

Assessment the Incidence of Gastrointestinal Problems for Critically Ill Patients in the Intensive Care Unit

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Abstract: Gastrointestinal tract has many important functions for critically ill patients especially it maintains immunological functions, decreases infection and promotes better survival rate. Several studies have confirmed that GI symptoms are frequent in the ICU with up to 62% of patients exhibiting at least one GI symptom for at least 1 day. **Aim of the Study:** This study was conducted to assess the incidence of Gastrointestinal Problems for critically ill patients in the Intensive Care Unit. **Materials and Methods:** A descriptive exploratory design was utilized was used in this study. Setting the study was conducted at El-fayoum university hospital. The study subjects; A Purposive sample of 60 patients from both genders, with different ages and educational levels were selected for this study. Tools of the study consist of tool of the study consist of Two tools, tool(1) Patient Assessment sheet (2) Modified Gastrointestinal symptoms rating scale (GSRS). **Results:** A total 60 patients were enrolled in the study with mean age $\bar{X} \pm SD$ (52.40 ± 14.40). also it was noted that 55.0% of the studied patients were male.it was found that (56.7%) of studied patients have mild gastrointestinal problems. While (1.67%) of the studied patient have severe gastrointestinal problems. **Conclusion.** About two thirds of studied patient were male, nonsmoker and give feed by oral method. Also neurological and respiratory problems were the majority of causes of ICU admission. Moreover, about more than half of the studied patients have mild gastrointestinal problems, while more than one third of them have moderate gastrointestinal problems (Abdominal pain, Constipation, Diarrhea, Reflux and distention).**Recommendations:** Replication of the study using a large probability samples acquired from different geographic areas. Incorporate abdominal massage as a routine care for critically ill patients receiving enteral feeding to relieve gastrointestinal problems.

Keywords: Assessment – Critically Ill Patient –Incidence- Gastrointestinal Problems.

1. INTRODUCTION

Critically ill patients are characterized by existence of actual or potential life threatening health problems which require constant observation, intervention and dependence on the health care providers and advanced technology. One of the key elements in the management of critically ill patients is nutritional support. It is a medical treatment as well as a basic part of the nursing care. Timely and adequate nutritional support play an important role in improving patient's recovery, reducing physiological stress, increasing the immunity capacity and eliminating malnutrition (El-Feky & Ali, 2020).

Gastrointestinal tract has many important functions for critically ill patients especially it maintains immunological functions, decreases infection and promotes better survival rate. For those patients, nutritional support is a routine care and should begin immediately after admission and should be maintained to avoid starvation that may increase patient's risk for morbidity and mortality (Momenfar, et al, 2018).

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Patient in critical illness stage has many barriers and challenges which keep him away to get all benefits of enteral-feeding and affect his nutritional status, recovery process and hospital days. Most of these barriers are gastrointestinal (GI) complications such as vomiting (by

12.2%), diarrhea, abdominal distention, constipation, and high gastric residual volume (by 32-39%) which can be prohibited by early identifying signs and symptoms of feeding intolerance. It is known that these complications whether are causal or effect can lead to an inability to achieve nutritional target in severely illness patients (**Morton & Fontaine, 2016**).

Several studies have confirmed that GI symptoms are frequent in the ICU with up to 62% of patients exhibiting at least one GI symptom for at least 1 day. There is also increasing evidence that development of GI problems is related to worse outcome in critically ill patients. Today, pharmacological and non-pharmacological approaches are used in GI problems management. Regarding the non-pharmacological approach, lifestyle changes like diet, fluid intake and increasing physical activity are applied. Apart from this, many other non-pharmacological approaches like abdominal massage, meditation, the use of probiotics, biofeedback, reflexology and acupuncture are used (**Kayıkçı, Kocatepe & Akyüz, 2020**).

Improving Gastrointestinal functions still the major problem that facing the critically ill patients' especially enteral-fed one and can increase the suffering so, the current study conducted to assess and determine the incidence of Gastrointestinal Problems for critically ill patients in intensive care unit.

Aim of the Study:

This study was conducted to assess the incidence of Gastrointestinal Problems for critically ill patients in the Intensive Care Unit.

Research Questions:

What is the incidence of Gastrointestinal Problems for critically ill patients in the intensive care units ?

