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The Effect of Abdominal Massage on Chronic Constipation and Constipation Quality of Life in Elderly: A Randomized Controlled Trial

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ABSTRACT

Objective: *This study aimed to effect abdominal massage on chronic constipation and constipation quality of life in the elderly.* ***Methods:*** *This randomized controlled study was conducted with 60 elderly. The subjects were randomized to either the massage (n=30) or the control group (n=30). In the massage group, 10 minutes of abdominal massage was applied for 4 weeks. The effect of abdominal massage on constipation was measured by comparing the averages of the scores obtained before (1st week) and after (5th week) its application.* ***Results:*** *The constipation symptoms (stool consistency, abdominal bloating, stool volume, and the number of defecation) were significantly between the 1st and 5th weeks in the massage group (p<0.05). The constipation quality of life scores was decreased significantly in the 5th week in the massage group (p<0.05).* ***Conclusion:*** *Abdominal massage was found to be effective in some constipation symptoms and constipation quality of life.*

Keywords: Abdominal massage, Constipation, Constipation Quality of life, Elderly

INTRODUCTION

Aging is a perpetual and universal process that occurs in every living being without any exceptions, causes all functions to decrease, and is the whole of the irreversible structural and functional changes that occur in the organism at all levels over time [1]. Along with aging, other chronic diseases, as well as gastrointestinal disorders, increase [2]. In the elderly, the rate of constipation is high due to the weakness of intestinal muscles, decrease in peristalsis, insufficient fluid and fiber consumption, low physical activity, chronic diseases, and polypharmacy [3,4]. It is reported that the incidence of constipation in the elderly is between 16%-50%, and about 67% of nursing home residents are diagnosed with constipation [5-8]. In studies conducted in Turkey, the rate of constipation in nursing home residents 24.2%-44.6% [9,10].

Laxative and enema are used regularly and in the long term in the standard treatment of constipation in nursing homes [11,12]. In a study conducted, 68% of the nursing home residents were found to use laxatives regularly [8]. The long-term use of laxatives may cause complications such as fluid-electrolyte imbalance, enteropathy, deficiency of fat-soluble vitamins, colon necrosis, flatulence, and abdominal cramps [5,13]. In addition to these, the cost of laxatives used in the treatment of constipation is high [14]. Because there are many side effects of laxatives used in constipation treatment and being high-cost direct health professionals to use nonpharmacological methods. In the first step of non-pharmacological measures in constipation management, it is recommended to increase regular physical activity, fluid and fiber consumption [15,16]. However, there is no consensus reached on the effectiveness of these methods [5,17].

The limited effect of the methods used in constipation management necessitates the use of complementary treatments [5]. One of these methods is abdominal massage application [18]. Abdominal massage is a treatment program in which normal intestinal activities can be trained again. Massage creates a mechanical and reflex effect on the intestines by applying an intra-abdominal pressure, thus initiating peristalsis, and increasing the contraction force by increasing the movement of the mass in the intestines. The massage program can shorten the period of transition in the digestive system and can soften the stool [19]. Abdominal massage has psychological benefits in addition to increasing peristalsis

and facilitating defecation [11]. Also, it is a non-invasive and economical method without any side effects that can be applied by health professionals, healthy and sick individuals, and their relatives [19,20].

Even though abdominal massage has been used for constipation treatment for many years, when studies on this subject are examined, it is observed that there are no randomized controlled studies, that the study samples are small, or that the massage is used in combination with some other initiatives such as digital stimulation, exercise, etc. that the duration of the massage application and the characteristics of the individuals (age, diagnosis, etc.) included in the study are different [11,18,21-25]. The number of randomized controlled studies examining the effects of massage alone in the elderly is inadequate.

Aim

This study aimed to investigate the effect of abdominal massage on chronic constipation and constipation quality of life in the elderly.

Objectives

- To determine constipation symptoms by using Defecation Diary and Bristol Stool Scale in the control group
- To determine constipation symptoms by using Defecation Diary and Bristol Stool Scale in the massage (intervention) group
- To determine the effect of four-week abdominal massage on constipation symptoms by using Defecation Diary and Bristol Stool Scale in the massage group
- To compare the pre and post effects of abdominal massage on constipation symptoms between the two groups
- To determine the effect of abdominal massage on constipation quality of life using the constipation quality of life scale

METHODOLOGY

Study Design and Sample Selection

This randomized controlled trial was conducted between 01 July and 31 December 2011 in a state nursing home in western Anatolia/Turkey. The population of the study consisted of elderly people living in a nursing home (n=140). Power analysis was performed to determine the size of the study sample (n=60). According to the power analysis performed after the study (PostHoc), it was found that the sample had 85% power at the 95% confidence interval with an effect size of 0.35. A total of 64 elderly individuals were enrolled in the study who met the Rome-III Diagnostic Criteria for Constipation. As two of the elderly were wheelchair-bound, one was bedbound, and one had dementia, they were not included in the study. The study was conducted with 60 subjects who were randomized to either the massage (n=30) or the control group (n=30). Elderly individuals were randomly divided into massage and control groups according to their age (65-74 years old and 75-90 years old), gender (female and male), and use of laxative (using and not using) characteristics. According to age group, there were 9 elderly 65-74 years old in the massage group and 13 elderly in the control group. According to the gender, there were 11 women in the massage group and 9 women in the control group. According to the use of laxatives, there were 18 elderly in the massage group and 19 elderly in the control group.

