FACTORS ASSOCIATED WITH INADEQUATE BOWEL PREPARATION FOR COLONOSCOPY IN CHILDREN - A PROSPECTIVE STUDY

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Disclosure

- I have no financial relationship to disclose

Introduction

- Good bowel preparation is a primary prerequisite for good quality colonoscopy
- Bowel preparation is a major quality indicator of colonoscopy
- ASGE-ACG Task Force recommends that bowel preparation quality should be documented in procedure report

Weinberg DS et al. Quality indicators for colonoscopy - Gastrointest Endosc 2015;81:31-53
**Impact**

- Missed diagnosis
- Incorrect diagnosis
- Longer anesthesia time
- Increased frequency of complications
- Cancelled procedures
- Shorter follow-up colonoscopy time
- Increased costs


**Introduction**

- Several studies have been done attempting to improve the quality of bowel preparation
- 20-40% of bowel preparations remain inadequate in most centers
- Several patient factors identified in adults which predict inadequate bowel preparation
- This aspect has not been studied in children


**Objective**

To determine factors associated with inadequate bowel preparation in children undergoing colonoscopy
Methods

- Prospective observational study
- Enrolled children (1 to 18 years) who received standard weight-based PEG 3350 bowel preparation for routine outpatient colonoscopy
- Data was collected from EMR and clinical chart
- Bowel preparation quality was evaluated by endoscopist using a validated tool, Boston Bowel Preparation Scale (BBPS)

Boston Bowel Preparation Scale

![Image of BBPS scale]

Statistical Analysis

- Patients were divided into two groups based on BBPS score
  - Inadequate preparation (BBPS score < 5)
  - Adequate (BBPS score ≥ 5)
- Groups were compared using Student's t-test and Chi-square test
- Univariate and Multivariate mixed effects logistic regression was used to analyze possible predictors of inadequate bowel preparation
Results

- 222 subjects
- Mean age 12.5 years (age range 2-18 year)
- 59.9% Females
- 82.9% Caucasian
- Indications: (abdominal pain 58%, diarrhea 23%, hematochezia 23%, IBD 9.5%, weight loss 5.9%)
- Mean BBPS score 6.5 (SD of ±2)

Quality of Bowel Preparation

- Adequate Bowel Preparation: 80.4%
- Inadequate Bowel Preparation: 19.4%

Body Mass Index and Inadequate Bowel Preparation

<table>
<thead>
<tr>
<th>BMI</th>
<th>OR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal BMI vs Overweight</td>
<td>0.92</td>
<td>0.42-2.04</td>
<td>0.8</td>
</tr>
<tr>
<td>Normal BMI vs Obese</td>
<td>1.21</td>
<td>0.45-3.22</td>
<td>0.6</td>
</tr>
<tr>
<td>Overweight vs Obese</td>
<td>0.88</td>
<td>0.63-1.87</td>
<td>0.6</td>
</tr>
</tbody>
</table>
### Other Factors and IBP

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>OR</th>
<th>95% CI</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1.18</td>
<td>0.55-2.52</td>
<td>0.67</td>
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<tr>
<td>Race</td>
<td>1.48</td>
<td>1.07-2.03</td>
<td>0.07</td>
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<td>Insurance</td>
<td>1.38</td>
<td>0.63-3.02</td>
<td>0.43</td>
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<tr>
<td>Diarrhea</td>
<td>0.83</td>
<td>0.33-2.04</td>
<td>0.68</td>
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<tr>
<td>Hematochezia</td>
<td>0.9</td>
<td>0.74-1.08</td>
<td>0.26</td>
</tr>
<tr>
<td>IBD</td>
<td>1.17</td>
<td>0.72-1.89</td>
<td>0.53</td>
</tr>
<tr>
<td>Weight loss</td>
<td>0.8</td>
<td>0.58-1.09</td>
<td>0.16</td>
</tr>
</tbody>
</table>

### Summary

- 1 in 5 children had inadequate bowel preparation
- No relationship between inadequate bowel preparation and
  - BMI
  - Gender
  - Race
  - Indication for colonoscopy
  - Insurance type
- We anticipate refinement in our data as more patients are enrolled in this ongoing pediatric study

### Future Direction

- This field is worthy of more studies in this era of quality and cost
- Our study shows the factors affecting bowel preparation in adults are different from children
- Examine other factors which may affect the quality of bowel preparation in children
Acknowledgements

- William E. Bennett, MD
- Riley Outpatient Surgery Center Nurses
- Pediatric Gastroenterology Department at Riley Hospital for Children
- Patients who participated in the study!

Future Direction

- Co-morbid conditions
- Medication
- Compliance with bowel preparation
- Socioeconomic factors
- Time between clinic visit and colonoscopy