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An experimental study to evaluate the effectiveness of chewing gum on gastrointestinal motility in terms of return of bowel sounds, passage of first flatus, tolerance of oral feeds and passage of stool after abdominal surgery among adult patient in selected hospital of Delhi.

Nursing

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ABSTRACT

An experimental study was conducted to evaluate the effectiveness of chewing gum on gastrointestinal motility in terms of return of bowel sounds, passage of first flatus, tolerance of oral feeds, and passage of stool after abdominal surgery among adult patient in selected hospital of Delhi. Pre-test Post-test Control Group Design was adopted for the research study.

The sample comprised of 60 patients. Each patient was assigned into two groups by odd even method: Experimental group (n=30). The tools used were Semi-structured Performa and Observational checklist. The study was conducted in the surgical wards of VMMC & Safdarjung hospital, New Delhi from 15th December 2013 to 8th January 2014. Data on demographic characteristics was collected one day before operation. After 8 hours of operation, pre- test observation of return of gastrointestinal motility was done for both the experimental and control group. The experimental groups were administered chewing gum after 8 hours of surgery for 15 to 30 minutes. Patients were instructed not to swallow and to stay awake while chewing the gum. After chewing the gum, patients were examined by the investigators for return of gastrointestinal motility and for any undue problems. The intervention was repeated every 8 hours till the return of gastrointestinal motility or up to 5th postoperative day, whichever is earlier. The mean post test score on return of first bowel sounds, passage of first flatus, tolerance of oral feeds and passage of stool was significantly higher in the experimental group as compared to the control patients as per t test. There was no significant association of return of gastrointestinal motility with selected demographic variables – age, gender, personal habits, body mass index, bowel habits, co-morbid condition, diagnosis and the surgical approach. Therefore, it can be concluded that chewing gum administration after abdominal surgery is an effective method for early return of gastrointestinal motility. Chewing gum aids in early recovery from postoperative ileus and is an inexpensive, simple, effective and alternative therapy for promoting the bowel function.

KEYWORDS:

Chewing gum, abdominal surgery, Postoperative Ileus

INTRODUCTION:

Postoperative ileus (POI) is a very common problem after many surgical procedures. It is a condition characterized by transient interruption of gut function following surgical intervention. Paralytic ileus can delay the speed of a patient's recovery after abdominal surgery and thus increase their hospital stay. In recent years, the use of gum chewing has emerged as a new and simple modality for decreasing POI. It acts by stimulating intestinal motility through cephalic vagal reflex and by increasing the production of gastrointestinal hormones associated with bowel motility.

OBJECTIVES:

1) Assess and compare the return of bowel sounds after abdominal surgery with or without the administration of chewing gum.
2) Assess and compare the passage of first flatus after abdominal surgery with or without the administration of chewing gum.
3) Assess and compare the tolerance of oral feeds after abdominal surgery with or without the administration of chewing gum.
4) Assess and compare the passage of stool after abdominal surgery with or without the administration of chewing gum.

REVIEW OF LITERATURE:

Marwah, S. et al. (2012) evaluated the effect of gum chewing on the duration of postoperative ileus following small bowel anastomosis performed for the closure of intestinal stoma, made as temporary diversion in the selected cases of typhoid perforation peritonitis. Hundred patients undergoing elective small bowel anastomosis for the closure of stoma were randomly assigned to the study group (n=50) and the control group (n=50). The study group patients chewed gum thrice a day for 1 h each time starting 6 h after the surgery until the passage of first flatus. The mean time for the appearance of bowel sounds as well as the passage of first flatus was significantly shorter in the study group (P=0.040, P=0.006). The feeling of hunger was also experienced earlier in study group cases (P=0.004). The postoperative hospital stay was shorter in the study group, but the difference was not significant (P=0.059).

Park, S.Y. et al. (2009) conducted a study to assess whether it is effective in shortening the time of hospitalization and postoperative ileus. Twenty patients who received open abdominal surgery for colon cancer in Gachon University, Gil Hospital were collected. They were further categorized to gum-chewing group (n=10, mean age=52.0 years, range 37 to 70) and control group (n=10, mean age=59.7 years, range 35 to 75) randomly. The patients in the gum-chewing group chewed gum three times a day from the first postoperative AM until the day they began oral intake. The time of gas out was recorded in each group. The mean time of gas out were 2.35 days (SD 1.2) in gum-chewing group and 2.87 days (SD 1.2) in control group (P=0.41). The mean postoperative hospital days were 10.5 days in gum-chewing group and 13.0 days in control group (P=0.23). The study concluded that there were no statistically significant results for shortening of postoperative ileus and hospital day in this study.