The inclusion criteria of the study were: 65 years and over elderly, diagnosed with constipation, have the ability of conscious, elderly people doing physical activity, those who use oral or rectal laxatives and do not laxatives, verbal communication and cooperation. The exclusion criteria were: elderly who have had bowel surgery before (hemorrhoids, fissure, etc.) elderly who have a cognitive disorder, who aren't capable of perception, who cannot be fed orally, who are wheelchair-bound or bedbound, taking antineoplastic drugs, who have intra-abdominal pathology, dementia, diarrhea, incontinence, fecal impaction, infection in the abdominal region or impaired skin integrity. The flowchart of the study was shown in Figure 1.

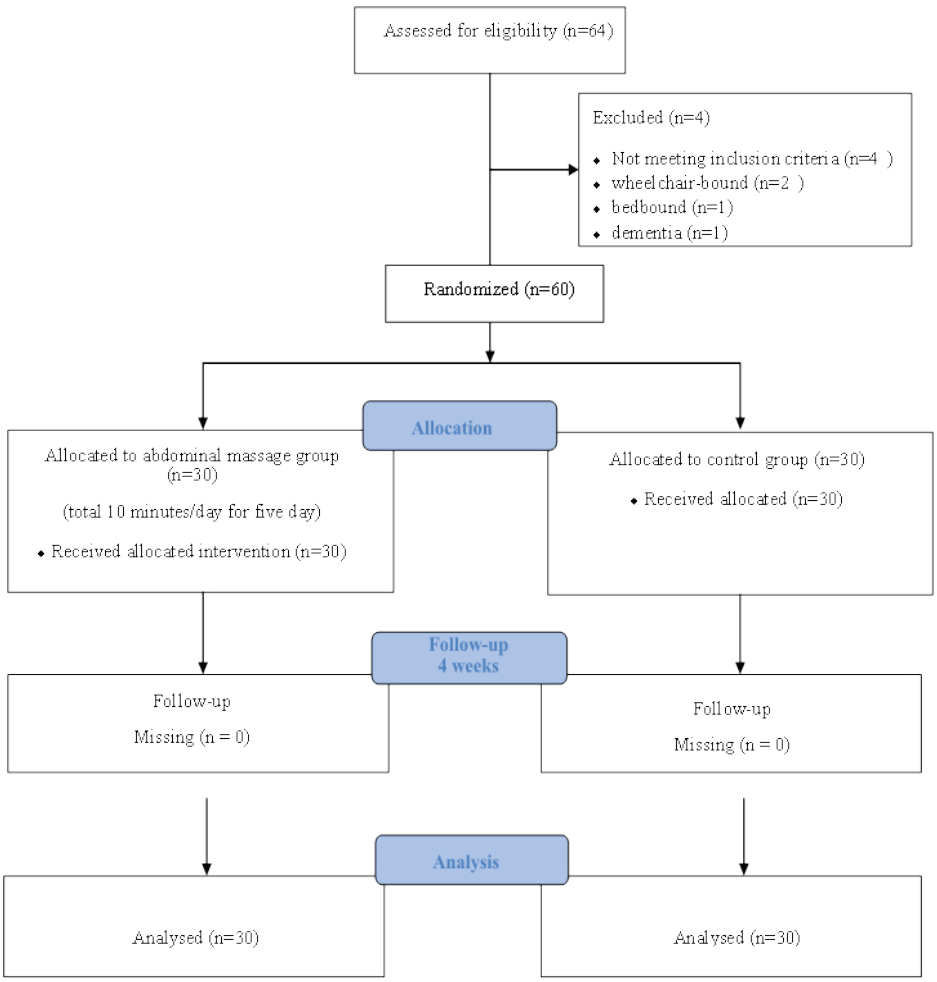

Figure 1 Study flow diagram

Data Collection Instruments

The data were collected using the Elderly Information Form, the Rome-III Diagnostic Criteria for Constipation Form, the Defecation Diary, the Bristol Stool Scale, and the Constipation Quality of Life Scale.

Elderly Information Form

This form, developed by the relevant literature, was prepared with questions about the socio-demographic characteristics of the elderly and the use of laxatives [25-27].

Rome-III Diagnostic Criteria for Constipation

This form was developed by the Rome Committee to standardize the definition of constipation. According to the Rome-III criteria, functional constipation symptoms should start at least 6 months before and last at least 3 days every month for the last 3 months. The elderly who marks the two items in this directive are diagnosed with chronic constipation [28].

