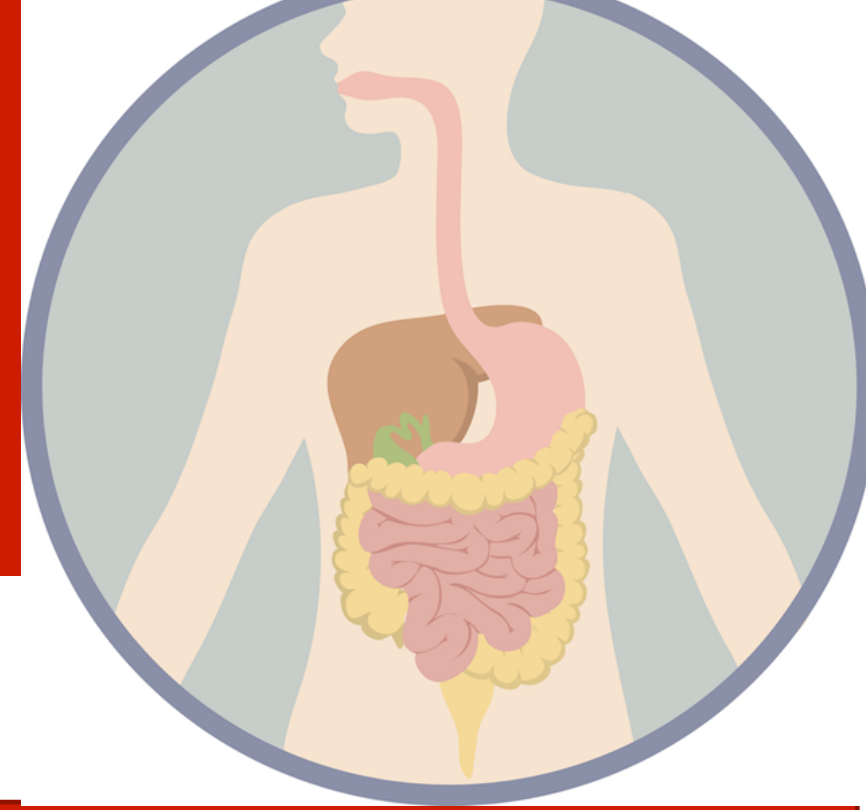




Effect of Feeding-Tube Properties on Residual Volume Measurement in Tube-Feedings



Penny Dorsett, Lauren Earl, Amie Jarosz and Rebecca Williams
 Indiana University School of Nursing at IUPUC
 Faculty Mentor: Rebecca J. Bartlett Ellis, Ph.D., R.N.

Introduction

There is no standardized approach for monitoring feeding tube intolerance. Gastric residual volume (GRV) measurement is utilized to determine gastrointestinal absorption of nutrients; however, Metheny and colleagues (2005) identified that the tube size may influence the amount of GRV assessed.

Methods and Material

Four nasogastric feeding tubes with four distal ports were used in this study:

- 10-FR Polyurethane tube (Maxter),
- 10-FR Sump tube (McKesson),
- 18-Fr PVC , and
- 18-Fr Polyurethane (Maxter)

Two tubes were randomly assigned a placed in the simulated stomach.



Participants (n = 16) were blinded from fluid present in the stomach.

