Managing Constipation in Children: A Comprehensive Approach for Community Nurses

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ABSTRACT
Constipation is a prevalent issue among children, with an estimated 3% of paediatric outpatient visits concerning this problem [1]. This paper presents a comprehensive examination of the strategies for diagnosing, investigating, and managing childhood constipation, with a focus on the role of community nurses. We explore clinical history pointers, examination findings, investigations, and treatments, emphasizing practical interventions that community nurses can implement to support affected children.

ABSTRACT
Constipation is a common yet frequently overlooked paediatric condition, posing significant challenges to healthcare professionals due to its multifactorial aetiology and potential long-term consequences. This article provides a comprehensive review of the diagnostic and therapeutic strategies for managing constipation in children, emphasising the vital role of community nurses. A meticulous clinical history and detailed physical examination form the cornerstone of diagnosis. Investigations are typically reserved for cases with atypical presentations, red flag symptoms, or when initial treatment strategies have failed. Treatment approaches are largely dependent on the severity of constipation, ranging from lifestyle and dietary modifications in mild cases to pharmacological interventions, including polyethylene glycol, lactulose, or Senna, for moderate to severe cases. Home management strategies also play a significant role in symptom control and recurrence prevention. The article underscores the role of community nurses in early detection, education, initiating management, and referral to specialist services. Considering the substantial psychological implications of constipation in children, a holistic approach addressing both physical and emotional aspects is advocated for successful management.

Introduction
Constipation is one of the most common gastrointestinal complaints in children, affecting both their physical health and psychological wellbeing [1-4]. This condition, although often benign and transient, can become chronic and significantly interfere with a child’s day-to-day life. It’s estimated that constipation accounts for approximately 3% of general pediatrician visits and up to 25% of pediatric gastroenterologist consultations [5].

Constipation in children can result from numerous causes and may lead to significant complications if not adequately managed [2,6]. In fact, the causes of constipation in children are the multifactorial, ranging from dietary factors and lifestyle habits to psychosocial issues and certain medical conditions that contribute significantly to constipation [6,7]. It’s paramount that healthcare providers have a thorough understanding of these factors to ensure effective management.

Community nurses play a vital role in early detection, referral, and follow-up for these children, providing necessary education and support to families. They are often the first line of contact for parents and guardians seeking advice for their child’s health. Nurses provide care across different settings, including homes, schools, and community clinics, giving them a unique perspective on the child’s environment, which can be invaluable in managing conditions like constipation.

This paper provides a comprehensive examination of the strategies that community nurses can utilize in diagnosing, investigating, and managing childhood constipation. We delve into critical aspects such as recognizing clinical history pointers, understanding physical examination findings, the necessary investigations, and the most effective treatment strategies. The practical roles that community nurses can play in this context, from early detection to family education and support, are highlighted.

Our ultimate goal is to equip community nurses with the knowledge and tools necessary to effectively manage childhood constipation, thus minimizing its impact on a child’s quality of life and preventing potential complications.

A detailed history and thorough physical examination are important in the evaluation of a child with constipation to establish the diagnosis of functional constipation as per the Rome IV criteria [8,9].
What Clinical History Questions to ask for Diagnosing Constipation in Children

Collecting a thorough and comprehensive clinical history is crucial in the diagnosis of constipation in children and discerning its possible causes.

In fact, a good clinical history of a child with constipation often needs exploring the chronic issues with bowel movements, including infrequency, straining, hard stools, and the sensation of incomplete evacuation [3,4]. These symptoms may be associated with abdominal pain, loss of appetite, and poor weight gain. It is crucial for community nurses to understand the child’s toileting habits, diet, fluid intake, physical activity levels, and family history of gastrointestinal disorders [2,4,6,10-12]. Detailed history-taking is essential for early detection and differentiation of functional and organic constipation [6].

We have managed to compile some questions as below, these are useful to explore the clinical history, the cause and contributors of the constipation. The interpretation of the responses to these clinical history questions is given in italics which may provide critical insights into the diagnosis of constipation and its underlying causes.

