

BACKGROUND

- Glucagon-like peptide-1 receptor agonists (GLP1 RA) delay gastric emptying, increasing satiety and decrease insulin resistance aiding in weight loss and diabetes management.
- GLP1-RAs are approved for pediatric patients ≥ 10 -years-old for type-2 diabetes (T2DM) and ≥ 12 -years-old for obesity management.
- Adult literature has raised concern for increased risk of pulmonary aspiration perioperatively in patients taking GLP1-RAs, despite adequate nil per os (NPO) times.¹
- There is a paucity of data in pediatric patients taking GLP1-RAs.

PURPOSE

Study Aim: To examine gastric contents in appropriately-fasted (≥ 8 hours) pediatric patients on GLP1-RAs compared to children not on GLP1-RAs utilizing gastric ultrasound.

PARTICIPANTS & METHODS

- Prospective cohort study recruited convenience samples of pediatric patients ages 10-18 years-old between June 2023-November 2024.
- Three patient populations were identified and studied:
 1. Children on GLP1-RAs
 2. Children at risk for delayed gastric emptying (DGE) (T1/2DM, obesity) not on GLP1-RAs
 3. Children not at risk for DGE not on GLP1-RAs
- Patients were considered NPO for solids ≥ 8 hours and clears ≥ 1 hour
- Gastric ultrasound images were obtained in right lateral decubitus position and were scored by a blinded reviewer for quality of contents (gastric antral grade 0-2)² and quantity.
- Gastric fluid volume (GFV) was obtained by calculating antral cross-sectional area and Spencer's formula (volume = $0.035 \times \text{CSA} [\text{mm}^2] + 1.52 \times \text{age}[\text{yrs}] - 7.8/\text{wt}[\text{kg}]$)

RESULTS

- 67 patients were included: 20 in the GLP1-RA group; 27 in the DGE at-risk group; and 20 in the healthy control group.
- The mean age was 15 ± 2.2 -years-old. There were significant differences in weight, body mass index, sex, and race between the three groups, as was expected based on the study design.
- Mean NPO times for solids and clears were 13 ± 1.9 hours and 9.5 ± 5.2 hours, respectively.
- **GLP1-RA group:** 16/20 (80%) had qualitative evidence of gastric solids present (grade 2)
- **High-risk DGE group:** 17/27 (63%) had solids present
- **Healthy control group:** 1/20 (5%) had solids present
- In children with clear fluid (grade 1), GFVs were estimated to be $\leq 1.5\text{mL/kg}$ in all 3 groups.

