Efficacy of Uninterrupted Vs. Intermittent Naso Gastric Feeding on Patient Outcome among Critically Ill Patients Admitted in Intensive Care Units

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Abstract

Appropriate nutritional support is effective on achievement of expected outcomes in intensive care unit (ICU) patients. Although several studies have suggested different conclusions about the effectiveness of tube feeding methods, there is no specific program of nutritional support for patients who have been hospitalized. There is a possibility for complications due to an inadequate nutrition. A Quasi experimental study by using purposive sampling technique was conducted on 40 patients $n_1 = 20$, $n_2 = 20$ who were admitted in ICUs of a tertiary care hospital, Ludhiana, Punjab. Data was collected by using a self-structured checklist to assess the efficacy of uninterrupted vs. intermittent naso gastric feeding among critically ill patients. Most of the patients were above 40years of age in both experimental and control groups. Out of 40 samples 25 were males. In addition, majority of patients were married. More than half 26 (65.00%) patients were from urban area. Moreover, majority of patients were from Sikh religion 24 (60%) and only 1 (2.5%) were Muslims. In addition 8 (20%) patients were graduate and 11 (27.5%) were in illiterate category. It is seen that 19 (47.5%) were working in both experimental and control group whereas, 21 (52.5%) were non-working in experimental and control groups. It is estimated that half 20 (50%) patients were known case of sepsis and majority, 25 (62.5%) had diabetes and only 12 (30%) had renal disease. Approximately 6 (30%) of the patients were having ventilator support in experimental group whereas, in control group 8 (40%) of patients were on ventilator support. It is evident that there were 5 (25.36%) patients in experimental group who had prior admission with the same pathological condition whereas 7 (37.43%) were in control group. It is revealed that some patients have multiple co-morbidities. Among co-morbidities majority 25 (62.5%) of the patients were known cases of diabetes mellitus in both groups. It is evident that diarrhoea was present in control group 13 (65%) as compared to experimental group it was only 3 (15%) and there was no presence of vomiting in any group. Whereas, constipation, abdominal distension and high gastric residual volume was higher in control group as compared to experimental group. It is concluded that uninterrupted naso gastric feeding is better than the intermittent naso gastric feeding in reference to patient outcome and gastrointestinal problems.

Key words: *Intensive care unit, uninterrupted naso gastric feeding, intermittent naso gastric feeding and Patient outcome.*

Introduction

In hospitalized patients, limitation of nutritional intake occurs because of traditional practices prior to the procedures requiring anesthesia as well as lack of emphasis on nutrition. For many patients admitted to the intensive care unit (ICU) it is not uncommon for nutritional intake to have been already compromised for certain reasons. Once the patients are in the intensive care unit, they are generally unable to ensure the adequacy of their own nutritional intake[1]. Therefore, in critically ill patients early and adequate nutritional status is considered crucially to promote the healing, to decrease physiological stress and to enhance immune-

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competency[2]. A patient in ICUs, who cannot take food orally, requires either enteral or parenteral nutritional support. Enteral nutrition can be administered by using various methods such as continuous, cyclic, intermittent and bolus techniques, either alone or in combination. A number of factors are taken into consideration when selecting enteral nutrition delivery modalities such as the medical condition of the patient, expected tolerance of the tube feeding, location of the feeding tube tip, type of formula used, nutritional requirements, mobility of the patient and cost. Enteral nutrition is generally preferred over parenteral nutrition because the former is associated the reduced cost, decreased length of hospital stay, lower incidence of infectious and non-infectious complications[3-6]. Moreover, enteral nutrition mimics the normal gastrointestinal response following the ingestion of a meal, with the exception of the oral phase[7]. Administration of enteral nutrition should be based on the patient's age, underlying disease, nutritional status, nutritional requirements, enteral access device and condition of gastrointestinal tract[9].There are different routes of providing enteral nutrition to the patients. These routes are through nose, oral cavity, trans-oesophageal feeding and percutaneous enteric route, such as, with the help of nasal route-naso gastric, naso duodenal. Naso jejunal feedings can be provided; through oral route-orogastric feeding is given to the patient furthermore, by means of gastrotomy and jejunostomy percutaneous enteric tube feeding can be provided to the patents[10].