1. **Defecation Patterns:** How often does the child have a bowel movement? Is there a recent change in frequency? Are the stools hard and difficult to pass? Does the child strain or show discomfort during defecation? Infrequent bowel movements, hard stools, and straining during defecation are typical signs of constipation. These patterns can indicate slow transit through the colon, which allows for more water to be absorbed, making the stool hard and difficult to pass.

2. **Toilet Habits:** Does the child have a regular toilet routine? Are there any signs of stool withholding, such as crossing legs, clenching buttocks, or refusal to use the toilet? Withholding behaviour often occurs in children who have had a painful defecation experience. They may associate bowel movements with pain and thus avoid going to the toilet, which exacerbates constipation.

3. **Diet and Fluid Intake:** What does the child typically eat and drink throughout the day? Is the diet rich in fibre from fruits, vegetables, and whole grains? How much water or other fluids does the child consume daily? A diet low in fibre and inadequate fluid intake can lead to harder stools that are difficult to pass.

4. **Physical Activity:** How active is the child? Does the child participate in regular physical activity or spend much of the day sedentary? Lack of physical activity can slow the transit time of stool, leading to constipation.

5. **Symptoms Related to Defecation:** Does the child complain of abdominal pain or discomfort? Is there a sensation of incomplete evacuation after bowel movements? Has there been any soiling or faecal incontinence? Abdominal pain or discomfort, the sensation of incomplete evacuation, and faecal incontinence can be associated with chronic constipation. Faecal incontinence or soiling often occurs when liquid stool from higher up in the bowel seeps around the impacted stool and leaks out, a condition known as encopresis.

6. **Medications:** Is the child currently on any medications? Some drugs, like certain anticonvulsants, antacids, or opioids, can lead to constipation. Certain medications can slow down the bowel movements or harden the stool, leading to constipation.

7. **Past Medical History:** Has the child had any previous medical or surgical conditions, especially related to the gastrointestinal system? Was the child’s development normal, especially in terms of achieving milestones related to toilet training?

A history of gastrointestinal issues or delayed toilet training can be associated with constipation. Additionally, some congenital conditions, such as Hirschsprung's disease, can present with chronic constipation.

8. **Psychosocial Factors:** Has there been any recent stress, change in environment, or significant event in the child’s life? Are there any school-related issues? Stress and emotional difficulties can contribute to constipation. Changes in routine, stress, or school-related issues can contribute to functional constipation, where the bowels are physically normal, but the child has difficulty passing stool regularly due to behavioural or psychological reasons.

9. **Family History:** Is there a family history of constipation or other gastrointestinal disorders?

A family history of gastrointestinal disorders or constipation may suggest a genetic or inherited predisposition.

It’s crucial to approach these questions with sensitivity, given that bowel habits can be a sensitive topic for children and their families. Building rapport and trust can aid in obtaining accurate and detailed information.

While these interpretations can help determine whether a child is suffering from constipation and its possible causes, a full clinical evaluation that includes a physical examination and possibly further investigations is necessary to confirm the diagnosis and plan appropriate treatment.

What Clinical Signs of Constipation do We Look for?

The main clinical sign to look for in examination is retention of faeces. A good physical examination usually reveals a palpable faecal mass in the lower abdomen, which may be associated with rectal distension [13-18]. Other signs such as fissures may suggest chronic constipation. In addition, community nurses should be aware of signs indicating a more serious condition, such as neurological deficits or a sacral dimple, which could point towards a spinal cord anomaly.

The clinical signs of constipation thus can vary, but here are several physical findings that healthcare professional should look for during the examination:

1. **Abdominal Examination:** Palpation of the abdomen may reveal a palpable faecal mass, typically in the left lower quadrant, indicative of stool impaction.

2. **Rectal Examination:** Although it’s not preferred, in some cases, a digital rectal examination may be appropriate. The presence of a large amount of hard stool in the rectum can confirm the diagnosis. An empty rectum in the context of severe constipation may suggest a faecal impaction higher in the colon.
3. **Anorectal Fissures**: Chronic constipation can lead to painful tears in the skin around the anus, known as anal fissures.

