Abdominal massage in the management of chronic constipation for children with disability

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ABSTRACT
A service development initiative was conducted to assess the impact of abdominal massage on chronic constipation in children with physical disabilities and learning needs. Twenty-five parents engaged in an abdominal massage training programme led by a specialist health visiting team (children's disability). Participants were asked to carry out abdominal massage for a total of 20 minutes per day. Quality of life indicators, descriptions of bowel movements, use of laxative medication and contact with health care services were recorded by parents. Costs and professional contact time with families was calculated. Results reported a wide range of quality of life improvements including relief in symptoms of constipation (87.5%), reduction in laxative medication (58%) and improved dietary intake (41%). Qualitative data indicated positive experiences described by parents which included enhanced parent-child relationships.

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BACKGROUND

Constipation is defined as a 'delay in passage of stool' (Plunkett et al, 2007; National Institute for Health and Care Excellence (NICE), 2010a). Chronic constipation is defined as 'inability to pass stools regularly or completely empty the bowels' with symptoms lasting 'longer than eight weeks' (NICE, 2014).

In the UK 1.7 million children experience constipation and more than 33% present with severe and/or chronic symptoms, which require referral to secondary care services. Bohmer et al (2001) highlight that 70% of children with learning difficulties experience constipation.

Management of the condition in children with disability forms a significant part of service provision within community and primary care services. In Leicestershire approximately 25% of children who receive input from the specialist health visiting (SHV) team present with constipation. These children often require additional management from GPs, community paediatricians and the hospital gastroenterology team. Exacerbation of symptoms includes pain, soiling and loss of continence skills, which may significantly impact on the child and family's quality of life.

The treatment of chronic constipation has significant financial and staffing implications. Community paediatric and outpatient department appointments cost approximately £230–360 per visit (NICE, 2010b). The majority of children with disability who present with constipation are prescribed long-term laxative medication to manage the condition. A pharmacological cost of approximately £146 per child per year is estimated (NICE, 2010b). This does not include increased doses to manage acute exacerbation. In the worst cases manual evacuation or surgery may be required, which may be particularly distressing to children with disabilities who may have communication, cognitive or behavioural difficulties. Evidence shows that individuals with constipation report significantly lower quality of life indicators than those without, and those who experience constipation in childhood continue to experience symptoms throughout their adult life (NICE, 2010).

Childhood constipation is shown to have medium- and long-term adverse effects on health, emotional wellbeing and quality of life. It is associated with significant negative impact on self-esteem (Procter and Loader, 2003; Talley, 2004; Dennison et al, 2005; Wald et al, 2007; NICE, 2010b). Early diagnosis and timely management/treatment is essential in preventing more severe complications such as fissure or impaction (NICE, 2010a).

NICE (2014) highlights that from 2011–2012 there were 12,865 hospital admissions for constipation in children and young people, of which 78% were emergency admissions. NICE guidelines have specifically recommended more investigation and evidence into the use of complementary and alternative therapies. Abdominal massage is identified as a suggested management of chronic constipation (NICE, 2010a).

Abdominal massage is a non-invasive intervention associated with a low burden of risk. There is evidence that when this intervention is used in the management of chronic constipation it improves quality of life, reduces laxative use and improves frequency and consistency of bowel movements (Smith and Moss, 2008; Moss et al, 2007; Richards, 1998; Lamas et al, 2010).

Abdominal massage can be carried out by parents who receive simple training and support from competent practitioners. Literature suggests that a wide range of benefits can be attributed to increased contact involved with abdominal massage. Improved parent–child communication, enhanced relationships along with the relief of symptoms associated with chronic

constipation have been identified (Smith and Moss, 2008). As long ago as 1986, Turnbull et al argued that interventions such as abdominal massage may be one of the few non-pharmacological techniques used to manage bowel movements in those who experience repeated and/or chronic constipation.

SERVICE AIMS AND OVERVIEW

This service development initiative aimed to:

- Improve the individual child's quality of daily living
- Empower parents to drive care and health outcomes for their children
- Prevent unnecessary onward referrals to other services such as GPs, outpatient clinics and A&E
- Reduce the cost of laxative prescribing associated with long-term chronic constipation
- Promote partnerships between parents and healthcare practitioners.

This initiative involved children with known disabilities and/or learning needs who had a history of chronic constipation. Ethical approval was not required from a research ethics committee as this initiative was categorised as service development.

