

NUR 568: Critical Appraisal Topic  
Lactobacillus in the Management of Abdominal Pain in Children  
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Evidenced Based Critically Appraised Topic  
Lactobacillus in the Management of Abdominal Pain in Children

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**Clinical Scenario**

A 12-year-old female presented to the clinic for intermittent abdominal pain over the last several (5) days, without nausea/vomiting or diarrhea. The patient was evaluated two days prior at another clinic with the same complaint. Diagnostic labs were done during that visit; results were “normal” and physical assessment was negative at that time. The patient continued to experience intermittent abdominal pain without resolution or lessening severity. Physical assessment during the current visit was unremarkable. The provider recommended the use of lactobacillus containing foods and/or supplements to alleviate the severity and occurrence of abdominal pain.

**Clinical Question**

Does ingestion of lactobacillus/probiotics lessen the frequency and severity of recurrent abdominal pain in pediatric patients, less than age 18, compared to those who do not?

**Articles:**

- Francavilla, R., Miniello, V., Magista, A., DeCanio, A., Bucci, N., Gagliardi, F., Lionetti, E., Castellanets, L...Cavallo, L. (2010). A randomized controlled trial of *Lactobacillus* GG in children with functional abdominal pain. *Pediatrics*, 126(6), e1445-1452. DOI: 10.1542/peds.2010-0467
- Gawronska, A., Dziechciarz, P., Horvath, A., & Szajewska, H. (2007). A randomized double-blind placebo-controlled trial of Lactobacillus GG for abdominal pain disorders in children. *Alimentary Pharmacology & Therapeutics*, 25, 177-184. doi:10.1111/j.1365-2036.2006.03175.x

**Summary and Appraisal of Key Evidence**

**Study 1**

Francavilla et al, (2010) conducted a randomized, double-blind, placebo-controlled trial to determine whether *Lactobacillus* GG (LGG) relieves symptoms in children with recurrent abdominal pain providing a Level 1, grade A level of evidence.

The study contained a total of 141 children with irritable bowel syndrome (IBS) or functional abdominal pain (FAP) that experience recurrent abdominal pain. All participants were enrolled in an 8-week treatment period that was preceded by a 4-week run-in phase and followed by an 8-week follow-up phase. Eligible participants were children age 5-14 years of age of either gender with a diagnosis of IBS or FAP. Patients must have had at least 1 episode of abdominal pain per week.

The randomly assigned patients were given either LGG ( $3 \times 10^9$  colony forming units) or placebo twice daily for 8 weeks and entered follow-up for 8 weeks. On a daily basis, patients recorded the frequency/severity of pain and school absence. Assessment of pain included a combination of the self-reported visual analog scale (VAS) and the Faces Pain Scale (FPS). The primary outcome was assessment of overall abdominal pain (frequency/severity) according to the VAS from baseline to the end of the intervention period. At the entry and end of the trial children also underwent a double-sugar intestinal permeability test.

### **Study 2**

Gawronska, Dziechciarz, Horvath, & Szajewska (2007) conducted a randomized double-blind placebo-controlled trial to determine the efficacy of *Lactobacillus GG* (LGG) for treating functional abdominal pain disorders in children providing a Level 1, Grade A level of evidence.

The study contained a total of 104 children who fulfilled the Rome II criteria for functional dyspepsia (FD), or irritable bowel syndrome (IBS), or functional abdominal pain (FAP). All participants were enrolled in a 4-week treatment period. Eligible participants were children age 6-16 years of age of either gender with an abdominal pain disorder according to the Rome II diagnostic criteria.

The randomly assigned patients were given either LGG ( $3 \times 10^9$  colony forming units) or placebo twice daily for 4 weeks. All patients received a diary to record symptoms and the frequency of daily pain, drug use and any symptoms they considered important. To assess the severity of pain, the Faces Pain Scale, by self-report was utilized. The primary outcome measure was treatment success defined as no pain at the end of the intervention. The secondary outcome measures were improvements defined as a change in the FPS by at least two faces score; self reported severity of pain during the preceding week measured on the FPS; self reported frequency of pain during the preceding week; use of medication for abdominal pain and school absenteeism because of abdominal pain.

### **Results**

The results of the studies indicate that the use of LGG in patients with abdominal pain may be effective in lessening the frequency and severity of pain. Limitations included a small sample size, short duration of study, and validity of self-reported record keeping. Furthermore, the beneficial effects may not be unique to LGG and the possibility that the positive effect is only temporary cannot be excluded. Further larger research trials are recommended at this time.

### **Clinical Bottom Line**

According to these two studies, the use of LGG can be recommended, as a treatment option for patients experiencing recurrent abdominal pain, however

further research is necessary to determine the true effectiveness. These studies are relevant to practice today because functional abdominal pain disorders are common in school-aged children. Approximately 10-20% of school-aged children experience recurrent abdominal pain and is a common reason for referral to a pediatric gastroenterologist. Therefore, there is an interest on the part of patients, caregivers and practitioners as to simple and effective measures to relieve symptoms.

### **Implications for Practice**

I would recommend the use of LGG to assist in lessening frequency and severity of recurrent abdominal pain in children. Possible causes of recurrent abdominal pain must be explored as well. Lactobacillus can be found in yogurt, buttermilk, cheese, sour cream and some fortified foods labeled "active cultures". Supplements are also available in tablet, capsule and liquid forms. The dosage at which a supplement is beneficial is currently being researched, and different supplement brands may contain different strains and dosages. Therefore, ingestion through more natural sources may be a better option at this time. Risks associated with the ingestion of LGG through natural sources are minimal; therefore, benefits outweigh any risk associated with this practice. More research on this topic, including supplement strains and dosing would be extremely beneficial.

Reference

- Francavilla, R., Miniello, V., Magista, A., DeCanio, A., Bucci, N., Gagliardi, F., Lionetti, E., Castellanets, L...Cavallo, L. (2010). A randomized controlled trial of *Lactobacillus* GG in children with functional abdominal pain. *Pediatrics*, 126(6), e1445-1452. DOI: 10.1542/peds.2010-0467
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