

# Module 2:

# Gastrointestinal Problems & Autism

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# Gastrointestinal Problems and Autism

- Under diagnosis of GI disorders in non-verbal patients
  - Associated with behavioral and sleep issues
- Prevalence of GI symptoms variable (46-84%)
  - Communication issues
  - Stereotypical diets: risk for deficits
  - Side effects of medications
    - Stimulants associated with abdominal pain
    - Beta blockers associated with diarrhea
- Unknown prevalence of GI pathology
- Similar demographics than non ASD patients
- Non-verbal patients show worse anxiety, irritability, social withdrawal
- Self-injurious behaviors
- No evidence for nutritional supplements or dietary therapies

# Gastrointestinal Problems and Autism

- Higher prevalence of Gastrointestinal symptoms
  - Constipation
  - Diarrhea
  - Abdominal pain
  - Bloating
  - Other: over eating, undereating
- Unclear if higher prevalence of gastrointestinal pathology
- Presentation with behavioral changes: self aggression, sleeping disorders, etc
- NO evidence of unique to autism GI pathology or different severity of GI pathology when present
- NO evidence supporting restrictive diets for autism treatment unless otherwise indicated
- Beware of nutritional deficiencies in restrictive eating behaviors

# Gastrointestinal Symptoms in Autism

McElhanon B et al. Pediatrics 2014; 133:872-883

- Meta-analysis. Pediatric population with ASD, control group, GI data presented
- 15 out of 961 articles fulfilled criteria. Pool of 2215 children.
- Higher levels of GI symptoms. Statistically significant.
  - Overall risk of GI symptoms OR 4.42 (0.39-48.25)
  - Diarrhea OR 3.63 (0.6-19.8)
  - Constipation OR 3.86 (0.86-32.89)
  - Abdominal pain OR 2.45 (0.93-7.91)
- Sensitivity analysis: No study significantly altered results
- Inspection of funnel plots: No significant publication bias

# Gastrointestinal Symptoms in Autism

McElhanon B et al. Pediatrics 2014; 133:872-883

- Limitations:
  - Small pool of studies
  - Only 4 of 15 possible GI symptoms met threshold
  - Insufficient data to link symptoms with organic GI pathology
  - Unclear relative contribution of behavioral factors (toileting, feeding issues, etc.) to GI symptoms
  - Data obtained through parents reports or chart review

# Comorbid Psychological Disorders, Sleep Problems and GI Symptoms in Autism

Mannion A et al.

Research in Autism Spectrum Disorders 7 (2013) 35-42

Research in Autism Spectrum Disorders 22 (2016) 20-33

- 89 Children and adolescents with autism
- Questionnaires:
  - Autism Spectrum Disorders-Comorbid for Children (ASD-CC). Includes over and under eating
  - Children Sleep Habits Questionnaire (CSHQ)
  - GI Symptoms Inventory: Abdominal pain, Abnormal BMs, Reflux, food sensitivity
- Comorbidity: 48% excluding intellectual disability (ID) and 78% with ID
- GI symptoms:
  - 79% had at least 1 GI symptom in the last 3 m
  - 20% had only one symptom and the rest 2 or more symptoms
  - 51.7% abdominal pain, 49.1% constipation, 45% diarrhea, 25% Bloating
- Linear regression for prediction of sleep disorder
  - Under eating, avoidant behavior and GI symptoms are predictors of sleeping disorders
- Multiple regression
  - GI symptoms predicted sleep anxiety and parasomnias

# Comorbid Psychological Disorders, Sleep Problems and GI Symptoms in Autism

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- 2 years follow up of 56 patients
- Sleep d/o persisted in 91.5 % of subjects
- GI symptoms persisted in 84.4 % of subjects
  - Sleep anxiety predicted abdominal pain
  - Nausea predicted worry/depressed behavior
  - Abdominal pain predicted problem behavior
  - Diarrhea predicted tantrum
- At least one symptom persisted in 84.4%
- Problem behavior and sleep problems might be presentation of GI disorders

# Association of GI Symptoms & Self-Injurious Behavior in ASD

Soke G et al. Autism 2017 1-11

- Data from the Study to Explore Early Development
- 692 children met criteria for Autism
- Self-Injurious behavior (SIB) “ever” reported in 47% and “current” in 28%
- Multivariable analysis demonstrated statistically significant association of GI symptoms among other
- GI symptoms reported in:
  - In 42.78 of patients with “Current” SIB
  - In 53.33 5 of patients with “Ever” SIB



# Nutritional and Dietary Interventions for Autism Spectrum Disorder: A Systematic Review

Sathe N et al. Pediatrics 2017; 139 (6): 1-8

- Systematic review of literature
- 19 RCTs, 732 pooled patients
- Interventions
  - Gluten/casein free diets
  - Food challenges
  - Enzyme supplementations
  - Omega 3
  - Other supplements (methyl B12, levocarnitine)
- Most have small sample and short term (<6m)
- Insufficient strength of data
- "There is little evidence to support the use of nutritional supplements or dietary therapies for children with ASD"

# References

Mannion, A., Leader, G., & Healy, O. (2013). An investigation of comorbid psychological disorders, sleep problems, gastrointestinal symptoms and epilepsy in children and adolescents with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 7(1), 35-42.

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