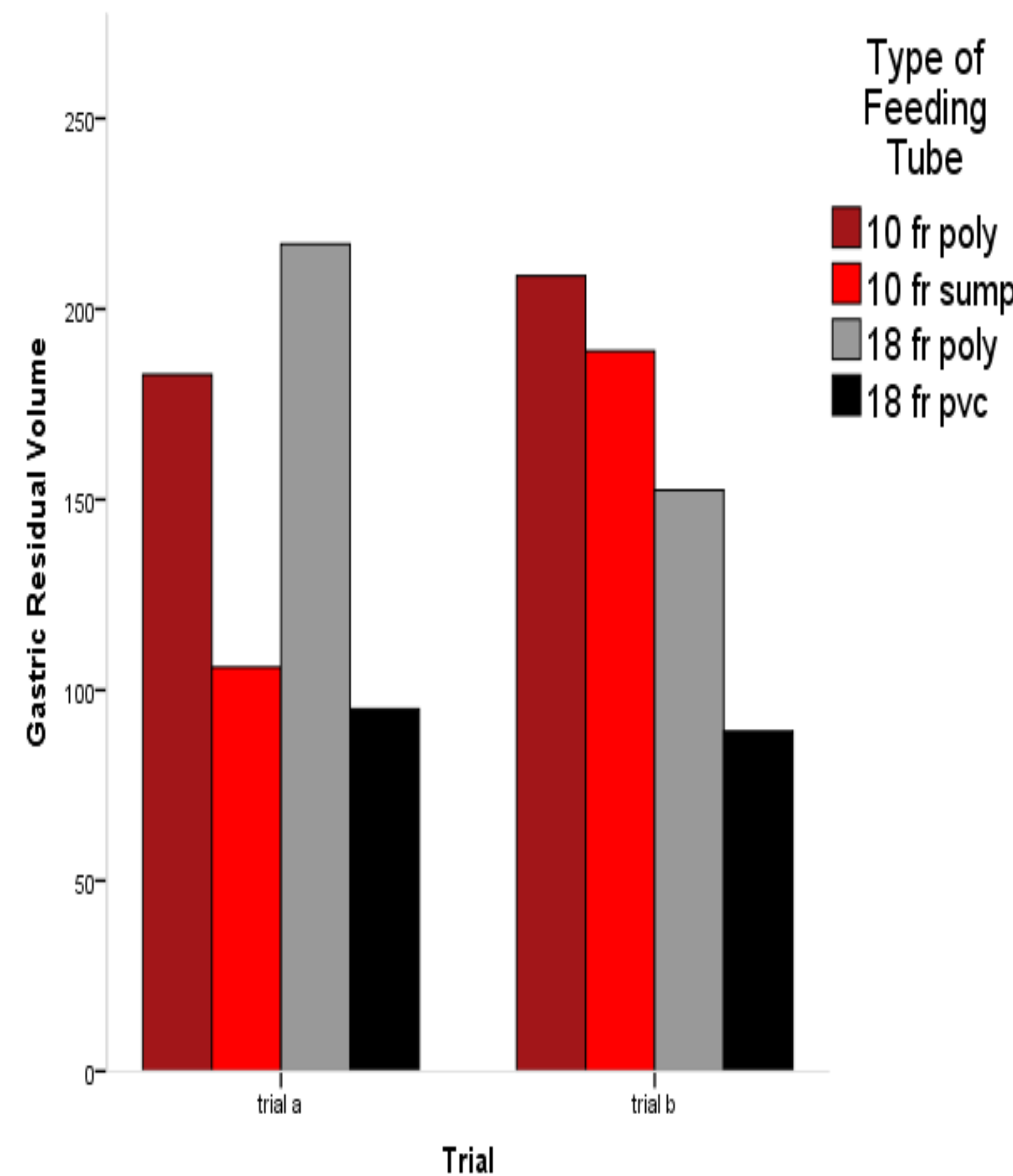
Participants first aspirated from one tube, returned fluid, flushed with 30 mL of water, then aspirated from the second tube.

A total of 31 measurements were made across all four tubes.

Purpose

The goal of this study was to replicate an *in vivo* study, to determine if the results are reproducible, *in vitro*, utilizing a simulated stomach, in particular, to determine if the smaller bore tubes underestimate gastric aspirate & content (Metheny, Stewart, Nuetzel, Oliver and Clouse, 2005).

Distribution of Gastric Residual Volumes



Analysis

SPSS 20.0 used to analyze data. Descriptive statistics used to evaluate distribution of GRV (Mean ± SD). A Paired T-Test was used to evaluate the overall research question. Alpha was set at $p < .05$.

Tube	Mean (SD)	Percent of Actual Volume	Significance
10 Fr Poly 10 Fr Sump	37.8(123)	78%	.921(8) = .384, $p > .05$
10 Fr Poly 18 Fr Poly	33.9(36)	78%	2.84(8)=.022, $p < .05$
10 Fr Poly 18 Fr PVC	87.3(127)	78%	2.48(12)=.029, $p < .05$

Conclusions

10-Fr Polyurethane tubes yielded larger percentages GRV compared with the 18-Fr Polyurethane and the 18-Fr PVC. We were unable to reproduce the results found in Metheny's (2005) study. In fact, our findings were just the opposite. The smaller bore (10 Fr) tubes were associated with larger aspirates.

Recommendations for clinical practice:

Smaller bore tubes are associated with less patient discomfort and may facilitate better GRV measurements, although the percent of assessed GRV was not very accurate across all feeding tubes. This should be further studied.