2. SUBJECTS AND METHODS

The study was portrayed under the four main designs as follows:

1. Technical design.
2. Operational design.
3. Administrative design.
4. Statistical design.

1)The technical design:

-It includes research design, setting, subject and tools for data collection.

A) Research design:

A descriptive exploratory design was utilized was used in this study.

B) Setting:

This study was carried out at the intensive care unit (ICU) at El-Fayoum university hospital.

C) Subjects:

- A Purposive sample of 60 patients from both genders, with different ages and educational levels were selected for this study.
- **Inclusion and Exclusion criteria:**

The inclusion criteria of the current study include Adult Patients from both gender >20years old and Conscious & semi-conscious patients. While the exclusion criteria include Intestinal obstruction patients, Immune compromised patients and Patients have recent abdominal surgeries.

D) Tools for data Collection:

Data were collected using the following two tools:

Tool (I): Patient Assessment sheet:

This tool was developed by the researcher based on review of relevant recent literatures, **Elpasiony et al, (2017) & Ahmed, et al, (2021)** and it includes patient' age, gender, the level of education, marital status, occupation, smoking, Causes of ICU admission, past medical history, allergic history, and type of feeding.

2) Modified Gastrointestinal symptoms rating scale (GSRS) (standardized scale):

It was adopted from (**Souza , et al ,2016**) and it includes 15 items instrument combined into 5 symptom clusters: Reflux "Heartburn", Abdominal pain, Indigestion "abdominal distension", Diarrhea, and Constipation.

Scoring system:

Likert-type scale 0-5 represents "Mild gastrointestinal problems " 6-10 "Moderate gastrointestinal problems " , the mean of the items 11-15 "severe gastrointestinal problems " , Scoring system completed within an individual scale .

Field Work:

- 1) at first day of the study, the researcher assessed patients demographic and health data of all patient' age, gender, the level of education, causes of ICU admission, past medical history, and type of feeding". These data collected using (tool I), data collected from the medical records of the patient.
- 2) All patients in the study assessed for method of feeding (oral, Enteral Parenteral) and amount of feeding per day.
- 3) Gastrointestinal problems were assessed using (tool II) for studied subject. The researcher assessed patients for presence of (Abdominal pain, Reflux, Indigestion, Diarrhea and constipation). Modified gastrointestinal symptoms rating scale was assessed by assistance of patients.
- 4) Data collection started and completed within 9 months from February (2020) until the end of October (2020).
- 5) Data collection was done 5 day/week by the researcher, two times per day at the morning and afternoon shifts.

Ethical Considerations:

Ethical approval was obtained from the scientific ethical committee of Helwan University. In addition, written informed consent was obtained from each participant prior to data collection. The participants assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture and beliefs were respected .

4. Statistical Design:

The collected data were organized, categorized, tabulated, and statistically analyzed using the statistical package for social science (SPSS) version (20). Data were presented in tables and graphs. The statistical analysis included; percentage (%), the arithmetic mean (\bar{X}), standard deviation (SD), chi-square (X^2), and Pearson correlation (r).

3. RESULTS**A) Characteristics of studied patients:**

A total 60 patients were enrolled in the study with mean age $X \pm SD$ (52.40 ± 14.40) .also it was noted that 55.0% of the studied patients were male, as regarding to an educational level it was found that 51.7% of the studied patients were illiterate, while 16.7% of them were higher education. As regarding health related data found that (61.7%) of the studied patients were smokers. As regarding causes of ICU admission, it was found that (26.7%) of the studied patients have respiratory problems, While, (25.0%) of them have neurological problem .As regarding Method of feeding, it was shown that 55.0% of studied patients receiving feeding by oral method, while, (6.7%) of them receiving feeding by parenteral method as illustrated in tables (1, 2).

Table (1): Frequency distribution of studied patients as regards their demographic characteristics (N=60).

| Items | No | % |
|---------------------------|---------------|------|
| Age(year) | | |
| 20 - <40 yrs. | 13 | 21.6 |
| 40 - < 60 yrs. | 26 | 43.3 |
| ≥ 60 yrs. | 21 | 35.0 |
| Mean (SD) | 52.40 (14.40) | |
| Gender | | |
| Male | 33 | 55.0 |
| Female | 27 | 45.0 |
| Marital status | | |
| Single | 5 | 8.33 |
| Married | 37 | 61.6 |
| Divorced& widow | 18 | 30 |
| Level of Education | | |
| Illiterate | 31 | 51.7 |
| Diploma | 19 | 31.7 |
| Higher-education | 10 | 16.7 |
| Occupation | | |
| Yes | 41 | 68.3 |
| No | 19 | 31.7 |

