



ASSESSING THE IMPACT OF GASTRIC INTOLERANCE FEATURES, INCLUDING VOMITING, FLATULENCE, DIARRHEA, AND STOMACH ACHE, ON PATIENTS IN A STUDY GROUP

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ABSTRACT

Background: Feeding intolerance is a common issue in critically ill patients, which refers to the difficulty in tolerating and digesting enteral feeding. Symptoms of feeding intolerance can include vomiting, bloating, abdominal distension, and diarrhea. Gastric residual volume (GRV) is a commonly used method to assess gastric emptying, although its use is still controversial. Other gastrointestinal (GI) dysfunctions, such as gastritis, lactose intolerance, food intolerance, and fat intolerance, can also cause symptoms similar to feeding intolerance. These symptoms can be associated with worse clinical outcomes, highlighting the importance of early recognition and management of feeding intolerance. **Methods:** Nursing plays a crucial role in monitoring for feeding intolerance in critically ill patients. Nursing functions include assessing signs and symptoms of feeding intolerance, monitoring for changes in GRV, and exploring the causes of GI symptoms through subjective assessment of the patient's medical and family history, as well as any digestive or nutritional issues. **Result:** By closely monitoring for feeding intolerance and promptly identifying its symptoms, nursing interventions such as adjusting the type of feeding, feeding rate, or switching to parenteral nutrition can be implemented. This can improve the patient's clinical outcomes and reduce the risk of complications associated with feeding intolerance, such as aspiration pneumonia or gut ischemia. **Conclusion:** In conclusion, one of the signs of gastric feeding intolerance, high GRV, is significantly prognostic of ICU mortality. It is estimated that about 27% of hospitalised patients in general units and approximately 36% of patients in intensive care units experience food intolerance.

KEYWORDS: Feeding intolerance, critically ill patients, enteral feeding.

INTRODUCTION

Feeding intolerance is a significant problem among critically ill patients, as it can lead to serious complications that can hinder their recovery. It is a complex condition that can be influenced by various factors, such as the type of feeding, feeding rate, and the patient's medical condition. Additionally, gastrointestinal dysfunctions such as gastritis, lactose intolerance, food intolerance, and fat intolerance can also cause symptoms similar to feeding intolerance.^[1] Therefore, it is important for healthcare professionals to monitor patients who are receiving enteral feedings for signs and symptoms of feeding intolerance. Our study, "Monitoring Adult Patients for Intolerance to Enteral Feedings," aims to provide a comprehensive overview of feeding intolerance and the nursing interventions that can be used to monitor and manage it effectively in adult patients receiving enteral feedings. In this study, we reviewed the literature on feeding intolerance and nursing interventions, and presented case studies to

illustrate the practical application of these interventions.^[2]

The nursing functions in monitoring for intolerance to feedings include assessing the signs and symptoms of feeding intolerance and monitoring for changes in gastric residual volume (GRV). Although the use of GRV is controversial, it is often used as a means of assessing gastric emptying. The subjective assessment of the patient's medical and family history, as well as any digestive or nutritional issues, is also important in exploring the causes of GI symptoms. Our study emphasizes the importance of considering the patient's medical and family history, as well as any digestive or nutritional issues when exploring the causes of GI symptoms.^[3] We also highlight the significance of using nursing interventions to monitor for signs and symptoms of feeding intolerance and assess GRV to identify and manage this condition effectively. As healthcare professionals working in critical care settings, it is

crucial to understand the importance of enteral feeding in critically ill patients and the potential complications that can arise from feeding intolerance. In conclusion, our study provides important insights into the nursing care of patients with feeding intolerance and can serve as a useful resource for healthcare professionals working in critical care settings. By monitoring patients for signs and symptoms of feeding intolerance and assessing GRV, healthcare professionals can identify and manage this condition effectively, ultimately improving patient outcomes.^[4]

MATERIAL AND METHODS

The study was conducted in critically ill patients admitted to the ICU at Indira Gandhi Medical College, Shimla in the year 2020-2021 over a 12-month period. The sample size was estimated to be 30 patients with an expected correlation coefficient of 0.5, 80% power and two-tailed alpha error of 5%, but 50 patients were enrolled to account for potential loss due to various circumstances. The study was conducted prospectively on patients aged 18-80 years who met the inclusion criteria and were willing to participate in the study. Ethics approval and informed consent were obtained prior to conducting the study

Inclusion criteria

- 1) Critically ill enterally fed patients.
- 2) Anticipated ICU stay of at least 5 days.
- 3) Not on any prokinetics for feed intolerance.
- 4) Patients giving consent for participating in the study.

Exclusion criteria

- 1) Bowel surgery within 24 hours.
- 2) GI bleed, obstruction, perforation, malabsorption syndrome (MAS).
- 3) Abnormal LFTs; SGOT/SGPT more than 3 times normal and/or Total bilirubin more than 3 times normal.
- 4) Morbid obesity/pregnancy (unable to achieve right lateral position).

The study included enterally fed patients who underwent bedside ultrasonography and manual aspiration twice a

day to measure gastric reserve volume. Any adverse effects were recorded, and Levosulpiride was administered if the gastric residual volume exceeded 150ml and gastric feed intolerance was observed. The patients were given enteral feed in a bolus technique and subjected to a chlorhexidine mouth wash to reduce VAP incidence. The gastric antrum was identified below the left lobe of liver and pancreas, and a still image was captured. Data was entered into proforma sheets and analyzed using appropriate statistical tests at the end of the study.