METHOD

Participants were identified through the existing SHV caseload or were referred to the service improvement initiative by the community paediatrician. A list of contra-indications provided the exclusion criteria:

- Recent abdominal surgery
- History of malignant bowel obstruction
- Inflammatory disease of the intestine
- Spastic colon
- Pregnancy (in patient)
- Unstable spinal injury
- Recent scarring or skin lesions.

The inclusion criteria were:

- Aged three months to 19 years of age
- Presentation of an identified disability
- Diagnosis of chronic constipation (symptoms lasting longer than eight weeks)
- Parent willing to participate in training and project activity.

Parents who consented to participate were sent an information pack and stool diary, which was completed by parents for two to three weeks before a planned training session. The abdominal massage training session included:

- PowerPoint presentation on the normal anatomy and physiology of the small and large intestine and constipation
- Abdominal massage technique; practical demonstration using a table-top torso
- One-to-one practical session with professional where parents observed, then participated and delivered abdominal massage
- Parents were awarded a certificate on completion of the training session.

Parents were asked to complete abdominal massage for 20 minutes per day (as preferred eg, five minutes x 4 or 10 minutes x 2); to record bowel movements, laxative medication use and contact with healthcare professionals over this time period. Professional support was provided following the training session via telephone or face-to-face contact, as preferred. This consisted of progress reports and changes in the symptom of constipation.

At six weeks, parents completed an end of study evaluation. As the SHV team conducted this evaluation there may have been a bias, which could have influenced parents responses. Economic data were also collected on medication costs and the cost of implementing the service initiative.

Recruitment

Twenty-eight children and their parents were recruited into the project. Three parents were not able to complete the six-week programme and data for these children were excluded from the results. A range of venues were used to meet training needs eg, special school; a local community hospital; a health centre and the home setting.

Sample size and timescales

This service development initiative was funded and supported by the Queen's Nursing Institute's Fund for Innovation and ran from January to December 2013. The first cohort of parents was trained in March 2013. The sample size was influenced by the timescale and availability of the SHV team.

Data collection

- An abdominal massage pre-training data collection tool was used. It included medical and family history/use; frequency of laxative medication; use of healthcare services related to management of chronic constipation; and parents' perceptions of how constipation affected

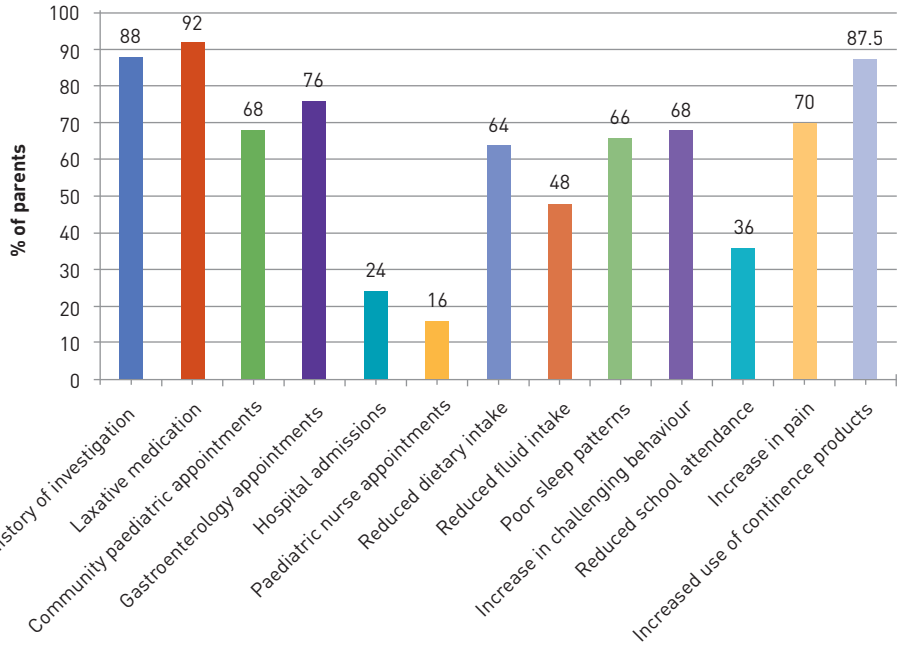

Figure 1. Percentage of parents reporting on the use of health services and perception of how constipation negatively affects their child's quality of life before abdominal massage intervention