Table (2): Frequency distribution of studied patients as regards their health related data (N=60).

| Items | No | % | |
|------------------------------------|--------------------------|----|------|
| Causes of ICU admission | Respiratory problem | 16 | 26.7 |
| | Cardiac Problem | 5 | 8.3 |
| | Renal problem | 5 | 8.3 |
| | GIT problem | 11 | 18.3 |
| | Neurological problem | 15 | 25.0 |
| | Others | 8 | 13.3 |
| Smoking | Yes | 37 | 61.7 |
| | No | 23 | 38.3 |
| History of Chronic diseases | Diabetes | 6 | 10.0 |
| | Hypertension | 24 | 40.0 |
| | Cancer | 14 | 23.3 |
| | None | 2 | 3.3 |
| | Kidney disease | 2 | 3.3 |
| | Heart disease | 6 | 10.0 |
| Previous abdominal surgery | Bronchial asthma | 6 | 10.0 |
| | No | 45 | 75.0 |
| Length of Stay | Yes | 15 | 25.0 |
| | 1 – 2 days | 18 | 30.0 |
| | 3 – 4 days | 20 | 33.3 |
| Method of feeding | ≥ 5 days | 22 | 36.7 |
| | Oral | 33 | 55.0 |
| | Enteral | 23 | 38.3 |
| Type of feeding | Parenteral | 4 | 6.7 |
| | Vegetable soup with salt | 13 | 21.7 |
| | Vegetable soup and meat | 12 | 20.0 |

| | | | |
|---------------------------|-----------------------------|----|------|
| | Milk and juice | 19 | 31.7 |
| | Vegetable soap without salt | 12 | 20.0 |
| | Total Parenteral Nutrition | 4 | 6.7 |
| Amount of feeding/ml/4hrs | 200 | 24 | 40.0 |
| | 300 | 26 | 43.3 |
| | 400 | 10 | 16.7 |

B) Assessment the incidence of Gastrointestinal Problems by using Modified Gastrointestinal Symptoms Rating Scale (GSRS) among Studied Subjects

Incidence of Gastrointestinal Problems among studied patients; it was found that (56.7%) of studied patients have mild gastrointestinal problems. While (1.67%) of the studied patient have severe gastrointestinal problems. as illustrated in table (3).

Table (3): Modified Gastrointestinal Symptoms Rating Scale (GSRS) among Studied Subjects (N=60).

| GSRS | No. | % |
|----------|-----|------|
| Mild | 34 | 56.7 |
| moderate | 25 | 41.7 |
| Severe | 1 | 1.67 |

4. DISCUSSION

One of the major problems of hospitalized critically ill patients is nutrition. Meeting the daily nutritional requirements to prevent malnutrition and problem related to it. Early enteral feeding is recommended as first line of nutrition therapy for critically ill patients, although enteral feeding is often complicated with intolerance and aspiration as a result of high gastric residual volume (Gunner, Thomas & Daren, 2017).

Regarding Demographic data for studied patients, the current study showed that more than three quarter of studied patient had age more than forty years old. , as co-morbidity increase with age and increase the risk of ICU admission .these observations could attribute to variety of changes in

the upper GIT related to aging process that predispose to GIT Problems, reflux and aspiration. This result consistent with Ahmed, et al., (2020) in a study titled "Effect Of Upper Respiratory Care Protocol On The Incidence Of Ventilator-associated Pneumonia for Critically Ill Patients." Who stated that more than two third of studied patient in both group had age more than forty years old.

This finding also contradict with Ogunyewo & Afemikhe (2020) in a study titled " Using Abdominal Massage to Reduce Gastric Residual Volume Among Critically Ill Patients by Nurses in a Tertiary Health Institution in Jos Metropolis, Plateau State " who shows that majority, 25 (32.2%) of the respondents were within the age group 30-40 years as the most common cause of hospitalization was trauma..

