

Pseudo constipation: Prevalence and impact on exclusive breastfeeding practice in 0-6 months infants

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Abstract

Objective: Knowledge of pseudo constipation behaviour in exclusively breastfed infant's 0-6-month age is sparse. This benign temporary condition creates anxiety among parents and health care providers so as infants are put to diagnostic tests and treatments not required. Mothers self-introduce early add on feeds as of anxiety which may hinder the optimal infant feeding. The study aimed to:

1. To determine prevalence of pseudo constipation or infrequent stools in 0-6 months healthy breastfeeding infants.
2. To draw correlation of pseudo constipation and its impact on exclusive breastfeeding.

Methods: 100 mothers fitting into inclusion criteria were put to a set of questionnaire. Babies born with normal birth weight, passed meconium within 48 hours and predominantly breastfed, having satisfactory weight gain and no illness history in past 6 months were included. Babies with functional constipation, infant dyschezia, history suggesting of organic causes of constipation, failure to thrive, congenital anomalies or associated illness were excluded.

Results: The prevalence of pseudo constipation in 0-6months predominantly breastfed infants was 42%. All these infants had mean peak time duration of defecation ≥ 2 days and mean duration the symptom lasted in weeks was 5.43 weeks (SD-4.52, median-5). All infants had reduction in frequency of stools in second month of life (median-45 days). Among the infants who had pseudo constipation behaviour 64.3% of mothers had started early complimentary feeds <6month age. The comparison between the cases and control group showed to be highly significant with $\chi^2 = 21.23$, $df = 1$, $p < 0.001$.

Conclusion: Prevalence of pseudo obstruction behavior in exclusive breastfed infants is as high as 42%. Nearly 64.3% of mothers intervened this by adding complimentary feeds early <6-month age. We would like stress that knowledge of this temporary condition requiring no interventions would be a great benefit for pediatricians, pediatric surgeons, nurses and parents.

Keywords: Pseudo constipation, breastfeeding, complimentary feeds

Introduction

Breast milk adequacy remains continuous concern to all mothers exclusively breast feeding. Passing of stool daily is linked with adequate feed uptake by an infant. Exclusively breastfed infants pass usually 3 soft stools per day for first 4-6 weeks of life ^[1]. In the first week, the stool frequency peaked on day 5 (4.4 times a day) ^[2]. After 4-6 weeks of life the number of stools decrease progressively ^[3]. It was shown that it decreases to 1.2 times per day with an associated increase in stool diameter ^[4, 5]. However, a group of breastfed infants defecates very infrequently, usually once for a couple of days to weeks. This condition is referred to as ‘constipation’, ‘pseudo constipation’, ‘infrequent defecation’, or ‘infrequent bowel movements’ ^[6]. Infants in this group had no other medical problems ^[7]. These are normally fed, infants who follow normal growth charts and who are free any other additional problems ^[8]. These were a group of infants who were being breastfed and having painless and soft defecation. Although this condition is usually considered a normal and temporary condition, the lack of knowledge about this benign condition among mothers and many treating physicians the mothers are given many recommendations for themselves and their babies, for example, “drink orange juice”, “eat more vegetables and fibre”, “drink mineral water with laxative properties”, etc. Some breastfed infants with so-called constipation may even undergo medical treatments like laxatives to babies and medical examinations including large bowel enema, rectal manometry and rectal biopsy ^[6, 9].

It was observed in clinical practice that infrequent defecation was also linked with breastfeed inadequacy by mothers and treating doctors. To overcome this infant were started on multiple interventions like starting complementary feeds, formula feeds etc. along with giving predominant breastfeeds so as infrequent defecation behaviour is corrected. It's due to lack of knowledge of benign and self-limiting nature of the condition. There are various studies on stool frequency in breastfed infants. But it is surprising that very few data are available in the medical literature concerning the pseudo constipation behaviour prevalence and its impact in exclusively breastfed infants. There are no studies correlating pseudo constipation and the anxiety created in parents which provokes them for early introduction of complementary feeds <6 months age. Objectives of this study was:

1. To determine prevalence of pseudo constipation or infrequent stools in 0-6 months healthy breastfeeding infants.
2. To draw correlation of pseudo constipation and its impact on exclusive breastfeeding.

