

A study to assess the effectiveness of abdominal massage on gastric residual volume among patients with intermittent naso-gastric tube feeding in a selected hospital, Bangalore.

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Abstract

AIM: To assess the effectiveness of abdominal massage on gastric residual volume among patients with intermittent nasogastric tube feeding.

MATERIAL AND METHODS: A one group pre-test post-test pre-experimental design was adopted to conduct the study on 50 patients with nasogastric tube feeding in an intensive care unit of St. John's Medical College Hospital, Bangalore. Subjects were selected using non-probability consecutive sampling based on specific inclusion and exclusion criteria. On day one, the gastric residual volume and abdominal circumference were measured after the first and fifth nasogastric feedings. On day two, the gastric residual volume and abdominal circumference was measured after abdominal massage, after the first and fifth nasogastric feedings. The data obtained was prepared and organized in a master sheet for analysis and was computed using descriptive and inferential statistics.

RESULTS: The findings revealed that there is statistically significant change in gastric residual volume after the application of abdominal massage at $p < 0.001$ level of significance. There was also a statistically significant association between gastric residual volume and drugs (proton pump inhibitor).

CONCLUSION: In the present study, abdominal massage has proven to be an effective technique in reducing the gastric residual volume among patients receiving intermittent nasogastric tube feeding.

Key Words

Gastric residual volume, abdominal circumference, Intermittent nasogastric tube feeding.

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I. Introduction

Nutrition is one of the essential components of life. Every individual requires nutrition for healthy living. However for some individuals, nutritional intake becomes compromised while some benefit from oral supplements, others require active nutritional support. In the hospital setting depending on the disease condition, patients may need to maintain their nutritional intake through altered routes like enteral tube feeds and parenteral. Critically ill patient can have issues that can lead to restriction in oral feeding. In such cases, an option is nasogastric feeding. Nutritional support in intensive care units (ICUs) is an integral part of patient care. It is an important factor in health maintenance and disease recovery, particularly in critically ill patients on mechanical ventilation (MV).^{1,2,3} In such cases, a nasogastric tube is inserted through the nares down the esophagus and into the stomach to allow the administration of feed based on requirement of the patient.⁴ Gastric residual volume (GRV) is defined as the volume of enteral formula left in a patient's stomach after cessation of enteral formula at numerous scheduled time intervals⁵, and is the most common alternate indicator for gastrointestinal tolerance use in intensive care units.⁶

The practice of monitoring GRV is to assess the safety of enteral tube feeding. There are many advantages to monitoring delivery of enteral feed, including the prevention of under feeding, which can decrease the morbidity and mortality rate in critically ill patients. Gastric intolerance develops in 10% -63% of enterally fed patients.¹ In order to prevent gastric intolerance; aspiration of gastric residual volume is most important way to improve the feeding. High GRV are thought to be due to delayed gastric emptying which is caused by intolerance to enteral feed. The large amount of GRV may result in aspiration of gastric contents, abdominal distension and ventilator associated pneumonia⁷. The findings from this study, revealed that there was statistically significant decrease in gastric residual volume after the application of abdominal massage.⁸

Massage is a part of many ancient cultures. Civilizations of the East and West found that massage could heal injuries, relieve pain, and prevent and cure illnesses. It is extremely helpful for the body and therapeutic for the mind as it helps in reducing stress and produce deep relaxation. Massage therapy began as a sacred system of natural healing. Abdominal massage was introduced by Chi Nei Tsang of Taoist.⁹ It was used by monks in monasteries to help detoxify and strengthen their bodies. Abdominal massage helps in elimination

and stimulation of lymphatic and circulatory systems.¹⁰ Additionally, digestive problems result in stress, and releasing stress can encourage healthy intestinal function. This massage also helps to stimulate the muscles and organs required to produce a bowel movement. There are different benefits such as improved circulation, relaxation, feeling of wellbeing and reduction in anxiety and pain. Performing abdominal massage on patient with nasogastric tube helps to reduce the chances of abdominal distension and elevated GRV. It is a completely natural and chemical free therapy.¹¹ This study is intended to study the effect of abdominal massage on GRV among ICU patients with intermittent nasogastric tube feeding. The intent was to implement a technique nurses could implement for reducing the chances of abdominal distension, side effects from nasogastric tube feeds, and excess GRV, while gathering data on its effectiveness and significance to patient outcomes. This technique is simple, cost effective, and non-pharmacological, can be practiced safely by nurses and caregivers. As nurses are responsible for the patients' feedings, using non-invasive means to reduce negative outcomes also provides holistic nursing care.

II. Material And Methods

Study design and sample

A one group pre-test post-test pre-experimental design was adopted to conduct the study on 50 patients with naso-gastric tube feeding in an intensive care unit of St. John's Medical College Hospital, Bangalore. Subjects were selected using non-probability purposive sampling based on specific inclusion and exclusion criteria. On day one, the gastric residual volume and abdominal circumference were measured after the first and fifth nasogastric feedings. On day two, the gastric residual volume and abdominal circumference was measured after abdominal massage, after the first and fifth nasogastric feedings. The data obtained was prepared and organized in a master sheet for analysis and was computed using descriptive and inferential statistics.

III. Results

The findings revealed statistically significant decrease in gastric residual volume after the application of abdominal massage. There was no significant change in abdominal circumference. There was no statistically significant association between GRV and age, gender, BMI, diagnosis, APACHE score, or total volume of feed. However, there was a statistically significant association between GRV and the use of drugs (proton pump inhibitor), with the value of $p < 0.04$ level of significance.

The study clearly indicated that intervention has helped in reduction in GRV among patients with intermittent nasogastric tube feedings. The process of study provided benefitting experience to the investigator, as it helped to understand the steps in the quantitative study. The consistent support, direction and correction from the guide and co-guide, cooperation from the study participants, and support from the management contributed to the successful completion of the study.

IV. Discussion

In the current study, the post-intervention median score (60 ml) was less than pre-intervention median score (132.5 ml). There was a statistically significant decrease in the quantity of gastric residual volume by 54.72% after intervention twice a day at $p < 0.001$ level of significance. In a similar study there was statistically significant decrease in GRV by 75% after the application of abdominal massage twice a day.⁸ Another study revealed that abdominal massage reduced gastric residual volume ($p < 0.01$ levels of significance).¹¹ This could be due to the fact that abdominal massage can stimulate parasympathetic activity resulting in a GI tract response.¹³

Similarly another study depicts that there was significant change in abdominal circumference and gastric residual volume on the first and last day in the study group.¹²

Since abdominal massage needs to be done repeatedly over a prolonged period of time for maximum benefits, researchers indicated that it might be beneficial to teach patients how to massage their own abdomen.²³ The introduction of a safe, easily learnt technique of abdominal massage has helped a number of patients gain relief from some of the painful, distressing effects and in some cases has enhanced their feelings of wellbeing.^{24, 25} Older patients cannot digest well due to physiological changes.

This study shows that there is a statistically significant association between GRV and drugs (proton pump inhibitors) at $p < 0.05$ level of significance. Severely ill patients commonly develop GI problems such as mucosal damage, motility disturbances, and hypoalbuminemia related mucosal edema due to severe physiological stress and higher usage of antibiotics. Therefore these patients are on proton pump inhibitor or histamine type 2 receptor blockers to prevent stress ulcers^{26, 27}. PPI also helps in better absorption of food which leads to decrease in GRV.

V. Conclusion

In the present study, abdominal massage has proven to be an effective technique in reducing the gastric residual volume among patients receiving intermittent nasogastric tube feeding.

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