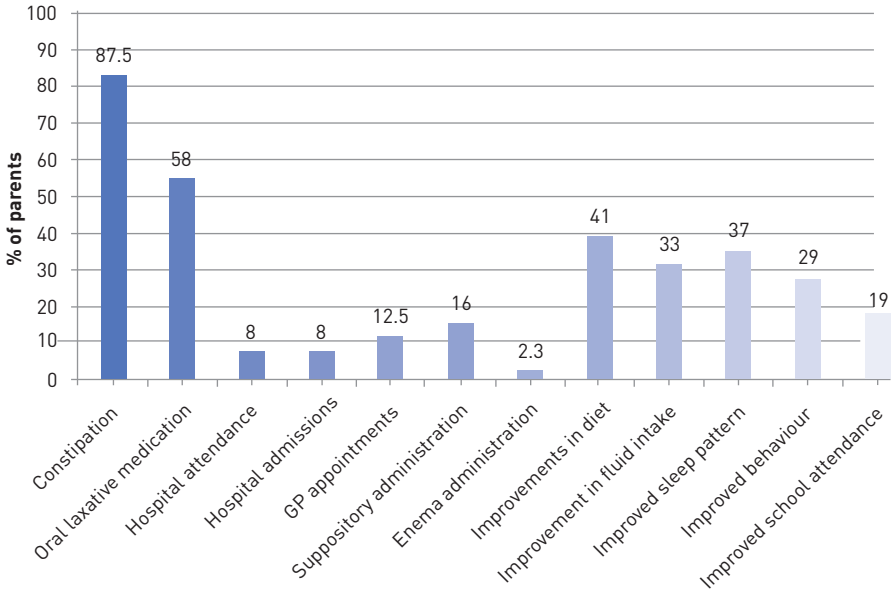

Figure 2. Percentage of parents reporting on the perceived improvement in service use and quality of life after abdominal massage intervention

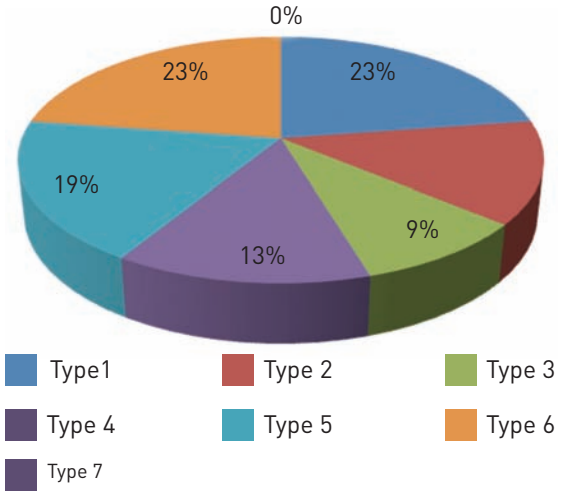

Figure 3. Type of stool passed (Bristol Stool Chart) before abdominal massage intervention

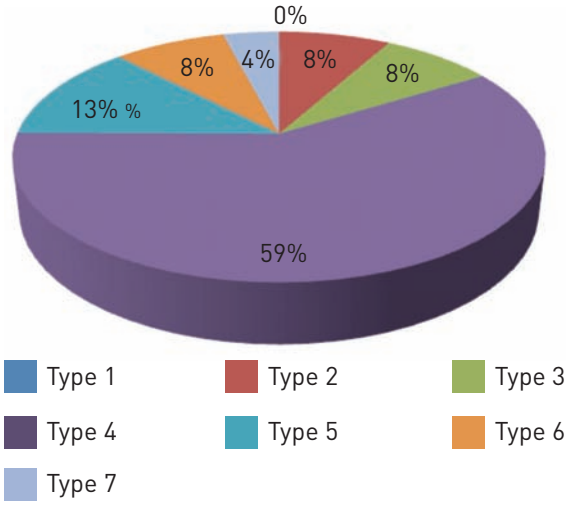

Figure 4. Type of stool passed (Bristol Stool Chart) after abdominal massage intervention

their child's lifestyle eg, sleep, dietary intake, school attendance, mood, and behaviour.