Materials and Methods

This is a retrospective study done on 100 healthy, term, normal birth weight, predominantly breastfed infants of 6 months age. The study was done in Government hospital Kodagu institute of medical sciences; Madikeri; Karnataka. Telephone numbers collected from case records of all mothers with child birth in month of June 2021, July and August 2021 admitted in obstetric ward for routine post natal care. Initial data like the contact number, sex of baby, mode of delivery, birth weight; any birth insult or congenital birth anomaly were collected. On completion of 6 months age the mothers of these babies were put on a set of telephone based follow up questionnaire. The data collected included questions on the defecation frequency in first month of life, time when mother started to notice reduction in stool frequency; mean peak time duration in days of passing each stool; the number of days in weeks the infrequent stool behaviour lasted; stool consistency; age in months when starting complementary feeds; stress and crying associated with defecation; having bloody stools or anal fissures; passing hard stools and satisfactory weight gain were documented.

Inclusion criteria

Babies born with normal birth weight, passed meconium within 48 hours and predominantly breastfed. Babies having satisfactory weight gain and no illness history in past 6 months.

Exclusion criteria: Babies fed on formula milk since birth or within 2 months of life, low birth weight babies (<2.5kg), hospital admissions, history suggesting infant dyschezia (straining, screaming, crying, and turning red or purple in the face while making an effort to defecate in a child that has daily soft stools).

History suggesting no optimal weight gain. History suggesting organic causes for defecation problems (Hirschsprung's disease, imperforate anus, tethered spinal cord, cerebral palsy, hypothyroidism, etc).

Statistical analysis

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test was used as test of significance for qualitative data.

Continuous data was represented as mean and standard deviation. Independent t test was used as test of significance to identify the mean difference between two quantitative variables.

Graphical representation of data: MS Excel and MS word were used to obtain various types of graphs such as bar diagram and Pie diagram.

p value (Probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

Statistical software: MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyze data.

Ethics committee approval

This study protocol was approved by the Ethics Committee of Kodagu Institute of Medical Sciences, Madikeri, Kodagu district, Karnataka.

Results

Out of 100 infants aged < 6 months whose information could be accessed, 66% were male and 34% were females. (Table 1, figure 1). 54% deliveries were via lower section caesarean section and 46% deliveries were normal vaginal deliveries. (Table 2, figure 2)

Table 1: Gender distribution

		Count	%
Gender	Female	34	34.0%
	Male	66	66.0%
	Total	100	100.0%

In the study 66% were males and 34% were female.

Table 2: Mode of delivery distribution

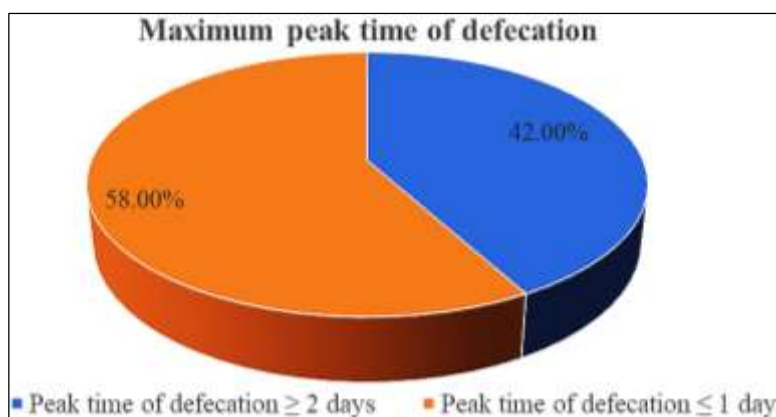
		Count	%
Mode of delivery	LSCS	54	54.0%
	NVD	46	46.0%
	Total	100	100.0%

In the study 54% were delivered by LSCS and 46% were delivered by Normal vaginal delivery.

Table 3: Maximum peak time of defecation in days

			Count	%
Group	Cases	Peak time of defecation \geq 2 days	42	42.0%
	Controls	Peak time of defecation \leq 1 day	58	58.0%
Total			100	100.0%

In the study 42% had Peak time of defecation \geq 2 days and 58% had Peak time of defecation \leq 1 day.

