisfied after the procedure (80% to 90%).<sup>[10]</sup> Other common obstacles included non-availability of pediatric surgeons (14%), risk of complications (8%), and nonavailability of G tube (3%). Most of our participants (76%) consider gastrostomy feeding in CP children a safe mode of treatment (Table 4). Only 17% of my participants have advised/managed CP children with Gastrostomy tube feeding despite knowing the prevalence and complications of malnutrition in children with cerebral palsy. This might be due to the prejudiced notion against gastrostomy feeding, the lack of

clear guidelines, and parents' anxieties related to surgical intervention (Table 5). Though many studies relating to gastrostomy tube insertion are not available, it is found that the prevalence of gastrostomy in Swedish children with Cerebral palsy is as high as 22% which is the highest in Europe.<sup>[10,11]</sup> The most important complication because of gastrostomy tube feeding according to my participants was wound infection/bleeding/peristomal leakage (43%). Other complications included tube dysfunction (24%) and gastroesophageal reflux leading to aspiration/respiratory complications (14%) (Table 5). A study by Peter B Sullivan et al found that the major complications were minor site infection (59%) granulation tissue (42%), leakage (30%), tube blockages (19%), tube migration (7%), tube pulled out by the child (4%) and peritonitis (2%).<sup>[9]</sup>

### **Conclusion:**

Feeding difficulties, malnutrition, and its associated complications are very common in children living with cerebral palsy. Nutritional rehabilitation is of prime importance in these children, as failure to do so may result in poor nutritional status, growth failure, chronic aspiration, esophagitis, and respiratory infections. Hence from our study, it can be concluded that the KAP of our pediatricians regarding gastrostomy tubes for feeding children with CP is just satisfactory, and better awareness and well-defined guidelines should be formulated to improve the feeding and hence quality of life in children with cerebral palsy.

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**Nil.**

### **Conflicts of interest**

**There are no conflicts of interest.**

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