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PATTERN OF BOWEL MOVEMENT AMONG CRITICALLY ILL PATIENTS ADMITTED IN INTENSIVE CARE UNIT

Nursing

Ankita Bartwal Msc Nursing (Nurse Practitioner in Critical Care), Himalayan College of Nursing, SRHU, Jollygrant, Dehradun, Uttarakhand.

Dr Kamli Prakash* Professor,Himalayan College of Nursing, SRHU, Jollygrant, Dehradun, Uttarakhand. *Corresponding Author

Dr Sonika Agarwal Associate Professor, Himalayan Institute of Medical Sciences, SRHU, Jollygrant, Dehradun, Uttarakhand.

ABSTRACT

Critically ill patients are prone to have delayed bowel movement as they are confined to bed which has an adverse effect on the recovery of the patient. The aim of the study was to assess the pattern of bowel movement among critically ill patients and to find out the associated risk factors of delayed bowel movement and its effects on clinical outcome of patients. Quantitative research approach with descriptive research design was adopted. Convenient sampling technique was used to select 100 critically ill patients from Intensive Care Unit. The study concluded that less than half of the patient had delayed bowel movement. The associated risk factors of delayed bowel movement were bowel sound, nil per oral status, type of feed and total output in 24 hours. Temperature was the only clinical outcome affected by delayed bowel movement.

KEYWORDS

Critically ill patient, delayed bowel movement, risk factors

INTRODUCTION

Critical care also known as intensive care unit is a multidisciplinary health care team looking after persons with life threatening conditions thus specially staffed and equipped with closer monitoring of patients to be looked after[1]. Although very common but rarely seen one such common problems that occur among critically ill patients is constipation[2].The proper management of critically ill patients require early identification of immediate problems and performing quick measures to save the persons life[3]. European society of intensive care medicine defines constipation as "the incompetence of the bowel to pass stool due to compromised peristalsis" and signs associated with it would be no passing of stool for three or more repeated days without having obstruction in gastro-intestinal tract with or without bowel sound[4].

There are many causes that can lead to delayed bowel movement and constipation in seriously ill patients such as injury to spinal cord. Because patient admitted in ICU are bed ridden as they are not conscious and receives medication that makes them sleep longer and remain in bed, may lead to delay in passing stool. Another cause of delayed bowel movement in terminally ill patient is sepsis.[5]

Disturbances in electrolyte like reduced level of calcium, potassium and magnesium can cause decrease in movement in gastro intestinal tract and increase the chances of constipation through impairment in contraction of muscles of rectum. Giving less fluid or overuse of diuretics causes reduction of water in body of patients this also causes constipation.[6] Many of the studies has shown that constipation is related with negative outcomes in patients admitted in ICU in return leading to longer breathing and mechanical ventilation, longer hospital stay, worsening of effect on other organs and increased number of deaths therefore if constipation is taken into consideration and its prevention in seriously ill patients will lead to better recovery by decreasing the incidences of other complications.[7]

Study conducted by Guerra et al. (2013) revealed higher incidences of constipation (72%) in patients who were on mechanical ventilation and received feed within seventy two hours after admission in the ICU.[8] Although late bowel movement is not a major problem as compared to other conditions which is a threat to patient's life yet it is an important component which can determine the recovery of patient, thus it should be considered.[3]

The patients who are deeply unconscious may not have impulse for passing the stool and they are not able to express it. It may be because of illness, injury/tranquillizers and stool quality which affect the amount of water and fibre in the body and also access to proper place of defecation.[9]

OBJECTIVES

1. To assess occurrence of delayed bowel movement among critically ill patients
2. To assess risk factors of delayed bowel movement among critically ill patients
3. To assess the clinical outcome associated with delayed bowel movement among critically ill patients

METHODOLOGY

A quantitative research approach and descriptive research design was used in this study to assess the pattern of bowel movement and associated risk factors for delayed bowel movement among critically ill patients. Convenient sampling technique was used to enroll 100 critically ill patients admitted in Intensive Care Unit in the study.

Data collection procedure

After obtaining the ethical and administrative permission the aim of the research was described to the patient's significant family members and written consent was obtained. Patients were enrolled based on inclusion and exclusion criteria. All patients were observed for five days. Daily defecation pattern and other parameters such as nil per oral status, mode of feed, type of feed, daily intake and output in 24 hours, extent of patient activity, type of ventilation and level of consciousness was checked and recorded in proforma from bedside documents of patients. Each patient was observed for five days and their data was collected daily from their bed side documents.