Defecation Diary

The "Defecation Diary" is a 1-week follow-up chart in which constipation symptoms and the state of laxative use are questioned with the help of the literature [25,29,30]. Symptoms in the Defecation Diary were evaluated as stool consistency (1-5 points), stool volume (1-3 points), straining during defecation (1-4 points), the number of defecation (1-2 points), abdominal bloating (1-2 points), the sensation of incomplete evacuation (1-2 points) and the

use of laxative (1-2 points). Information on constipation symptoms obtained from elderly individuals was recorded in the "Defecation Diary" by the researcher for 7 days during the first week of the study (before the application of abdominal massage) and during the 5th week (after the application). The scores recorded for each symptom in this form were summed to obtain a weekly total score for each item. Increased scores of stool consistency, stool volume, and the number of defecation and the decreased scores of distensions straining during defecation, and the sensation of incomplete evacuation and the use of laxative indicate that constipation symptoms are reduced.

Bristol Stool Scale (BSS)

The BSS was developed by Lewis and Heaton. This form gives information about the changing physical properties and time of the stool while in the colon. According to this scale, there are 7 types of stool. Type 1-2 indicates "constipation"; Type 3-4 indicate "normal defecation"; and Type 5-6-7 indicate "diarrhea" [31].

Patient Assessment of Constipation Quality of Life (PAC-QOL) Scale: This scale, which determines the quality of life in constipation, was developed by Marquis, et al. [32]. The validity and reliability studies of the scale in Turkey were carried out in 2007 by Dedeli, et al. [33]. The PAC-QOL is a 28-item self-assessment scale consisting of "Worries/ Concerns" "Physical Discomfort," "Psychosocial Discomfort," and "Satisfaction" subscales. The Likert-type scale ranges from 1 to 5. The highest score that can be obtained from the scale is 140, while the lowest score is 28. The higher the score obtained from the scale is, the lower the quality of life is.

Study Procedure

At the beginning of the study, the researcher obtained the first data using the face-to-face interview technique, the Elderly Information Form, the Rome-III Diagnostic Criteria for Constipation Form, and the PAC-QOL. The constipation symptoms of the elderly in both groups were followed up using the "Defecation Diary" and "BSS" during the 1st week of the study (for 7 days). For 4 weeks (weeks 2, 3, 4, and 5) starting from the 2nd week of the study, abdominal massage was applied by the researcher to the elderly in the massage group. No application was made to the control group. At the end of the study (at the end of the 5th week), the constipation symptoms of both groups were assessed with the "Defecation Diary" and "BSS". At the same time, the PAC-QOL scale was applied to both groups.

Intervention (Massage) Group

The abdominal massage was applied 10 minutes, 5 days a week, and at least 2 hours after lunch least 2 hours for 4 weeks by the researcher. The subject was given a supine position with his/her head elevated at a 30-degree angle. Hands were heated to prevent the subject from feeling cold and lubricated. The subject's abdomen was gently stroked to prevent responsive abdominal wall tension due to the first touch. The abdominal massage was applied in a clockwise direction over the colons on the abdominal wall. Three basic maneuvers were used: stroking, effleurage, and kneading [11,21].

Control Group

There wasn't applied any intervention to the control group. Data from the subjects in the control group were collected as in the massage group.

Data Analysis

The data were evaluated using the SPSS 15.0 packaged software. In the data analysis, descriptive tests and comparative statistical methods (Paired sample t-test in variables exhibiting a normal distribution and the Mann-Whitney U test in those not exhibiting a normal distribution) were performed. In the analyses, $p<0.05$ values were considered statistically significant.

Ethical Considerations

For the study to be carried out, written permission was obtained from Aydın Adnan Menderes University Faculty of Medicine Clinical Research Ethics Committee (Decision Date: 10.06.2011, No: 2011/005) and the Ministry of Family and Social Policies (No: 310). It was obtained permission from the authors who developed the PAC-QOL scale. The elderly individuals were informed about the study and their written consents were obtained. This study was carried out by the principles of the Helsinki Declaration.

RESULT

Seventy percent of the elderly in the massage group and 56.7% of the control group were in the age range of 75-90 years (average age; massage group: 77.00 ± 7.62, control group: 76.13 ± 7.72). There wasn't a statistically significant difference between the age and gender features of the groups ($p>0.05$). According to affective factors the development of constipation in the elderly, no statistically significant difference was found between groups when compared in terms of chronic disease, use of laxative, consumption of vegetables/fruit, fluid consumption, physical exercise, stress exposure, consumption of caffeinated drinks and smoking ($p>0.05$).

Table 1 shows the median scores of constipation symptoms in the 1st week of the massage and control groups. According to this, there was a statistically significant difference between the median scores of stool consistency, stool volume, and the number of defecation ($p<0.05$), while there wasn't a statistically significant difference between the median scores of abdominal bloating, straining during defecation, the sensation of evacuation and the using of laxatives ($p>0.05$).