4. **Signs of Withholding Behaviour**: The child may exhibit signs of withholding stool, such as crossing the legs, clenching the buttocks, or unusual posturing.

5. **Poor Growth or Weight Loss**: Chronic constipation and associated nutritional issues can result in failure to thrive or poor weight gain [18].

6. **Perianal Erythema or Excoriation**: Irritation or rash around the anus can be a sign of chronic soiling or faecal incontinence, often associated with overflow diarrhoea in constipation.

It’s important to note that a physical examination should always be conducted with sensitivity and respect for the child’s comfort and privacy.

In addition to these signs, healthcare providers should be aware of “red flag” signs that might suggest an organic cause of constipation such as Hirschsprung’s disease, spinal cord anomalies, or hypothyroidism.

**What are “Red Flags” for Constipation?**
The ‘red flags’ are signs or symptoms in the history that indicate need for assessment by a specialist. The Red Flags are - delayed passage of meconium, failure to thrive, ribbon shaped stools, rectal bleeding or presence of blood in the stool, severe abdominal distension, absent anal wink, abnormal knee jerks, presence of dimple /hair tuft /lipoma/haemangioma in the lumbosacral area, and an anteriorly displaced anus, developmental delay, bilious vomiting, scars in perianal region [8, 19-21].

**What Investigations We Need to do for Constipation in Children?**
The majority of childhood constipation cases are functional or idiopathic, meaning there’s no identifiable organic cause. Thus, the diagnosis is primarily clinical, based on history and physical examination, and does not usually require extensive testing [1,2,4,8,15,17,19-21]. Investigations are however needed on many occasions to exclude the medical conditions. [19,20].

Here are some scenarios where the investigations are required:

1. **Persistent Constipation**: Despite appropriate dietary modifications and medical treatment, some children continue to suffer from constipation. In these cases, additional investigations may help identify underlying causes or complications.

2. **Atypical Presentation**: If the child has atypical or alarming symptoms such as significant weight loss, persistent abdominal pain, blood in stools, or if there are signs suggestive of an underlying neurological condition (such as lower limb weakness or abnormal gait), investigations are warranted to exclude organic causes.

3. **Failure to Thrive or Growth Faltering**: These may suggest an underlying systemic or gastrointestinal disorder.

Typical investigations include:

1. **Blood Tests**: Full blood count, electrolytes, calcium, thyroid function tests, and coeliac screening can help rule out metabolic, endocrine, or systemic causes of constipation.

2. **Abdominal X-ray**: Although not necessary in most cases as it causes radiation, an X-ray may be needed in some cases and can show the extent of faecal loading in the colon and help confirm the diagnosis in severe or chronic cases. However, this should not be used as a routine diagnostic tool for constipation [19].

3. **Anorectal Manometry**: This test measures the pressure and coordination in the rectum and anal sphincter and can be helpful in diagnosing disorders like Hirschsprung’s disease, particularly in neonates and infants or in children with severe, refractory constipation. It can also be helpful sometimes to understand the rectal dyssynergia resulting into persistent soiling [22].

4. **Rectal Biopsy**: If Hirschsprung’s disease is suspected, a rectal biopsy can be performed to confirm the diagnosis. The biopsy will show the absence of ganglion cells in the myenteric plexus. If child has passed meconium with in first 48 hours after birth, it is less likely to have Hirschsprung’s disease.

5. **Colonic Transit Study**: This involves sequential ingestion of radiopaque markers on different days with different shapes and subsequently taking abdominal X-rays to see the retention of markers being universal (pan-colonic distribution) or retention in particular part of bowel i.e. rectum, sigmoid colon, ascending colon etc. We can also measure the rate of transit of the markers. This test can help in diagnosing slow-transit constipation but is generally reserved for refractory cases or before considering surgical intervention. If there is only rectal collection, rectal wash outs or enemas are quite effective.

6. **Neuroimaging**: Spinal ultrasound or MRI may be considered in cases where a spinal cord anomaly is suspected.

Healthcare providers should use these investigations judiciously and in the context of a careful history and physical examination to avoid unnecessary testing.