RESULTS

Pattern of bowel movement: Out of 100 critically ill patients maximum 56 % had early bowel movement and 44 % had delayed bowel movement.

Socio-demographic characteristic of critically ill patients in early and delayed bowel movement group: Among patients in early bowel movement group maximum 21.4% were in age group between 51 to 60 years and in delayed bowel movement group maximum 29.5% were between 61 to 70 years of age. Regarding gender in early bowel movement group 50% were males and females and in delayed bowel movement group majority 77.3% were males. In early bowel movement group maximum 33.9% were uneducated and in delayed bowel movement group maximum 38.6% patients had educational qualifications up to 12th class. Regarding marital status in both groups majority were married. Regarding dietary habit in both the groups majority (>75%) were non vegetarians.

Clinical Variables of critically ill patients in early and delayed bowel movement groups:

Among the patients in early bowel movement and delayed bowel movement groups > 60 % patients had co morbidities. In early bowel movement group maximum 23.2% had Diabetes Mellitus and Hypertension while in delayed bowel movement maximum 31.8% had

only Hypertension. In both the groups maximum > 80 % admission were under medical category and majority (>55%) admission were from emergency. In early bowel movement group maximum 44.6% patients were confined to bed for 6 to 11 days whereas in delayed bowel movement group maximum 22.7% patients were confined to bed for 11 to 15 days.

Assessment of risk factors of delayed bowel movement among critically ill patients

Table 1: Association between defecation pattern and bowel sounds in critically ill patients N=100

Defecation pattern	Bowel sound		Total f	Df	X^2_P
	Present f	Absent f			
Early bowel movement	39	17	56	1	14.15
Delayed bowel movement	14	30	44		0.000*
Total	53	47	100		

* Significant P<0.05

Table 1shows that there was significant association (p=0.000) between defecation pattern and bowel sound.Therefore it could be inferred that bowel sound was associated with defecation pattern

Table2: Association between defecation pattern and NPO status in critically ill patients N= 100

Defecation pattern	NPO Status		Total f	Df	X^2_P
	Yes f	No f			
Early bowel movement	0	56	56	1	6.699
Delayed bowel movement	5	39	44		0.010
Total	5	95	100		

Table 2 shows that there was significant association (p=0.010) between defecation pattern and NPO status.Therefore it could be inferred that NPO status was associated with defecation pattern

Table 3: Association between defecation pattern and NPO status in critically ill patients N=100

Defecation pattern	Type of feed				Total	df	X^2 P
	No feed F	Solid feed f	Semi Solid feed f	Liquid feed F			
Early bowel movement	0	0	7	49	56	3	17.140
Delayed bowel movement	2	7	0	35	44		0.001
Total	2	7	7	84	100		

Table 3 shows that there was significant association (p=0.001) between defecation pattern and type of feed.Therefore it could be inferred that type of feed was associated with defecation pattern

Table 4: Association between defecation pattern and total output in 24 hours in critically ill patients N=100

Defecation pattern	Total output in 24 hours(ml)						Total F	df	X^2 P
	Less than 100 ml F	101-500 ml F	501–900 ml F	901 – 1300 ml F	1301 – 1700 ml f	1701 – 2100 ml f			
Early bowel movement	6	4	0	13	30	3	56	5	16.796
Delayed bowel movement	6	7	2	7	11	11	44		0.005
Total	12	11	2	20	41	14	100		

Table 4 shows significant association (p=0.005) between defecation pattern and total (nutritional) output in 24 hours.Therefore it could be inferred that total (nutritional) output in 24 hours was associated with defecation pattern

There was no significant association between defecation pattern and mode of feed ($\chi2 = 3.649$, p = 0.302), total nutritional intake in 24 hours ($\chi2 = 2.997$, p=0.392), extent of patient activity ($\chi2 = 0.881$, p = 0.644), type of ventilation ($\chi2 = 1.160$, p=0.281), and level of consciousness ($\chi2 = 0.924$, p = 0.630).

Clinical outcomes associated with delayed bowel movement among critically ill patients

Clinical outcomes assessed were vital signs - Temperature, pulse respiration and blood pressure. Results showed that on 5th day in ICU in early bowel movement group (3.6%) patients had rise in temperature 100.1*F - 102 *F. Whereas in delayed bowel movement group maximum (90.9%) patients had temperature between 99*F - 100*F.