Table 1 The comparison of median scores of constipation symptoms of the elderly in the 1st week

Constipation symptoms	Groups				Z	p-value
	Massage group (n=30)		Control group (n=30)			
	Median	Min-Max	Median	Min-Max		
Stool consistency	4	1.0-7.0	5	2.0-8.0	-2.679	0.00
Stool volume	3	1.0-7.0	4	3.0-6.0	-2.679	0.00
Straining during defecation	8	4.0-14.0	7	3.0-12.0	-1.751	0.08
Number of defecations (per week)	3	1.0-4.0	3	2.0-5.0	-2.538	0.01
Abdominal bloating	4	2.0-7.0	4	2.0-7.0	-0.251	0.80
Sensation of incomplete Evacuation	2	1.0-5.0	2	1.0-4.0	-0.683	0.49
Use of laxative	2	1.0-7.0	2	1.0-7.0	-0.402	0.68

According to Table 2, there was a statistically significant difference between the median scores of stool consistency, stool volume, and abdominal bloating of the elderly in the massage and control groups in the 5th week ($p<0.05$), while there wasn't a statistically significant difference between the median scores of straining during defecation, number of defecations, the sensation of evacuation, and the using of laxatives ($p>0.05$).

According to Table 3, there was a statistically significant difference between the mean scores of stool consistency, stool volume, abdominal bloating, and the number of defecation of the elderly in the massage group in the 1st and 5th weeks ($p<0.05$), while there wasn't a statistically significant difference between the mean scores of straining during defecation, the sensation of evacuation and the using of laxatives ($p>0.05$). However, there wasn't a statistically significant difference between the mean scores of constipation symptoms of the elderly in the control group in the 1st and 5th weeks ($p>0.05$).

Table 2 The comparison of median scores of constipation symptoms of the elderly in the 5th week

Constipation symptoms	Groups				Z	p-value
	Massage group (n=30)		Control group (n=30)			
	Median	Min-Max	Median	Min-Max		
Stool consistency	6	2.0-11.0	5	4.0-9.0	-2.062	0.03
Stool volume	5	2.0-11.0	4	3.0-7.0	-2.062	0.03
Straining during defecation	8	3.0-13.0	7	4.0-9.0	-1.815	0.06
Number of defecations (per week)	3	1.0-5.0	3	2.0-5.0	-1.179	0.23
Abdominal bloating	3	1.0-5.0	5	2.0-7.0	-4.838	0.00

Sensation of incomplete Evacuation	2	1.0-4.0	1	1.0-3.0	-0.848	0.39
Use of laxative	2	1.0-7.0	2	1.0-7.0	-0.48	0.63

Table 3 The comparison of the mean scores of constipation symptoms of the elderly in the 1st with 5th weeks

Constipation symptoms	Groups	Weeks		t	p-value
		1st week	5th week		
		Mean ± SD	Mean ± SD		
Stool consistency	Massage	3.63 ± 1.42	6.06 ± 1.98	-7.592	0.00
	Control	5.13 ± 1.43	5.03 ± 1.51	0.441	0.66
Stool volume	Massage	3.47 ± 1.33	5.30 ± 1.91	-7.959	0.00
	Control	4.30 ± 1.02	4.47 ± 1.12	-0.348	0.73
Straining during defecation	Massage	8.13 ± 2.60	7.76 ± 2.47	0.917	0.36
	Control	6.96 ± 2.09	6.80 ± 1.21	0.491	0.62
Number of defecations (per week)	Massage	2.70 ± 0.70	3.43 ± 0.97	-5.43	0.00
	Control	3.20 ± 0.71	3.20 ± 0.80	0.000	1.00
Abdominal bloating	Massage	4.30 ± 1.36	2.63 ± 0.96	6.774	0.04
	Control	4.43 ± 1.10	4.50 ± 1.33	-0.32	0.75
Sensation of incomplete Evacuation	Massage	1.93 ± 0.98	1.90 ± 0.80	0.205	0.83
	Control	2.03 ± 0.80	1.73 ± 0.82	1.725	0.09
Use of laxative	Massage	2.80 ± 1.64	2.60 ± 1.69	1.989	0.06
	Control	2.66 ± 1.64	2.66 ± 1.66	0.000	1.00

The mean PAC-QOL subscale scores (physical discomfort, psychosocial discomfort, worries/anxiety, satisfaction) and the scale total mean scores of the massage group decreased significantly in the 5th week compared to the 1st week ($p<0.05$). For the control group, the mean scores of physical discomforts, worries/concerns, satisfaction among the PAC-QOL subscales and the scale total mean scores increased in the 5th week compared to the 1st week. This increase was statistically significant ($p<0.05$). There wasn't any statistically significant difference between the mean scores of the psychosocial discomfort subscale ($p>0.05$) (Table 4).