**How to Manage and Treat the Constipation in Children?**
The Management of constipation in children is multifaceted, involving education, behaviour modification, dietary changes, and pharmacological interventions. Community nurses can educate families about the importance of regular toilet routines, a balanced diet rich in fiber, and adequate hydration [11]. Polyethylene glycol can be recommended under appropriate supervision [12]. Community nurses can play an important role in following up with these families, ensuring adherence to treatment plans, and providing emotional support [13].

Children most commonly have functional constipation which may result from psychological factors, behavioural factors, life style changes and parents behaviour etc. Withholding behaviour is an important factor in pathophysiology of childhood functional constipation, whereas adults often have dyssynergic defaecation patterns [23].

The severity of the constipation often determines the therapeutic approach and this may include the medications, lifestyle modifications, behavioural strategies, and family education.
1. **Mild Constipation:** For children with mild constipation, lifestyle modifications are often the first step in treatment. This includes increasing dietary fibre intake (such as fruits, vegetables, and whole grains) and ensuring adequate fluid consumption. A carrot a day is quite easy to remember and provide enough hygroscopic fibres to allow propulsion pressure. Encouraging regular physical activity can also help promote bowel movements. Toilet training, including establishing regular toilet routines with encouragement to sit on the toilet of potty for 10 minutes and pushing, and promoting a relaxed and non-stressful toilet environment, can be beneficial. If these modifications do not improve symptoms, a gentle stool softener such as polyethylene glycol (PEG) may be introduced. PEG 3350 without electrolytes is safe and effective for children and can be adjusted based on response and tolerability [24].

2. **Moderate Constipation:** In cases of moderate constipation, or when initial measures for mild constipation are ineffective, pharmacological treatment is often necessary. This can involve using PEG which binds with water to increase rectal distention and thus result in rectal stretch and defaecation. It is one of safe and effective laxative that can be used for a long time [25,26]. For children who are not responsive to PEG or cannot tolerate it, lactulose can be considered as an alternative, although it may be associated with more bloating and gas [27]. In some cases, a stimulant laxative such as bisacodyl or senna may be added, especially if stool softeners alone are not effective [19]. Adding these stimulant laxatives is helpful when as children are not able to build enough propulsion pressure, the stimulant laxative stimulate the push and peristalsis.

3. **Severe Constipation:** Severe constipation indicates massive dilatation of rectum and many children start soiling due to the loss of stretch receptor functioning. It is important to involve the child if possible, if the child can understand the mechanism and what to do to get the faeces out, the life becomes easier. Also, the doses of the laxatives need to be increased in varying combination and sometimes it involves doses bigger than advised in the formulary to control the rectal stretch and dilatation. Also sometimes change of laxatives or addition of different laxatives including bulk laxatives is helpful. Each child is different and therefore what works in one child may not work in the other. PEG is first option, however other laxatives include Senna, docusate, lactulose, and bulk laxatives. These should be used like a tool in the tool-box and the doses can be increased as appropriate for each child. There is evidence for benefit of Mineral oil (liquid paraffin [19,28]. Checking the compliance or adherence is important.

4. **Intractable Constipation and Faecal Impaction:** Intractable constipation is managed with a stepwise approach and in rare cases requires surgical interventions such as antegrade continence enemas in children [30]. In these severe cases, particularly in the presence of faecal impaction, a disimpaction regimen is often necessary. This typically involves high-dose PEG over several days (commonly increasing doses for a week) until the impacted stool is cleared. This regimen may need to be conducted under medical supervision, particularly in very young children or those with comorbidities.

Once disimpaction has been achieved, maintenance therapy is necessary with lower-dose PEG is necessary to prevent recurrence, and is described in more details later.

The principle of management of constipation is to “Empty the Rectum and Keep it Empty” so that no further accumulation happens. This means increasing the doses of laxatives, sometimes the doses of laxatives can be even bigger than adults as the intestine of children is more stretchy. Finding a right balance is difficult but is important. If the rectum is not kept empty, the rectum will not shrink to get the stretch receptors action back. Sometimes it may be necessary to add liquid paraffin to allow lubrication and ease of passing hard faeces.