Material and Method

Quantitative research approach was used to collect quantitative data. A quasi experimental post-test only research design was used to collect the required and necessary information. The study was conducted in intensive care units of Dayanand Medical College and Hospital (DMC & Hospital) Ludhiana. The population for the present study comprised of patients who were admitted in ICUs and were receiving enteral feeding. Purposive sampling technique was used for the present study to draw sample from the target population. Total of 40 patients were included as subjects. Different tools were prepared to collect data, PART A: Socio-demographic profile- The tool was prepared to interpret the socio-demographic profile of the patient. It includes age, gender, habitat, religion, educational status, marital status, occupation, family members and family monthly income. PART B: Clinical profile of the patient- It includes medical diagnosis, ventilator support, prior admission with the same illness, associated renal disease, diabetes mellitus, sepsis, type of feed received by the patient, acid suppressing drugs, laxatives, prokinetics, neuromuscular blocking agents and opioids that were prescribed to the patient at the time of interview. PART C: Observational checklist- used to have an account of events of problems associated with enteral feeding. It includes the assessment of gastrointestinal problems like diarrhoea, vomiting, constipation, abdominal distension, high gastric residual volume, which were evaluated at 12 hours after the first feeding followed by at 48 and 72 hours post-feeding in both the groups. The content validity has been checked by Consultation with Various experts from critical care medicine, surgery, anesthesia, nursing and research fields. The reliability of the tool, i.e. self-structured checklist was estimated by using inter-rater method for 10 patients. The research tool has been found to be highly reliable in assessing the gastrointestinal problems like (diarrhoea, vomiting, constipation, abdominal distension, high gastric residual volume) at the interval of 12,48 and 72 hours (r=0.9), which was estimated by inter-rater or inter-observer reliability.

Major Finding of the Study

A microscopic review of data delineated that maximum 12 (30%) patients were of 46-75 years, whereas few, 5 (12.50%) of them were from the age group between 18-31 years. Also it has been seen that slightly more than 2/3rd, 25 (62.50%) of the patients were male. In addition, most 28 (70.00%) of the patients were married. It was found that patients in the experimental group and control group had homogeneity in their socio-demographic characteristics i.e. habitat, religion, educational status and occupation. Furthermore, it was seen that more than half 26 (65%) patients were from the urban area. Moreover, more than half 24 (60%) were from Sikh religion and about one third 15 (37.50%) of the patients were Hindu. In addition one third 14 (35%) of the patients were having secondary education and only 8 (20%) of the patients were graduate and above. In addition 21 (52.50%) of the patients were non-working among experimental group and control group and nearly half 19 (47.50%) of the patients were working in both experimental group and control group. The percentage distribution of ventilator support among both experimental group and control group one third 8 (40%) of the patients were having ventilator support in experimental group whereas in control group 6 (30%) of the patients were on ventilator support. The major findings of the study revealed that the high gastric

residual volume was present only in control group i.e. 9 (30%) patients whereas it was absent among experimental group and it is highly significant as p=0.001. Therefore, it was concluded that the uninterrupted naso gastric feeding is better than intermittent naso gastric feeding in terms of gastrointestinal complications. The findings of the present study also revealed that gastrointestinal problems like diarrhoea, vomiting, constipation and abdominal distension was high in control group as compared to experimental group. This suggests that uninterrupted naso gastric feeding has less gastrointestinal complications as compared to intermittent naso gastric feeding. Therefore, efficacy of uninterrupted naso gastric feeding is higher as compared to intermittent naso gastric feeding among critically ill patients.

Discussion

Enteral nutrition is the preferred modality of support for seriously ill patients who have acceptable gastrointestinal functions but are unable to maintain oral diet. Inspite of the advantages i.e. enhancement of intestinal mucosal integrity, increased nutritional nutrient absorption, improvement of metabolic and immune response as well as reduction of cost, there are certain complications which present themselves clinically in the form of vomiting, constipation, diarrhoea, abdominal distension, high gastric residual volume and pulmonary aspiration of the gastric contents. Gastrointestinal complications associated with intermittent naso gastric feeding are very common. Moreover, many studies have shown that the uninterrupted naso gastric feeding is better as compared to intermittent naso gastric feeding while certain studies concluded that there was no statistically difference between these two feeding modes. There is lack of consensus over use of uninterrupted naso gastric feeding in comparison to intermittent naso gastric feeding.

Conclusion

The present study concluded that uninterrupted naso gastric feeding is better than the intermittent naso gastric feeding in reference to the gastrointestinal complications. Therefore, initially the uninterrupted naso gastric feeding can be started among critically ill patients as compared to the intermittent naso gastric feeding to control gastrointestinal problems.

Conflict of Interest- None

Source of Funding- Self

Ethical Clearance: The quasi experimental study was approved by research and ethical committee of DMC & Hospital, Ludhiana. Permission also has been sought from the head of department of critical care. An informed written consent from the patient/ legal guardian was also taken. Anonymity of patients and confidentiality of information was maintained. It was ensured that study did not affect the participants in any way. Furthermore, any complications experienced by the patient was dually recorded and reported to treating physicians and caring nurses. In addition, it was ensured that problem was adequately taken care.

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