Table 4 The comparison of PAC-QOL scores of the elderly in the 1st with 5th weeks

PAC-QOL Scores	Groups	Weeks		t	p-value
		1st week	5th week		
		Mean ± SD	Mean ± SD		
Physical discomfort	Massage	14.53 ± 2.73	10.90 ± 2.75	10.26	0.00
	Control	13.33 ± 2.50	14.10 ± 2.45	-2.43	0.00
Psychosocial discomfort	Massage	20.90 ± 5.01	15.90 ± 5.14	11.58	0.00
	Control	18.06 ± 4.71	18.90 ± 4.12	-1.73	0.09
Worry/anxiety	Massage	37.80 ± 5.65	27.43 ± 6.92	15.12	0.00
	Control	34.83 ± 5.90	36.46 ± 4.95	-2.71	0.01
Satisfaction	Massage	17.90 ± 3.32	17.13 ± 3.47	2.47	0.01
	Control	16.70 ± 2.07	17.30 ± 2.23	-3.07	0.00
PAC-QOL total	Massage	93.63 ± 11.21	73.13 ± 13.35	16.73	0.00
	Control	84.73 ± 10.92	88.56 ± 9.16	-3.28	0.00

DISCUSSION

Many factors cause constipation in the elderly. These factors include inadequate fluid and fiber intake, reduction of physical activity, stress, drugs, etc. [4,34]. Side effects of many drugs are known to cause constipation in the elderly [34,35]. In our study, it was determined that the elderly in the massage and control groups had similar situations in terms of laxative use, vegetable/fruit consumption, daily fluid intake, physical activity/exercise, and drug use which leads to constipation. The fact that these factors causing constipation were similar in the elderly in both groups supports our study.

In the present study, except for the median scores of stool consistency, stool volume, and the number of defecations among the constipation symptoms, no significant difference was found between the other symptoms in the 1st week of the elderly in the massage and control groups. These findings show that the symptoms of constipation were similar in both groups before the application.

In this study, the median scores of the constipation symptoms were compared between the massage group and the control group in the 5th week. There was a statistically significant difference between the stool consistency, stool volume, and abdominal bloating median scores among the constipation symptoms of the elderly, while there wasn't a statistically significant difference between the number of defecations, straining during defecation, the sensation of evacuation, and the using of laxative median scores. The fact that the abdominal massage improved some of the constipation symptoms in the elderly (consistency, volume, distension) and there was no change in the symptoms in the control group suggests that the massage affects constipation symptoms. It is stated in the studies conducted that abdominal massage reduces constipation symptoms [23-25,36].

The mean scores of the constipation symptoms in the massage group were compared between the 1st and 5th weeks. It was found out that the abdominal massage was applied for four weeks; it provided softening in the stool consistency of the elderly. Similarly, to our study, Cevik, et al. effect of it was determined that it softened their stool consistency by the abdominal massage applied for 45 minutes-60 minutes for 30 days to 22 elderly with constipation [37]. Turan and Atabek Asti found out that the abdominal massage applied to the patients who couldn't defecate in the first 3 days after orthopedic surgery softened the stool consistency [38]. In the study carried out by McClurg, et al., it was determined that diet, fluid intake, activity, correct defecation position, and 4 weeks of abdominal massage provided to the patients with constipation and Multiple Sclerosis (MS) resulted in the softening of stool consistency [18]. In two different studies carried out on children with constipation, abdominal massage provided softening in the stool consistency [39,40]. In addition to these studies showing similar results to our study, there was also a study showing that abdominal massage didn't affect stool consistency [25]. Apart from a study conducted, findings obtained from the others are parallel with the results of our study.

One of the most common constipation symptoms that the elderly complain about is the decrease in stool volume [12,41]. It was observed in the present study that the abdominal massage increased the stool volume in the elderly. In the study carried out by Cevik et al. it was found out that abdominal massage increased the stool weight of the elderly [37]. However, the study of Lamas, et al. showed that the massage application didn't change the stool size of the patients [25]. This result, which is observed to be inconsistent with the present study, may be attributed to the fact that the duration of the massage applied to the abdominal region (for 7 minutes) is shorter than that in our study and that the intensity of the pressure applied during the massage is different.

Abdominal massage can provide peristaltic stimulation in patients with constipation, shortens the colonic transit time, and increases intestinal movements [20]. It was determined that abdominal massage in our study increased the defecation number in the elderly. In the study of Cevik, et al., it was found out that the participants for the number of defecations were increased, after the implementation of abdominal massage [37]. Turan and Atabek Asti, it was found out that the patients to whom abdominal massage was applied had more frequent defecation than the control group [38]. Lai, et al. stated that abdominal massage with aroma oils and plain abdominal massage they applied to cancer patients with constipation increased the intestinal movements of the patients [36]. In the study of Lamas, et al., it was determined that abdominal massage increased the frequency of defecation [25]. In a study, it was determined that the abdominal massage applied for four weeks increased the frequency of defecation in patients with MS [18]. In a different study, it was stated that the abdominal massage applied to a 64-year-old single patient who was diagnosed with myelopathy and had defecation difficulties provided rectal waves leading to defecation [22]. In the study carried

out by Hu, et al., it was found out that the abdominal massage applied 5 times a week to the patients with spinal cord injury (n=20) for 12 weeks shortened the defecation period [42]. In the study of Resende, et al., 12 weeks of exercise and abdominal massage application were found to increase intestinal movements in patients [23]. In the study of Harrigton and Haskvitz, 10-minute abdominal massage applied daily for 13 weeks to an 85-year-old patient with chronic constipation who couldn't benefit from stool softening agents were reported to provide the normal intestinal frequency [43]. Ayas, et al. determined that the abdominal massage applied for 15 minutes for 2 weeks to 24 patients who had a spinal cord injury in addition to fiber support in the diet and digital stimulation reduced the total colonic transit time [24]. However, because of the limitations such as the small size of the sample group, the lack of the control group, and the research design, the researchers stated that the results of the study aren't appropriate for determining the effectiveness of the treatment. Findings obtained from our study and many other studies suggest that the application of abdominal massage increases the number and frequency of defecation.