In all cases, treatment should be accompanied by education and support for the child and the family. Ensuring an understanding of the treatment plan and the importance of adherence is crucial to the successful management of constipation.

It’s important to note that any treatment plan should be individualised to the child’s specific needs and circumstances, and regularly reassessed for effectiveness and tolerability.

**How to Achieve Disimpaction?**

Severe constipation in children, especially when accompanied by faecal impaction, can be challenging to manage but is essential to address the problems promptly to prevent further complications such as faecal incontinence or psychological distress. Treatment usually involves a two-phase approach: disimpaction and maintenance therapy.

1. **Disimpaction:** The goal of disimpaction is to clear the colon of the large volume of accumulated stool. This is often accomplished with high-dose oral medications, although enemas may be used in certain cases.

   - **Oral Medications:** High-dose polyethylene glycol (PEG) 3350 without electrolytes is commonly used for disimpaction due to its effectiveness and safety profile. The dosage can vary but is often 0.7g/Kg going up to 1.5g/kg/day for three to six days [1]. If the child cannot tolerate PEG or if it’s ineffective, alternatives may include admission to hospital for large doses of Klean-prep another PEG that needs high volume of water to be given by nasogastric tube. Klean-Prep acts as a bowel cleansing agent and flushes all faeces...
Some foods may contribute to constipation. This may be different for different experts based on their choice and experience, however this just gives you a flavour.

<table>
<thead>
<tr>
<th>Laxative</th>
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<tbody>
<tr>
<td>PEG Alone</td>
<td>48%</td>
</tr>
<tr>
<td>PEG with stimulant (Senna or Picosulfate)</td>
<td>34%</td>
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<tr>
<td>Lactulose and Senna</td>
<td>11%</td>
</tr>
<tr>
<td>PEG + Liquid Paraffin</td>
<td>5%</td>
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<tr>
<td>Methyl Cellulose (Fibre)</td>
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Poorly treated constipation leads to deleterious psychological consequences predisposing children to develop significant psychological damage and bowel dysfunctions [20].

The treatment of severe constipation should be guided by an experienced healthcare professional who can provide appropriate monitoring and adjustments to the treatment plan as necessary.

**Home Management of Constipation**

Home management strategies for constipation in children involve lifestyle and dietary changes, behavioural interventions, and supportive measures. It is important to discuss these strategies with a healthcare provider to ensure they are appropriate for the child’s age and overall health status.

1. **Dietary Changes**
   - **Increase Fibre Intake**: Dietary fibre can help to soften the stool and promote regular bowel movements. Good sources of fibre include fruits, vegetables, whole grains, and legumes. Fibre intake should be increased gradually to prevent gas and bloating. Increased fibre not only helps in constipation but also helps in preventing obesity. A scientific study has confirmed increased risk of obesity in children with functional constipation especially in developed countries [32]. The recommendation is that Children should consume “age in years plus 5 g - 10 g” of fibre per day for children over 2 years, however for practical purpose as much of a fruit or vegetable per day is enough [33].
   - **Ensure Adequate Hydration**: Drinking plenty of fluids can help prevent constipation. Water is an excellent option, however for young infants adequate intake should be ensured [34]. Fruit juice (especially prune, pear, or apple juice) can be helpful for infants and toddlers, but should be limited due to its high sugar content.
   - **Limit Constipating Foods**: Some foods may contribute to constipation i.e. the fast food, processed foods, and low-fibre carbohydrates. This works well if child is explained the benefits.
   - **Dairy- Free Diet**: Occasionally the doctor may advise a dairy-free diet for a period as cow’s milk allergy may present as constipation [35,36]. Some people believe that excessive dairy products (e.g., cheese, yogurt) may contribute to constipation. There is some evidence to consider a 4-week cows’ milk protein (CMP) free diet for children with chronic constipation resistant to conventional treatment [37]. European as well as North American guidelines recommend such diet to be under the guidance of an expert [19].
   - **Probiotics**: There is some evidence for benefit of probiotics in chronic constipation [38,39]. This is due to change in microbiomes that affect the smooth muscles of intestine and gut motility. In addition, the microbiomes are also found to significantly contributes to the stool bulk [40].