**Fig 3:** Pie diagram showing Maximum peak time of defecation in days

It was observed that 42% of infants had complaints of passing infrequent stool (\leq 1 stool for 2 days) i.e. maximum peak time defecation of \geq 2 days. The prevalence of pseudo constipation in predominantly breastfed infants in the study group was 42% (Table 3, figure 3). Mean Average Duration of symptoms among this pseudo constipated infants was 5.43 ± 4.52 weeks. (Table-4).

Table 4: Average number of weeks symptoms lasted among cases

Average Duration of symptoms lasted in weeks		
N	Mean	SD
42	5.43	4.52

Mean Average Duration of symptoms among cases was 5.43 ± 4.52 weeks.

It was observed that among the infants who had faced pseudo constipation history at least once in early 6 months of infancy nearly 64% of mothers had anxiety of breastfeed insufficiency and started on some or other form of complimentary feeds along with predominant breastfeeds. The group of infants with no symptoms only 19% of mothers had started complimentary feeds along with predominant breast feed. (Table-5, Figure 4).

Table 5: Initiation of Complimentary Feeds comparison between Cases and controls

		Group					
		Cases		Controls		Total	
		Count	%	Count	%	Count	%
Initiation of Complimentary Feeds	Early Initiation of Complimentary feeds (< 6 months)	27	64.3%	11	19.0%	38	38.0%
	No Introduction of Complimentary feeds <6 months	15	35.7%	47	81.0%	62	62.0%
	Total	42	100.0%	58	100.0%	100	100.0%

$\chi^2 = 21.23$, $df = 1$, $p < 0.001^*$

In the study among cases, 64.3% had Early Initiation of Complimentary Feeds within 6 months and 35.7% had No Introduction of Complimentary feeds before 6 months. Among controls 19% had Early Initiation of Complimentary Feeds within 6 months and 81% had No Introduction of Complimentary feeds before 6 months. There was significant difference in Initiation of Complimentary Feeds between cases (Peak time of defecation ≥ 2 days) and controls (Peak time of defecation ≤ 1 day).

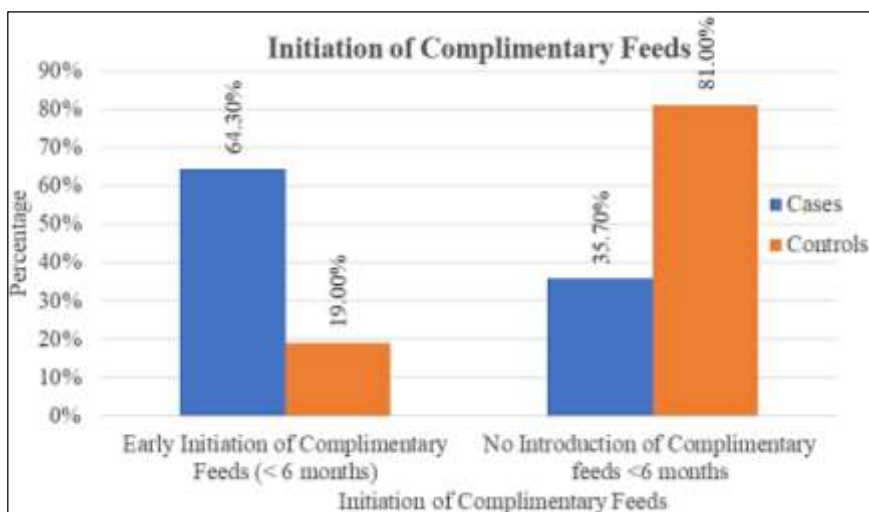


Fig 4: Bar diagram showing Initiation of Complimentary Feeds comparison between Cases and controls

Table 6: No of Stools passed per day comparison between Cases and controls

		No of Stools passed per day in First Month of life			P value
		Mean	SD	Median	
Group	Cases	4.38	1.74	4	0.054
	Controls	5.10	1.89	5	
	Total	4.80	1.85	5	

Mean No of Stools passed per day in 1 Month of life among cases was 4.38 ± 1.74 and among controls was 5.10 ± 1.89 . There was no significant difference in No of Stools passed per day in 1 Month of life between two groups.