It is stated that bloating and flatulence complaints are severe in the elderly with constipation [41]. It was determined in the present study that the abdominal massage application reduces abdominal bloating in the elderly. In a study on the effects of abdominal massage on gastrointestinal symptoms in patients with constipation, it was stated that the massage reduces abdominal pain [25]. In the study conducted by Preece, the abdominal massage applied for 5 days for 6 weeks reduced flatulence and distension [21]. In the study carried out by Lai, et al., it was concluded that abdominal massage with aroma oils and plain abdominal massage applied to cancer patients with constipation decreased bloating [36]. In a study on the effects of abdominal massage on intestinal functions in patients with spinal cord injury, it was determined that the abdominal massage applied for 15 minutes after digital stimulation had a significant effect on bloating and pain [24]. The findings obtained from the studies are similar to the results of our study.

The abdominal massage wasn't effective on the complaints of the elderly about straining during defecation. Similarly, to our study, Ayas, et al. found out that the massage didn't change the straining of the patients during defecation [24]. However, Cevik, et al. found out that abdominal massage decreased straining during defecation in the elderly [37]. Besides 10-minute abdominal massage applied to one patient by Harrigton and Haskvitz was determined to provide the patient's normal intestinal function without straining or digital assistance [43]. Many factors can change the effectiveness of abdominal massages, such as the number of weekly applications, the duration of massage sessions, and the intensity of the pressure applied during the abdominal massage [25]. Similar and different study results suggest that constipation symptoms are affected by these factors.

The abdominal massage in the present study didn't change the frequency of the use of laxatives by the elderly. Similarly, to our study, Lamas, et al. also found out that the massage application didn't change the use of laxatives [25]. However, in two studies conducted on adults and children; it was found out that abdominal massage reduced the frequency of laxative use [23,40]. Similarly, to the results of this study, Hu, et al. also found that it was effective in reducing the dose of glycerin enema [42]. McClurg, et al. determined a decrease in the use of laxatives in one patient [18]. In the study of Resende, et al. and McClurg, et al., additional interventions besides the application of abdominal massage increased the effectiveness of the massage, suggesting that they reduced the frequency of laxative use [18,23]. However, the fact that the average age of patients was lower compared to our sample group may be another factor affecting the results of the study.

Since constipation affects physical, mental, and social areas, the health-related quality of life of individuals is also negatively affected [17,36,44]. Inadequate intestinal management causes a decrease in the comfort and quality of life of the elderly [45]. It is stated that abdominal massage improves intestinal peristalsis and eliminates bloating in addition to having a positive effect on the psychosocial state, and increasing the health-related quality of life [11,39,46]. In our study was indicated that abdominal massage decreased the physical and psychosocial discomfort, and worries/concerns of the elderly in the massage group, and increase their satisfaction and total PAC-QOL. There was an increase in the physical discomfort and worries/concerns of the elderly in the control group and a decrease in their satisfaction and total quality of life. However, there was no change in the psychosocial discomfort of the group. The abdominal massage with aroma oils applied by Lai, et al. to cancer patients with constipation was reported to improve the physical sub-dimension of the patients' quality of life, and the normal abdominal massage was reported to improve the psychosocial sub-dimension [36]. In a different study, it was determined that the abdominal massage applied to patients who couldn't defecate within the first 3 days after surgery decreased the PAC-QOL physical discomfort, psychosocial discomfort, worries/concerns dimension mean scores, and the PAC-QOL total mean scores

of the patients [38]. In the study of McClurg, et al. on patients with Parkinson's disease, it is stated that abdominal massage application improves the quality of life by alleviating constipation symptoms [47]. Findings obtained from our study and other studies conducted indicate that the abdominal massage application increases the quality of life of patients.

CONCLUSION

In this study, it was concluded that the abdominal massage application increased the stool volume and the number of defecations, softened the stool consistency, reduced abdominal bloating, and improved the quality of life in the elderly. However, it didn't affect straining during the defecation and the sensation of evacuation, and the frequency of laxative use. There is a need for further randomized controlled abdominal massage studies with different durations and periods and applied with different additional interventions that will provide evidence in this regard.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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REFERENCES

[1] Giray, Hatice, et al. "Proposal for elderly health care system in Turkey." *TAF Preventive Medicine Bulletin,* Vol. 7, No. 1, 2008, pp. 81-86.

[2] Firth, Michael, and Charlene M. Prather. "Gastrointestinal motility problems in the elderly patient." *Gastroenterology,* Vol. 122, No. 6, 2002, pp. 1688-700.