Related to gender, the present study results showed that, more than half of studied patients were males; this could due to the natural of ICU admission as emergency and increase accident among male more than female patient. This finding is consistent with Momenfar et al., (2018) in a study titled " Studying the effect of abdominal massage on the gastric residual volume in patients hospitalized in intensive care units "who reported that Among the patients, 60% (36 patients) were male. But this finding contradicted with Turan& Atabek (2016) in a study titled" The Effect of Abdominal Massage on Constipation and Quality of Life" who revealed that the majority of the population were female.

In Relation to Marital status, the present study indicated that, more than two third of studied patients were married. This due to the majority of studied patient had age more than forty years. This finding is consistent with Ogunyewo & Afemikhe (2020) in a study titled " Using Abdominal Massage to Reduce Gastric Residual Volume Among Critically Ill Patients by Nurses in a Tertiary Health Institution in Jos Metropolis, Plateau State " who indicates that 48 (65.8%) of the respondents were married.

Concerning educational level, the present study indicated that, about more than half of the studied patients were illiterate. This due to the majority of studied patient had age more than forty years, this explain that the people in the older years not interested to educate. This finding is inconsistent with **Elsaay & Ahmed (2016)** in a study titled "Clinical Evaluation of Comprehensive versus Routine Oral Care among Critically Ill Patients " who found that about two third of the control and study group read and write.

Regarding causes of ICU admission, the current study revealed that neurological and respiratory problems were the majority of causes of ICU admission among studied patients. This may be due to the majority of the patient were elderly and have a complication from chronic disease like hypertension ,diabetes mellitus or hepatic disease who can't follow up for it . This result coincides with **El-Feky & Ali. (2020)** in a study titled " Effect Of Abdominal Massage On Gastric Residual Volume Among Critically Ill Patients At Cairo University Hospitals" who said that acute cerebrovascular stroke (CVS) was the most common diagnosis among half (50%) of studied patients.

Concerning smoking, the present study showed that more than two third of studied patient were smoker. This could due to the nature of ICU were general and emergency and patient who were smoker expected to admit to chest ICU more than this ICU. this result consistent with **Diab ,et al.(2021)** in a study titled" Effect of Abdominal Massage on Clinical Outcomes of Enterally Fed Mechanically Ventilated Patients" who revealed that Two third of the sample were smoker.

In relation to amount of feeding; the present study show that the most common amount of feeding among studied patients were 300ml/4hrs.this could due to patient needs .this result consistent with **Diab ,et al.(2021)** in a study titled" Effect of Abdominal Massage on Clinical Outcomes of Enterally Fed Mechanically Ventilated Patients" who found that the majority of patient take 300ml/2hrs during study.

Past history of chronic disease in the current study was hypertension as the most common disease among studied patients. This finding was agreed with **Elpasiony, et al (2017)** in a study titled" impact of Abdominal Massage on Ventilator-Associated Pneumonia among Patients with Enteral Feeding"" who found that hypertension was the most common past medical history among control and study group.

While this finding contradicted with **Faramarzi, et al. (2020)** in a study titled "Effect of gastric residual volume monitoring on incidence of ventilator-associated pneumonia in mechanically ventilated patients admitted to intensive care unit" who found that respiratory disease was the most common past medical history among both study and control group.

In relation to total score of **Modified Gastrointestinal Symptoms Rating Scale (GSRS)** among Studied Subjects, the present study show that about more than half of the studied patients have mild gastrointestinal problems, While more than one third of them have moderate gastrointestinal problems(Abdominal pain, constipation, Diarrhea, Reflux and distention). This result consistent with **Jones, et al (2021)** in study title "Routine assessment of gastrointestinal symptom using a validated questionnaire in the clinical setting to assess the probability of organic or functional gastrointestinal diseases" who found that more than one third have moderate gastrointestinal symptoms.

5. CONCLUSION

About two thirds of studied patient were male, nonsmoker and give feed by oral method. Also neurological and respiratory problems were the majority of causes of ICU admission. Moreover, about more than half of the studied patients have mild gastrointestinal problems, while more than one third of them have moderate gastrointestinal problems (Abdominal pain, Constipation, Diarrhea, Reflux and distention).

6. RECOMMENDATIONS

- Replication of the study using a large probability samples acquired from different geographic areas.
 - Periodic monitoring of nurses and implementation implementing an educational program about prevention guidelines.
- Incorporate abdominal massage as a routine care for critically ill patients receiving enteral feeding to relieve gastrointestinal problems.
- Adequate supplies and facilities should be available in such critical unit.

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