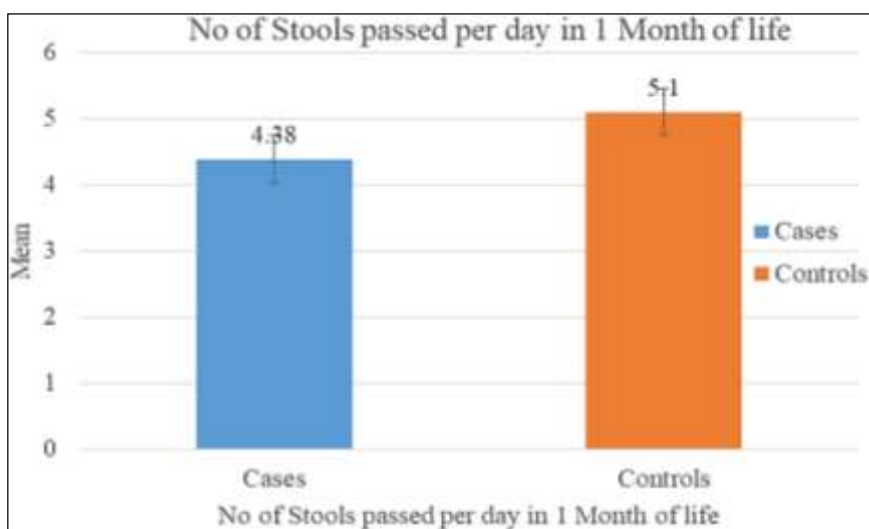
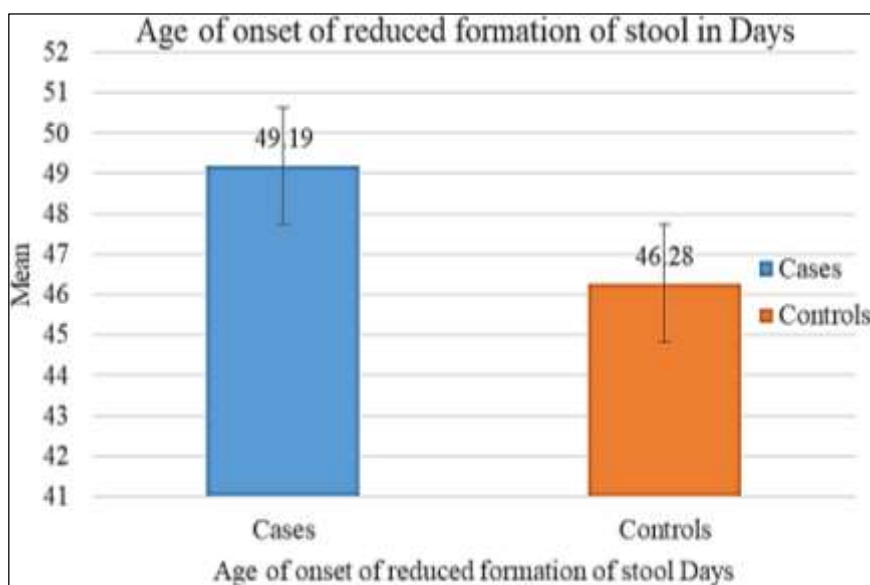


Fig 5: Bar diagram showing No of Stools passed per day comparison between Cases and controls

Table 7: Age of onset of reduced formation of stool in day's comparison between Cases and controls

		Age of onset of reduced formation of stool days			P value
		Mean	SD	Median	
Group	Cases	49.19	22.13	45	0.559
	Controls	46.28	26.08	45	
	Total	47.50	24.42	45	

Mean Age of onset of reduced formation of stool Days among cases was 49.19 ± 22.13 and among controls was 46.28 ± 26.08 . There was no significant difference in Age of onset of reduced formation of stool Days between two groups.