Quah, H. M. et al. (2006) determined whether gum chewing in the immediate postoperative period facilitated recovery from ileus following resection for left-sided colorectal cancer. In a prospective randomized control trial, 38 patients undergoing open surgery for left-sided colorectal cancer were allocated to standard postoperative care (control group, n = 19) or to standard postoperative care plus the immediate use of chewing gum (treatment group, n = 19). Control patients passed flatus by mean of 2.7 days (SD 1.0) and faeces by 3.9 days (SD 1.5); for the treatment group, this was 2.4 days (SD 1.0) and 3.2 days (SD 1.5) respectively, (NS, P = 0.56 and P = 0.38). Length of hospital stay was 11.1 days (SD 7.3) in control group and 9.4 days (SD 2.5) in the treatment group (NS, P = 0.75). The study concluded that the addition of gum chewing to a standardized postoperative

regimen did not reduce the period of postoperative ileus or shortens length of stay following open surgery for left-sided colorectal cancer.

Asao et al. (2002) published results from a prospective experimental clinical trial that studied the effect of chewing gum on Japanese patients with paralytic postoperative ileus who had undergone laparoscopic colectomies. A total of 19 patients participated in the study. Each patient was randomly assigned to one of two groups: a gum-chewing group (n = 10, mean age 58.6 years, range 50 to 71 years) or a control group (n = 9, mean age 60.6 years, range 45 to 80 years). The patients in the gum-chewing group chewed gum three times a day from the first postoperative AM until oral intake. The first passage of flatus was seen, on average, on postoperative day 2.1 in the gum-chewing group and on day 3.2 in the control group. The first defecation was 2.7 days sooner in the gum-chewing group (postoperative day 3.1) than in the control group (5.8 days). The study concluded that gum chewing aids early recovery from postoperative ileus and is an inexpensive and physiologic method for stimulating bowel motility. Gum chewing should be added as an adjunct treatment in postoperative care because it might contribute to shorter hospital stays.

METHODOLOGY:

A true experimental research approach with Pre-test Post-test Control Group Design was used for the study. Sample consisted of 60 patients who had who have undergone planned abdominal surgery, 20 years and above, who are willing and able to follow instructions. Sixty patients who met the sampling criteria were assigned randomly by odd even method: Experimental group (n=3) and Control group (n=30). Before data collection the content validity of tools were established by consulting with 9 experts. A semi-structured performa and observational checklist were used for data collection. The semi-structured performa consisted of two parts: part-I consisted of items on demographic characteristics of the sample and part-II consisted of items regarding post-operative data. An observation checklist was used for assessment on return of gastrointestinal motility. To ensure the content validity of the tool, it was submitted to 9 experts. The experts included four surgeons and five experts from medical-surgical nursing. The interrater observer reliability of the observational checklist to assess the return of gastrointestinal motility was done using Pearson product movement coefficient of correlation and was found to be 0.99. Thus, the observational checklist was found to be highly reliable.

Ethical clearance from the research board of Rajkumari Amrit Kaur College of Nursing and administrative approval from the VMMC & Safdarjung Hospital was taken before conducting study. Data was collected in surgical unit of VMMC & Safdarjung Hospital from 15th December 2013 to 8th January 2014. Data on demographic characteristics was collected one day before operation. Then, after 8 hours of operation, pre- test observation of return of gastrointestinal motility was done for both the experimental and control group. Patients in the experimental group, after 8 hours of surgery were given sugar free chewing gum (Orbit) and are instructed to chew the gum for 15 to 30 minutes. Patients were instructed not to swallow and to stay awake while chewing the gum. After chewing the gum, patients were examined by the investigators for return of gastrointestinal motility and for any undue problems. The intervention was repeated every 8 hours till the return of gastrointestinal motility or up to 5th postoperative day. Control group were give routine postoperative care. The data were analysed using descriptive and inferential statistics.