[3] Vasanwala, Farhad Fakhrudin. "Management of chronic constipation in the elderly." *The Singapore Family Physician,* Vol. 35, No. 3, 2009, pp. 84-92.

[4] Forootan, Mojgan, Nazila Bagheri, and Mohammad Darvishi. "Chronic constipation: A review of literature." *Medicine,* Vol. 97, No. 20, 2018, p. e10631.

[5] Bosshard, Wanda, et al. "The treatment of chronic constipation in elderly people." *Drugs & Aging,* Vol. 21, No. 14, 2004, pp. 911-30.

[6] Chen, Chien-Liang, et al. "Constipation and its associated factors among patients with dementia." *International Journal of Environmental Research and Public Health,* Vol. 17, No. 23, 2020, p. 9006.

[7] Schuster, Brenda G., Lynette Kosar, and Rejina Kamrul. "Constipation in older adults: Stepwise approach to keep things moving." *Canadian Family Physician,* Vol. 61, No. 2, 2015, pp. 152-58.

[8] Lamas, Kristina, et al. "Prevalence of constipation among persons living in institutional geriatric-care settings-A cross-sectional study." *Scandinavian Journal of Caring Sciences,* Vol. 31, No. 1, 2017, pp. 157-63.

[9] Gumus, Aysun Babacan, Sevinc Sipkin, and Gulseren Keskin. "Determining the care needs of elderly individuals who live in a nursing home according to the functional health patterns model." *Journal of Psychiatric Nursing,* Vol. 3, No. 1, 2012, pp. 13-22.

[10] Bilgic, S., et al. "Constitutional situations and affecting factors of the elderly living in a nursing home." *International Journal of Basic and Clinical Medicine,* Vol. 4, No. 1, 2016, pp. 9-16.

[11] Emly, Marian, Simon Cooper, and Andy Vail. "Colonic motility in profoundly disabled people: A comparison of massage and laxative therapy in the management of constipation." *Physiotherapy,* Vol. 84, No. 4, 1998, pp. 178-83.

[12] Fosnes, Gunvor S., Stian Lydersen, and Per G. Farup. "Effectiveness of laxatives in elderly-A cross sectional study in nursing homes." *BMC Geriatrics,* Vol. 11, No. 1, 2011, pp. 1-7.

[13] Andresen, Viola, and Peter Layer. "Medical therapy of constipation: Current standards and beyond." *Visceral Medicine,* Vol. 34, No. 2, 2018, pp. 123-27.

[14] Woodward, Sue, Christine Norton, and K. Louise Barriball. "A pilot study of the effectiveness of reflexology in treating idiopathic constipation in women." *Complementary Therapies in Clinical Practice,* Vol. 16, No. 1, 2010, pp. 41-46.

[15] Annells, Merilyn, and Tina Koch. "Constipation and the preached trio: Diet, fluid intake, exercise." *International Journal of Nursing Studies,* Vol. 40, No. 8, 2003, pp. 843-52.

[16] Brandt, Lawrence J., et al. "Systematic review on the management of chronic constipation in North America." *American Journal of Gastroenterology,* Vol. 100, 2005, pp. S5-22.

[17] Rao, Satish SC, and Jorge T. Go. "Update on the management of constipation in the elderly: New treatment options." *Clinical Interventions in Aging,* Vol. 5, 2010, pp. 163-71.

[18] McClurg, Doreen, et al. "Abdominal massage for the alleviation of constipation symptoms in people with multiple sclerosis: A randomized controlled feasibility study." *Multiple Sclerosis Journal,* Vol. 17, No. 2, 2011, pp. 223-33.

[19] Laycock, Jo, and Jeanette Haslam, eds. "Therapeutic management of incontinence and pelvic pain: pelvic organ disorders." *Springer Science & Business Media*, 2013.

[20] Sinclair, Marybetts. "The use of abdominal massage to treat chronic constipation." *Journal of Bodywork and Movement Therapies,* Vol. 15, No. 4, 2011, pp. 436-45.

[21] Preece, Joyce. "Introducing abdominal massage in palliative care for the relief of constipation." *Complementary Therapies in Nursing and Midwifery,* Vol. 8, No. 2, 2002, pp. 101-05.

[22] Liu, Zhi, et al. "Mechanism of abdominal massage for difficult defecation in a patient with myelopathy (HAM/TSP)." *Journal of Neurology,* Vol. 252, No. 10, 2005, pp. 1280-82.

[23] Resende, T. L., J. C. Brocklehurst, and P. A. O'Neill. "A pilot study on the effect of exercise and abdominal massage on bowel habit in continuing care patients." *Clinical Rehabilitation,* Vol. 7, No. 3, 1993, pp. 204-09.

[24] Ayas, Sehri, et al. "The effect of abdominal massage on bowel function in patients with spinal cord injury." *American Journal of Physical Medicine & Rehabilitation,* Vol. 85, No. 12, 2006, pp. 951-55.