On the 5th day in ICU among the patients in early bowel movement group the maximum (44.6 %) had pulse rate between 91- 110 beats/min. But in delayed bowel movement group maximum (52.3%) had pulse rate between 111 - 130 beats/min. The respiratory rate of maximum (46.4%) patients in early bowel movement group was between 20 -25 breath /min and in the delayed bowel movement group maximum (50%) had respiratory rate between 20 - 25 breath /min. Maximum (55.4%) patients in early bowel movement group had Systolic blood pressure between121 - 150 mmHg and 28.6% patients had diastolic blood pressure between 61 -70mmHg. In delayed bowel movement group maximum patients had Systolic blood pressure between 121 - 150 mmHg and maximum patients had diastolic blood pressure between 71-80mmHg.

On the 5th day in early bowel movement group nearly 33.9 % had Glasgow coma score between 8 to 11 and in delayed bowel movement group 45.5% patients between 12 to 15. In early bowel movement group maximum 37.5% had white blood cell counts between 6000 - 10,000 /mm^3 when compared with delayed bowel movement group maximum 45.5 % patients had white blood cell counts between 10,001 - 14,000 /mm^3.

Other clinical outcomes of critically ill patients in early bowel movement and delayed bowel movement groups

The results showed that maximum (>80%) patients in the early and delayed bowel movement groups had stay in Intensive Care Unit for 6 to 11 days. They were on mechanical ventilation for 7-11 days and were shifted out from ICU to the wards.

DISCUSSION

Out of 100 critically ill patients maximum 56 % had early bowel movement and 44 % had delayed bowel movement. Similar results were reported by **Guerra et al. (2013)** there was higher incidences of constipation (72%) in patients who were on mechanical ventilation and received feed within seventy two hours after admission in the ICU.

Further results revealed the significant association between defecation pattern and bowel sound (p=0.000), nil per oral status (p=0.010), type of feed (p=0.001).However there was no significant association between defecation pattern and extent of activity (p=0.644), type of ventilation (p=0.281), level of consciousness, mode of feed, nutritional intake in 24 hours

These findings were supported by **Sharma S K et al(2007**) study, results revealed terminally ill patients who were Nil per oral, consumed small amount of liquid diet, consumed selected drugs (opioids sedatives etc) and unconscious showed higher observations of absence of daily bowel movements and it was found highly statistical significant (P < 0.001) while patients on mechanical ventilator had higher number of absence of daily bowel movements and it was found statistically significant (P < 0.05).[10]

The findings are further supported by **Fukudal S. et al (2016)** conducted a retrospective observational study on risk factors for late defecation and its association with the outcomes of critically ill patients. The results revealed that late enteral nourishment, sedatives, and surgery were the independent risk factors for late defecation in critically ill patients. Late defecation was associated with prolonged ICU stay [11].

Another study led by **Mostafa M. S. et al (2003)** revealed that the length of stay in intensive care and the proportion of patients who failed to feed enterally were greater in constipated than non-constipated patients. Delays in weaning from mechanical ventilation and enteral feeding were reported amongst patients[12]

The clinical outcome affected by delayed bowel movement was only temperature while other parameters (Pulse rate, respiratory rate, systolic blood pressure, diastolic blood pressure, Glasgow coma score) remained constant. Majority of the patients were shifted out from the Intensive care unit in both the group.

The results are supported by **Paulo A et al(2009)** study, concluded that there was no association between constipated and non-constipated in terms of sex, age, Acute Physiology and Chronic Health Evaluation II, type of admission (surgical, clinical, or trauma), opiate use, antibiotic therapy, and mechanical ventilation. The initiation of early enteral nutrition (before 24 hours) was associated with less constipation with earlier return of bowel function[13]

IMPLICATION OF THE STUDY

1. Results of the study can be utilized to create awareness among nurses and nurse practitioners regarding assessment of defecation pattern among critically ill patients.
2. Study revealed that daily assessment of defecation pattern of critically ill patients is an essential responsibility of nurses, nurse practitioner and physicians.
3. Nurses and nurse practitioners working in intensive care units play important role in care of critically ill patients. They must include assessment of defecation pattern in daily assessment of patients.

CONCLUSION

Assessment of bowel movement pattern in critically ill patients is an essential responsibility of physicians, nurses and nurse practitioners working in intensive care unit. Delayed bowel movement must be identified and treated promptly so as to hasten the recovery of seriously ill patients.

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