STATISTICAL ANALYSIS

The presentation of the Categorical variables was done in the form of number and percentage (%). On the other hand, the quantitative data were presented as the means \pm SD and as median with 25th and 75th percentiles (interquartile range). The following statistical tests were applied for the results:

1. The comparison of the variables which were quantitative in nature were analysed using Paired t test was used across follow up.
2. Sensitivity, specificity, positive predictive value and negative predictive value of ultrasonographic was calculated for predicting feed intolerance, average gastric reserve volume(mL/kg) ≤ 0.8 and average gastric reserve volume(mL/kg) > 0.8 .
3. Pearson correlation coefficient was used for correlation of Gastric reserve volume(mL) and gastric reserve volume(mL/kg) between Ultrasonographic and Manual aspiration.
4. Bland-Altman plot was used for comparison of measurement of gastric reserve volume and average gastric reserve volume between ultrasonographic and manual aspiration.

The data entry was done in the Microsoft Excel spreadsheet and the final analysis was done with the use of Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, version 21.0. For statistical significance, p value of less than 0.05 was considered statistically significant.

RESULTS

Table 1:-Sensitivity, specificity, positive predictive value and negative predictive value of ultrasonographic for predicting feed intolerance, average gastric reserve volume(mL/kg) ≤ 0.8 and average gastric reserve volume(mL/kg) > 0.8 .

Ultrasonographic vs Manual aspiration	Sensitivity (95% CI)	Specificity (95% CI)	AUC (95% CI)	Positive Predictive Value (95% CI)	Negative Predictive Value (95% CI)	Diagnostic accuracy
Feed intolerance	66.67% (9.43% to 99.16%)	98.15% (90.11% to 99.95%)	0.82 (0.70 to 0.91)	66.67% (9.43% to 99.16%)	98.15% (90.11% to 99.95%)	96.49%
Average gastric reserve volume (mL/kg) ≤ 0.4	89.66% (78.83% to 96.11%)	76.58% (71.06% to 81.51%)	0.83 (0.79 to 0.87)	45.22% (35.92% to 54.77%)	97.17% (93.94% to 98.95%)	78.90%
Average gastric reserve volume (mL/kg) > 0.8	75% (47.62% to 92.73%)	92.28% (88.74% to 94.99%)	0.84 (0.79 to 0.87)	33.33% (18.56% to 50.97%)	98.63% (96.52% to 99.62%)	91.44%

We investigated the USG's sensitivity for determining the feed. When it came to intolerance, we discovered that this method had a diagnostic accuracy of 96.49%, an AUC of 0.8, a sensitivity and PPV of 66.67%, and a specificity and NPV of 98.15%. Only 57 patients were included in our investigation, which resulted in a low sensitivity and positive predictive value (PPV) as well as a low prevalence of the illnesses, as only 4 USG patients (7%) and 3 patients (5.2%) using the manual aspiration approach had increased GRV. Since the USG could accurately diagnose feed intolerance in all of the patients in whom the manual aspiration approach found it, the specificity and NPV were both excellent. The majority of research on GRV have used volumes greater than 0.8 ml/kg as a danger threshold where there is a substantial risk of morbidity and mortality if aspiration occurs in patients. A better prognosis was discovered by researchers who looked at aspiration of stomach contents less than 0.8 ml/kg. As a result, we also divided the GRV into two groups: >0.8 and less than this. In the diagnosis of >0.8 ml/kg risk stomach, where the diagnostic accuracy was 91.44% as opposed to 78.90% for 0.4 ml/kg stomach, we discovered that USG had greater sensitivity and specificity.

DISCUSSION

Feeding intolerance refers to the inability of the digestive system to tolerate enteral feeding, leading to a host of telltale signs and symptoms that may signal intolerance to enteral feeding, including vomiting, nausea, abdominal pain and/or distension, constipation, and diarrhea. Feeding intolerance can occur due to various factors such as delayed gastric emptying, gastrointestinal complications, and medication interactions. The assessment of signs and symptoms of feeding intolerance involves the monitoring of gastric residual volume (GRV).^[5] However, there is controversy surrounding GRV monitoring in assessing feeding tolerance in acutely and critically ill adults. Other common gastrointestinal issues include constipation, irritable bowel syndrome (IBS), nausea, food poisoning, gas, bloating, gastroesophageal reflux disease (GERD), and diarrhea.^[6] Symptoms of lactose intolerance usually begin 30 minutes to 2 hours after eating or drinking foods that contain lactose, including diarrhea, nausea, stomach cramps, bloating, and gas. Abdominal discomfort (bloating, pain or cramps), unintentional weight loss, vomiting and nausea, acid reflux (heartburn), diarrhea, constipation (or sometimes both), fecal incontinence, and fatigue are common symptoms of most gastrointestinal problems.^[7] Proton pump inhibitors, anticholinergics, parenteral nutrition (PN), oral feeding, and cholestyramine are some of the treatment options for gastrointestinal issues.

CONCLUSION

Feeding intolerance is a common problem in critically ill patients receiving nutrients through tube feeding, characterized by vomiting, nausea, and large gastric residual volume. Gastritis is an inflammation of the

stomach lining caused by various diseases and conditions, including Crohn's disease. Peptic ulcers cause burning stomach pain, often relieved by certain foods or medication. Food intolerance differs from allergies and causes bloating, belching, and heartburn. Chronic diarrhea may result from an endocrine neoplasm, a rare cause that accounts for <1% of patients. Consultation with healthcare professionals is necessary to determine the underlying cause and receive appropriate treatment.

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