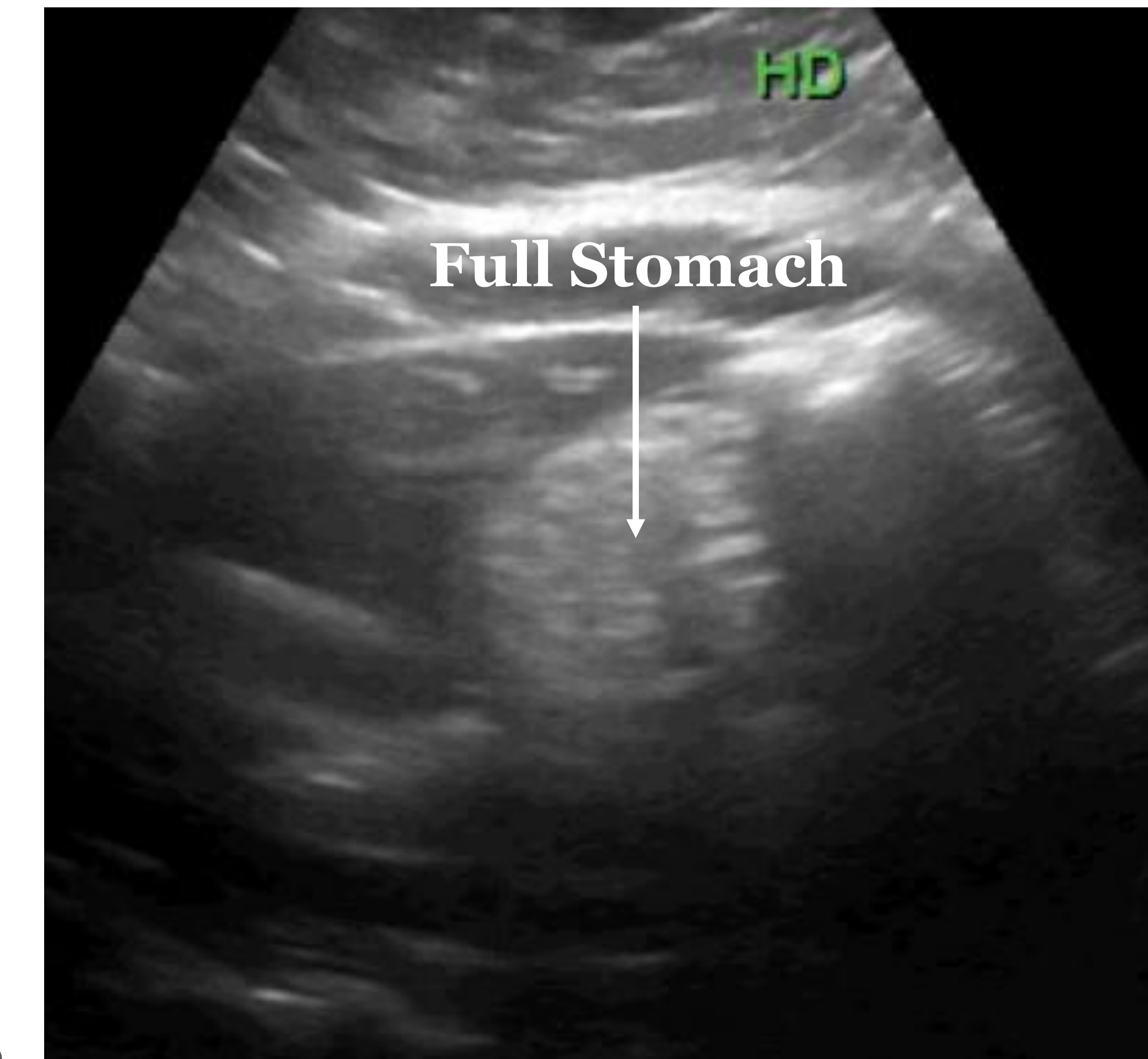
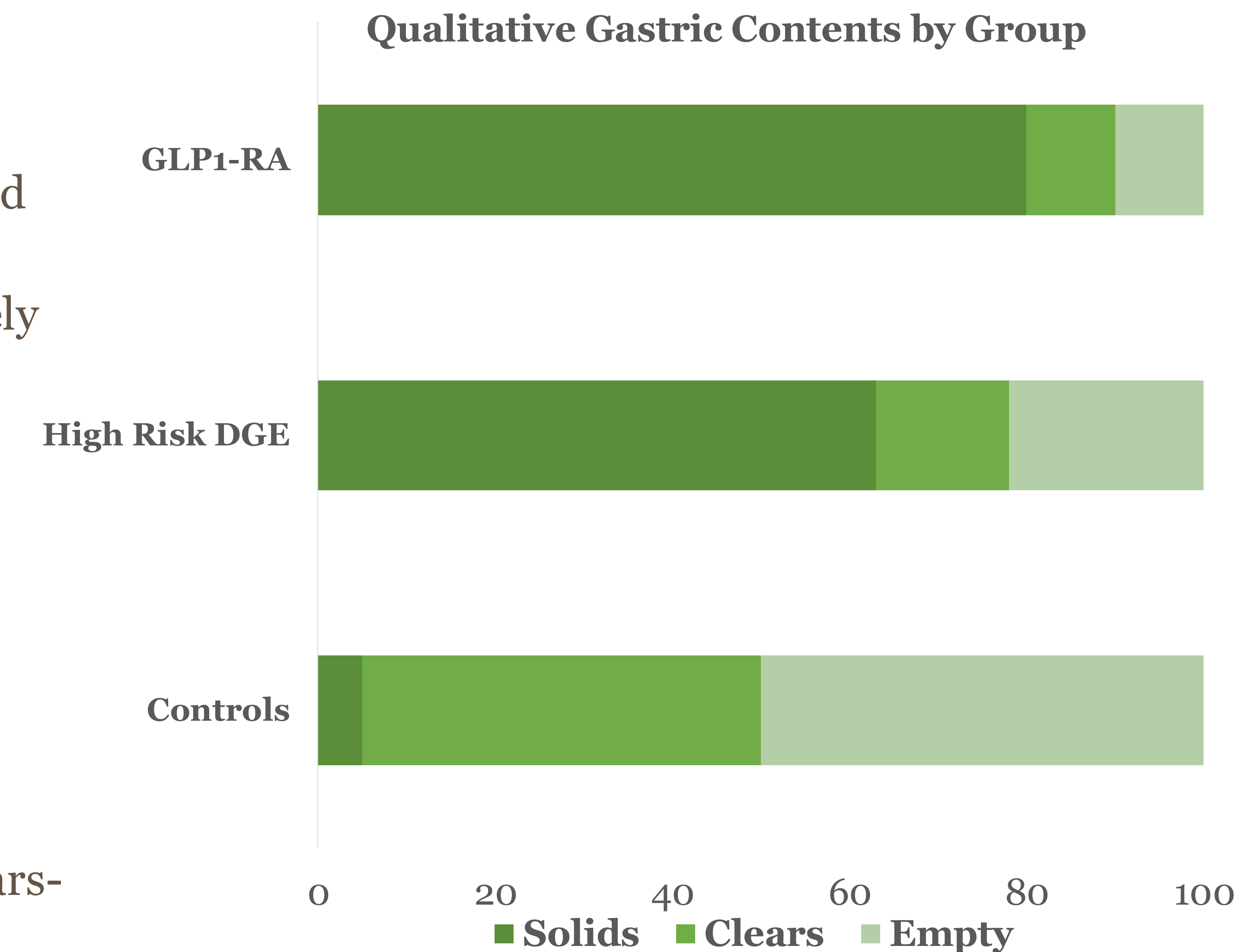


Figure. Gastric ultrasound with mixed solids/liquids in a patient on a GLP1-RA.

DISCUSSION

- This study suggests that a high percentage of pediatric patients on GLP1-RAs have gastric solids present despite adequate NPO times.
- Children not on GLP1-RAs but at risk for DGE also had solids present $>50\%$.
- In 2024, the American Society of Anesthesiologists, alongside several multidisciplinary societies, published guidelines advising GLP1-RAs be continued perioperatively, and patients at elevated risk of DGE should be placed on a liquid diet 24-hours before day of surgery.⁴
- Based on the recent guidelines and these study findings, pediatric patients on GLP1-RAs may be at risk for DGE and should likely transition to clears 24-hours preoperatively or have their GLP1-RAs held periprocedurally.

CONCLUSION:

- **Eighty percent of pediatric patients on GLP1-RAs had solids present on gastric ultrasound in the setting of standard NPO times.**
- More evidence is needed to shape perioperative management guidelines in children utilizing these medications.

REFERENCES:

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4. Kindel T et al. Surgery for Obesity and Related Diseases. 2024 Oct. 1-4.