FINDINGS:

TABLE-1 Comparison of subjects as per return of bowel sounds, passage of first flatus, tolerance of oral feeds and passage of stool between both the groups. N=60

Variables	Experimental group (n=30) n (%)	Control group (n=30) n (%)	X^2, df p value
Return of bowel sounds (hr)			
≤24	22(73.33)	2(6.67)	27.78
>24	8 (26.66)	18(93.33)	0.001*
Passage of first flatus (hr)			
≤24	19(63.33)	6(20)	11.59
>24	11(36.67)	24(80)	0.001*
Tolerance of oral feeds (hr)			
≤24	17(56.66)	2(6.66)	17.33
>24	13(43.33)	28(87.32)	0.001*
Passage of stool (hr)			
≤56	21(69.99)	13(43.33)	4.34
>56	9(30)	17(56.66)	0.037*

The data Table-1 shows that the return of bowel sounds before 24 hours were significantly higher in the experimental group 22(73.33%) as compared to the control group 2(6.67%) as per χ^2 test ($p<0.05$).

The passage of first flatus before 24 hours was significantly higher in the experimental group 19(63.33%) as compared to the control group 6(20%) as per χ^2 test ($p<0.05$).

Similarly, tolerance of oral feeds before 24 hours was significantly higher in the experimental group 17(56.66%) as compared to the control group 2(6.66%) as per χ^2 test ($p<0.05$).

The table also depicts that the passage of stool before 56 hours after abdominal surgery was significantly higher in the experimental group 21(69.99%) as compared to the control group 13(43.33%) as per χ^2 test ($p<0.05$).

TABLE-2 Comparison of mean post-test score on return of bowel sounds, passage of first flatus, tolerance of oral feeds and passage of stool between both the groups.

N=60

Variables	Experimental group Mean ±S.D	Control group Mean ±S.D	't' value	p value
Return of bowel sounds	12.87±0.628	11.6±0.62	7.847	0.001*
Passage of first flatus	12.66±0.546	11.53±0.899	5.897	0.001*
Tolerance of oral feeds	12.53±0.571	11.47±0.629	6.877	0.001*
Passage of stool	9.033±0.809	8.33±0.758	3.459	0.005*

Data in table-2 shows that there is a significant difference in the return of return of bowel sounds, passage of first flatus, tolerance of oral feeds and passage of stool between the experimental and control group. The mean post-test score on the return on bowel sounds after surgery was significantly higher (12.87±0.628) in the experimental group than in the control group (11.6±0.62) with 't' value 7.847.

The mean post-test score on the passage of first flatus after surgery was significantly higher (12.66±0.546) in the experimental group than in the control group (11.53±0.899) with 't' value 5.897.

Similarly, the mean post-test score on tolerance of oral feeds after surgery was significantly higher (12.53±0.571) in the experimental group than in the control group (11.47±0.629) with 't' value 6.877.

The mean post-test score on the passage of stool after surgery was significantly higher (9.033±0.809) in the experimental group than in the control group (8.33±0.758) with 't' value 3.459.

NURSING IMPLICATION:

1. Gum chewing may be added to a multimodal treatment program

because it will assists with increasing patient comfort, satisfaction, and decreasing healthcare expenditures.
2. The nurse administrator should take responsibility to implement a protocol of chewing gum as an alternative therapy to prevent postoperative paralytic ileus.
3. Administration of chewing gum may be studied more significantly and used as specific nursing intervention.
4. Emphasis should also be laid on the publication of findings of research in the journals to disseminate the research-based evidence for nurse practitioners.

RECOMMENDATIONS

On the basis of the findings, the following recommendations were made for future research.

1. The study can be replicated on larger sample in different settings so that the findings can be generalized to larger population.
2. A comparative study can be done on effectiveness of other non-pharmacological methods in early return of gastrointestinal motility e.g. early oral feeding and early mobilization to determine which intervention is more effective.
3. A Comparative study can be done to assess the return of gastrointestinal motility between laparoscopic surgery and conventional surgery.
4. A Study can be done by confining to only one particular surgical procedure. E.g. Cholecystectomy, appendectomy etc.

CONCLUSION:

Therefore, it can be concluded that chewing gum administration after abdominal surgery is an effective method for early return of gastrointestinal motility. Chewing gum aids in early recovery from postoperative ileus and is an inexpensive, simple, effective and alternative therapy for promoting the bowel function. Chewing gum be should added as an adjuvant treatment method in postoperative care because it will contribute to increase the early return of gastrointestinal function after abdominal surgery. Therefore nurses working in postoperative ward should encourage clients to chew chewing gum after major abdominal surgery.

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