**Physical Activity**

Regular exercise helps stimulate intestinal motility and can reduce the risk of constipation [41]. Encourage the child to...
be physically active each day, whether it’s through structured activities (like sports or dance) or unstructured play (like biking or playing in the park).

**Toilet Routines**

Stool toilet refusal is quite common [42]. Establish regular toilet routines to take advantage of the body’s natural tendency to have a bowel movement after meals. Encourage the child to sit on the toilet for 10 minutes after each meal. Creating a relaxed and positive environment around toileting is also helpful. Parents also need to be counselled to reinforce a positive behaviour in the child [43]. It is important that the process of toileting is a conscious effort, and use of mobile phones or tablets while sitting on the potty or toilet seat would be counterproductive.

**Stress Management**

Stress can be a significant contributor to the constipation in children and includes stressful life event, abuse, parental rearing style and psychological state, and poor toilet training [20]. Encouraging relaxation techniques, such as deep breathing or yoga, can help manage stress. If school or family issues are contributing to stress, these should be addressed appropriately.

Remember, these home remedies are part of the overall treatment plan for managing constipation in children, which also includes regular follow-up with a healthcare provider to assess effectiveness and make necessary adjustments.

**Prevention of Recurrence**

Early withdrawal of the laxative is the commonest cause of recurrence of constipation [17]. Transanal irrigation is useful in children with constipation with severe recurrent faecal impaction that is resistant to conventional medical management [44].

What are the Adverse Factors for Improvement?

- Constipation in first year of life
- Longer duration of symptoms before presentation
- Low defaecation frequency at presentation
- Persistent faecal incontinence despite of medication
- Large diameter of faeces (indicate massive rectal dilatation)
- Persistent faecal withholding (need situation exploration)
- Night time urinary incontinence
- Prolonged colon transit

Childhood constipation is a widespread problem with potential long-term health implications. The quality of life of children with constipation needs to be improved [45]. Community nurses are well-positioned to support early detection, ongoing management, and community education about this issue, playing a vital role in mitigating the effects of this condition on children and their families.

**Conclusion**

Managing constipation in children requires a comprehensive and multidimensional approach, given its complex aetiology and potentially significant impact on a child’s physical and emotional well-being. With a reported prevalence as high as 30% in certain populations, constipation is a significant public health issue that necessitates active involvement from healthcare professionals, including community nurses.

An accurate diagnosis of constipation primarily hinges on a meticulous clinical history and thorough physical examination. A detailed clinical history can elicit key information about the nature, onset, duration, frequency, and consistency of bowel movements, associated symptoms, dietary habits, level of physical activity, toileting routines, and psychosocial factors. The physical examination, including an abdominal and anorectal examination, can provide crucial diagnostic clues.

While most cases of constipation in children are functional, healthcare professionals must maintain a high index of suspicion for organic causes in the presence of red flag symptoms or atypical presentation. Although most cases do not necessitate extensive testing, investigations may be required in specific circumstances, such as persistent, refractory constipation, or in the presence of concerning clinical features.

Treatment strategies for constipation are generally dependent on the severity of the condition. While lifestyle modifications and dietary changes form the cornerstone of management for mild cases, moderate to severe cases may necessitate the use of pharmacotherapy such as polyethylene glycol, lactulose, or senna, under the guidance of a senior healthcare professional. Home management strategies can also play a crucial role in controlling symptoms and preventing recurrence, especially in milder cases.

Community nurses, due to their position in the front lines of healthcare and their continuity of care, have a pivotal role in early detection, education, initiating management, and referral to specialist services when necessary. Through active involvement in community health education programs, they can also disseminate accurate information about constipation, dispel misconceptions, and promote healthy habits that can reduce the prevalence and impact of this condition. It is also essential to underline that constipation is not just a physical condition but can have significant psychological implications, particularly in children. Therefore, a holistic approach that addresses both the physical and emotional aspects of this condition is critical for successful management.

**References**