- Stool diary recordings kept by parents for two to three weeks before the intervention included a description of stools, frequency of bowel movements, symptoms of constipation, use of laxative medication and additional support from additional healthcare services.
- Stool diary recordings were kept by parents during the six weeks of intervention. This identified time and frequency of abdominal massage, frequency of bowel movements, symptoms of constipation, use of laxative medication and contact with additional healthcare services.
- A post-intervention evaluation form allowed parents to report their perceptions of how abdominal massage had improved their child's quality of life.
- A clinical log was used to record how much SHV time was spent with each family.
- A Bristol Stool Chart was given to each family to identify the consistency of stools (NICE, 2010a).

RESULTS

Parents of 25 children participated in and provided written feedback, including end of service initiative evaluation. The findings showed that some parents had accessed a range of healthcare services due to their child's constipation. This included medical investigation for presenting symptoms (88%); administration of laxative medication (92%); acute hospital appointments including attendance at A&E departments (76%), and appointments with the community paediatrician (68%).

Parents reported their perceptions of how constipation negatively affects their child's quality of life. Areas that were most reported were reduced dietary intake (64%); poor sleep patterns (66%); increased pain (70%); reduced fluid intake (48%) and the increased use of continence products (87.5%) (Figure 1). This highlighted that 87.5% of parents considered there was 'significant improvement' in their child's constipation. Data collected described positive experiences by parents, which included enhanced parent–child relationships.

Parents, regardless of whether they had reduced their laxative medication,

recorded an improvement in their child's quality of life. There was a reduction in the laxative medication use in 58% of the children. Dietary improvements were reported in 41% and an improvement in sleep pattern was reported in 37% (Figure 2).

Data were collected on the type of stool passed before and after the abdominal massage intervention using the Bristol Stool Chart to identify the consistency of the stool. Type 4 stools (narrow, smooth sausage) are considered to be optimal and the data showed an increase from 13–59% of this type of stool following abdominal massage (Figures 3 and 4).

Before the intervention all 25 children were reported to be taking laxative medication for constipation. Some children were receiving a combination of medication. Laxatives included:

- Macrogol eg, Movicol (softener/osmotic)
- Lactulose (softener/osmotic)
- Sodium picosulphate (stimulant)
- Glycerin suppositories (locally acting softener)
- Bisacodyl (stimulant)
- Docusate sodium (softener and mild stimulant).

Post service intervention laxative medication was reported to be reduced in 10 of the children. Results can be seen in Figure 5 (some children continued to receive more than one type of medication). An annual cost saving of £1,322.03 was projected for the 10 children who had reduced their laxative medication at the end of the six-week intervention (see Table 1).

The NICE Quality Standard for management of constipation in children and young people (NICE, 2014) recommends providing parents with written information on constipation that would include normal anatomy and physiology of bowel function with a Bristol Stool Chart to increase understanding and management of constipation. Parents who participated reported that this information was beneficial and raised their understanding and knowledge of constipation.

The average time spent by the SHV with each family was 4.9 hours. This included face-to-face and telephone contact, record keeping and travel time (Table 2). It has been estimated that the cost of the education/training package is £35.20 per family.

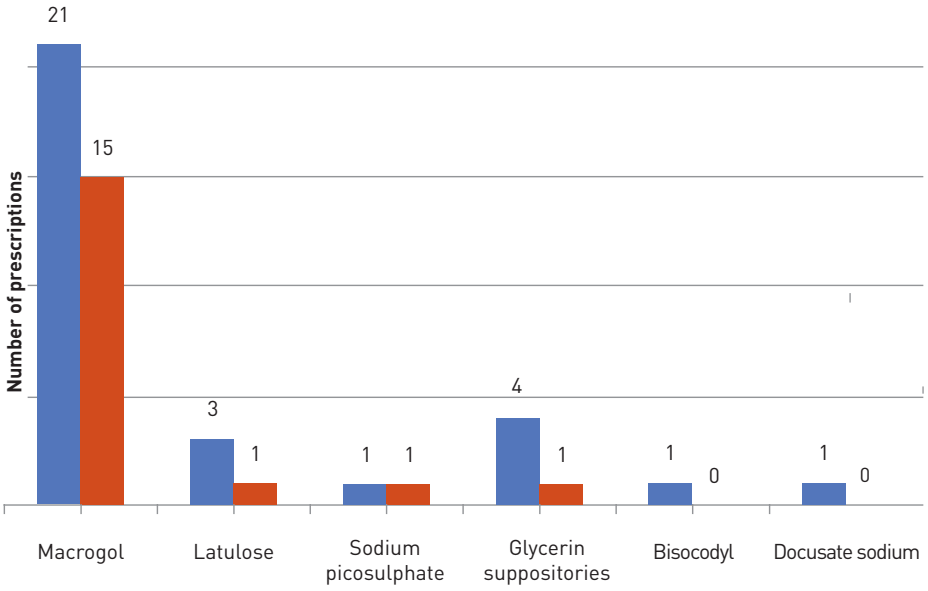

Figure 5. Changes in laxative medication use for constipation before abdominal massage (AM) and after abdominal massage (AM) at six-week intervention