**Fig 6:** Bar diagram showing Age of onset of reduced formation of stool in Days comparison between Cases and controls

Discussion

History of not passing stool daily in breastfed < 6 month infants creates an anxiety among the care takers. Infant dyschezia, functional constipation and pseudo constipation need to be clearly defined among <6month infants. The Current Rome III definition for infant dyschezia is straining and crying for at least 10 min before successful passage of soft stools in an infant younger than 6 months of age without any other health problem. Usually they pass soft stools several times daily, which contrasts with infants suffering from functional constipation. Infant dyschezia belongs to the infant functional gastrointestinal diseases. Infant dyschezia and functional constipation of childhood are considered two separate entities [10]. Functional constipation according to the Rome III criteria was not seen at the ages of 1 and 3 months here infants passed stools less frequently. The diagnosis of functional constipation requires the simultaneous presence of at least two of the following symptoms: scybalous, pebble-like, hard stools for a majority of stools; or hard stools ≤ 2 times/week and no evidence of structural, endocrine, or metabolic disease [11, 12]. The initiating event in functional constipation is a painful bowel movement which leads to voluntary withholding of stools by the child who wants to avoid unpleasant defecation. Withholding of feces leads to prolonged fecal stasis in the rectum, with resultant absorption of fluids and harder stools [12, 13]. The common explanation for infant dyschezia is lack of coordination between increased intra-abdominal pressure preceding defecation and relaxation of the pelvic floor. The symptoms tend to start in the first months of life and resolve spontaneously after a few weeks [14, 15]. Apart from infant dyschezia and functional constipation a group of breastfed infants have no bowel movements for several days or

Even weeks. Healthcare providers usually refer to this situation as “false or pseudo constipation”, “infrequent bowel movements” or “scarce stools” of the breastfed infant despite the absence of discomfort or passage of hard stools [6].

Most studies performed on stool frequency reveal that the number of stools per day in the first month of life is significantly higher than in other months of life [16, 17, 18]. In our study mean stool frequency in first month of life was 4.8 times per day. The high frequency of defecation in early life is thought to be due to colostrum that can act as a natural laxative. The function of digestive enzymes is still not optimal [19]. It is related to immaturity of the gut, breast milk is rich in proteins and oligosaccharides that are not digested by immature gut, which results in increase in volume, osmolarity and consequently, the frequency of stooling, breast-fed infants had more frequent feeding which results in stimulation of the gastrocolic reflex [20].

Interestingly, in the second month, more than a third of infants passed less than one stool each day. These infants had mean peak time of defecation every 3-4 days, although the stool consistency was normal [19, 20]. Courdent *et al.* [6] observed high prevalence (37%) and Choe *et al.* [8] observed prevalence of 28% of infrequent stools in the exclusively breastfed population. In our study we observed 42% prevalence of infrequent stool behavior with mean peak time duration of defecation ≥ 2 days noticed in first 6 months of life in predominantly breastfed infants. One of the reasons may be with breast milk that is 100% absorbed [19]. The exact mechanism of infrequent stools is unknown. There is an insufficient literature information and awareness among physicians about this condition. To date, three views have been proposed for the mechanism of infrequent stools in breastfed infants. According to the first view, breast milk is easily digested and rapidly degraded in the stomach; hence it leaves a lower amount of pulp [21]. It is also far more easily digested than cow milk [8] and the stools of breastfed infants contain many saccharolytic bacteria that degrade absorbable and non-absorbable sugars [22]. The second view states that the digested breast milk may wait in the bowels before reaching rectum, which is explained by small bowel immaturity [23]. The third view advocates that bowel movements and digestive pattern of each infant vary by breast milk content, which is directly affected by mother’s nutritional habits [24]. It was observed that babies experiencing pseudo constipation behavior were started with add on complimentary feeds early to 6 month age in 64.3% of cases. Most mothers had anxiety of feed inadequacy and hence started with 1 or 2 complementary feeds with predominant breastfeeds. There are no studies till date compare the pseudo constipation behavior hampering exclusive breastfeeding practice in 0-6months infants. Infrequent stool behavior in a breastfed infant is a temporary self-correcting behavior Knowledge of this is absolutely essential in parents as well health care providers so as to avoid unnecessary interventions which may be harmful to the infant. Infants with infrequent stool behavior were put on laxatives rectal stimulation with thermometer, rectal manometry and ultrasound abdomen. These otherwise well growing infants were put early complimentary feeds also which may hamper their optimal nutrition and even lead to sequele of illness.

Conclusion

Prevalence of pseudo constipation behavior in exclusive breastfed infants is as high as 42%. Nearly 64.3% of mothers noticing pseudo constipation intervened by adding complimentary feeds as of anxiety. This hindered optimal nutrition of infants. We would like to stress that knowledge of this temporary and Benin condition requiring no interventions would be a great benefit for pediatricians, pediatric surgeons, nurses and parents. Health professional should patiently analyze the issue and deal with wait and see attitude. Early introduction of complementary feeds (6month age) in infants should be strictly avoided.

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