[25] Lämås, Kristina, et al. "Effects of abdominal massage in management of constipation-A randomized controlled trial." *International Journal of Nursing Studies,* Vol. 46, No. 6, 2009, pp. 759-67.

[26] Uysal, Nurcan, Leyla Khorshid, and I. Eşer. "The identification of constipation problem in healthy young individuals." *TAF Preventive Medicine Bulletin,* Vol. 9, No. 2, 2010, pp. 127-32.

[27] Arslan, Gulsah Gurol, and Ismet Eser. "An examination of the effect of castor oil packs on constipation in the elderly." *Complementary Therapies in Clinical Practice,* Vol. 17, No. 1, 2011, pp. 58-62.

[28] Drossman, Douglas A., and Dan L. Dumitrascu. "Rome III: New standard for functional gastrointestinal disorders." *Journal of Gastrointestinal and Liver Diseases,* Vol. 15, No. 3, 2006, pp. 237-41.

[29] Pamuk, Omer Nuri, Gulsum Emel Pamuk, and Aykut Ferhat Celik. "Revalidation of description of constipation in terms of recall bias and visual scale analog questionnaire." *Journal of Gastroenterology and Hepatology,* Vol. 18, No. 12, 2003, pp. 1417-22.

[30] Longstreth, George F., et al. "Functional bowel disorders." *Gastroenterology,* Vol. 130, No. 5, 2006, pp. 1480-91.

[31] Lewis, Simon J., and Kenneth W. Heaton. "Stool form scale as a useful guide to intestinal transit time." *Scandinavian Journal of Gastroenterology,* Vol. 32, No. 9, 1997, pp. 920-24.

[32] Marquis, Patrick, et al. "Development and validation of the patient assessment of constipation quality of life questionnaire." *Scandinavian Journal of Gastroenterology,* Vol. 40, No. 5, 2005, pp. 540-51.

[33] Dedeli, O., et al. "A validity and reliability of adaptation patient assessment of constipation quality of life scale." *MN Internal Medical Sciences,* Vol. 2, No. 1-2, 2007, pp. 36-43.

[34] Bouras, Ernest P., and Eric G. Tangalos. "Chronic constipation in the elderly." *Gastroenterology Clinics,* Vol. 38, No. 3, 2009, pp. 463-80.

[35] Korkmaz, Murat. "Management of the patient with constipation in primary care." *Konuralp Medical Journal,* Vol. 3, No. 3, 2011, pp. 35-41.

[36] Lai, T. K. T., et al. "Effectiveness of aroma massage on advanced cancer patients with constipation: A pilot study." *Complementary Therapies in Clinical Practice,* Vol. 17, No. 1, 2011, pp. 37-43.

[37] Cevik, Kivan, et al. "The effect of abdominal massage on constipation in the elderly residing in rest homes." *Gastroenterology Nursing,* Vol. 41, No. 5, 2018, pp. 396-402.

[38] Turan, Nuray, and Turkinaz Atabek Asti. "The effect of abdominal massage on constipation and quality of life." *Gastroenterology Nursing,* Vol. 39, No. 1, 2016, pp. 48-59.

[39] Moss, Lucy, et al. "Abdominal massage for the treatment of idiopathic constipation in children with profound learning disabilities: A single case study design." *British Journal of Learning Disabilities,* Vol. 36, No. 2, 2008, pp. 102-08.

[40] Bromley, Debbie. "Abdominal massage in the management of chronic constipation for children with disability." *Community Practitioner,* Vol. 87, No. 12, 2014, pp. 25-30.

[41] Yont, G. Hakverdioglu, et al. "Assessment of constipation diagnosis in elderly residents in nursing homes." *I.U.F.N. Journal of Nursing,* Vol. 19, No. 2, 2011, pp. 83-88.

[42] Hu, Chunying, Miao Ye, and Qiuchen Huang. "Effects of manual therapy on bowel function of patients with spinal cord injury." *Journal of Physical Therapy Science,* Vol. 25, No. 6, 2013, pp. 687-88.

[43] Harrington, Kendra L., and Esther M. Haskvitz. "Managing a patient's constipation with physical therapy." *Physical Therapy,* Vol. 86, No. 11, 2006, pp. 1511-19.

[44] Sun, Shawn X., et al. "Impact of chronic constipation on health-related quality of life, work productivity, and healthcare resource use: An analysis of the National Health and Wellness Survey." *Digestive Diseases and Sciences,* Vol. 56, No. 9, 2011, pp. 2688-95.

[45] Gallegos-Orozco, Juan F., et al. "Chronic constipation in the elderly." *American Journal of Gastroenterology,* Vol. 107, No. 1, 2012, pp. 18-25.

[46] Lamas, Kristina, et al. "Abdominal massage for people with constipation: A cost utility analysis." *Journal of Advanced Nursing,* Vol. 66, No. 8, 2010, pp. 1719-29.

[47] McClurg, Doreen, et al. "Abdominal massage for the relief of constipation in people with Parkinson's: A qualitative study." *Parkinson's Disease,* Vol. 2016, 2016.