Table 1. Projected annual medication cost savings for 10 participants

Patient	Cost of medication before massage	Cost of medication after massage	Estimated annual cost savings
1	£81.27	£0.00	£81.27
2	£325.10	£0.00	£325.10
3	£325.10	£0.00	£325.10
4	£81.27	£0.00	£81.27
5	£16.88	£0.00	£16.88
6	£96.54	£0.00	£96.54
7	£111.02	£0.00	£111.02
8	£61.01	£40.64	£20.37
9	£325.09	£81.27	£243.82
10	£32.38	£11.72	£20.66
	Total=1,455.66	Total=133.63	Total=1322.03

Table 2. Reported amount of time spent per family

Time spent	Face-to-face contact	Telephone calls	Record keeping	Travel
Average per family	2 hours 49 mins	32 mins	22 mins	1 hour 12 mins

DISCUSSION

This service development initiative set out to assess the impact of abdominal massage on children (0–19 years) who have physical disability and/or learning needs and who have a diagnosis of chronic constipation.

The results show that training using abdominal massage offers parents skills and knowledge to provide a close and meaningful symptom relief intervention for their child. It promotes a model of shared care service provision and enables parents to take 'ownership' of their child's constipation management.

Consistent with previous evidence, the results reported improved quality of life for the child, a reduction in laxative medication use at completion of the six-week intervention and improved frequency and consistency of bowel movements (Smith and Moss, 2008; Moss, 2007; Richards, 1998; Lamas et al, 2010). The data collected indicated that abdominal massage also reported to enhance the relationship between parent and child. It may be considered that this enhanced relationship is a result of the close intimacy abdominal massage brings to the parent–child communication.

A significant reduction in the financial cost associated with laxative medication use was reported. It may be argued that abdominal massage appears to be financially cost effective to the NHS drug budget.

Other data outcomes included parents reporting the introduction of toileting plans during the six-week intervention.

Engaging in this service development initiative and reducing drop-outs highlights areas that are yet to be evaluated; for example, the gender of parents, and cultural and/or religious beliefs may or may not inhibit participation in this activity. Making the training package attractive to offer in a home setting will be a key area to evaluate. Using interpreting services may be a way of addressing the potential language barriers to participation.

RECOMMENDATIONS

- Provision of written patient information – constipation in children.
- Commissioning of abdominal massage by local continence services if this initiative is to be successfully integrated.
- Training packages to include training of education staff and non-parent carers to optimise management of constipation for this client group.
- Future research in this area eg, a longitudinal study to replicate the initiative above over time to demonstrate the effectiveness with inclusion of a control group. This would offer evidence, which may influence future practice to improve outcomes for children with chronic constipation.

Case study

A 17-year-old girl with complex needs had a lifelong history of constipation. Management included high doses of laxative medication, hospital admissions and extensive investigations. During an episode of acute pain, staff at her special school were unsure if it was abdominal or hip related. The patient's mother was called as staff wanted to phone for ambulance. Mum went into school and performed abdominal massage, after which the pain subsided and her daughter later passed a large stool.

Key points

- 70% of children with learning difficulties experience constipation
- 87.5% of parents reported that abdominal massage improved their child's symptoms of constipation
- 13% of children were passing a Type 4 stool (Bristol Stool Chart) pre-abdominal massage compared to 59% after six weeks of intervention
- Other notable improvements included a reduction in laxative medication; improvement in dietary and fluid intake; and improvement in sleep patterns, behaviour and school attendance

CONCLUSION

Improved quality of life was reported in all 25 children and included improved sleep pattern and increased dietary intake. The delivery of an intimate clinical task may enhance the parent-child relationship and promotes a model of shared care provision. This service development initiative proved to be cost efficient with the efficiencies increasing year on year as chronic constipation is often a lifelong condition as long as abdominal massage continues to be carried out.

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