

Effect of Reflexology on the Constipation Status of Elderly People

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ABSTRACT

Background The current literature shows that one of the alternative therapies used to control constipation is reflexology. This study was conducted to assess the effect of reflexology on the constipation status of elderly people.

Methods This study was randomized clinical trial conducted from at the private nursing home in the Ankara Province. At the nursing home, 60 eligible elderly people were randomly assigned into experimental ($n = 30$) and control ($n = 30$) groups. The experimental group received foot reflexology massage for 1 month three times per week for 30 min. Reflexology was initiated from the patient's right foot. The foot was relaxed primarily by applying effleurage followed by shaking, rotation, and stretching methods. The practice ended by applying solar plexus pressure on both feet. For elderly people in the control group foot surface massage without pressure was applied to simulate the interventions similar to the experimental group. The scale scores before and after reflexology were noted for the experimental group, and those for the control group, which did not receive any reflexology massage, were also determined

Results After the implementation of reflexology, the rate of emptying bowels on alternate days increased in the experimental group as opposed to that in the control group ($P < 0.001$). In this study, reflexology was found to improve the quality of life of the elderly and decrease the severity of constipation.

Conclusion Foot reflexology massage was found to be effective in relieving the constipation of elderly people. Therefore, reflexology is recommended as part of nursing care to reduce the constipation status of elderly people.

Key words constipation; elderly people; randomized controlled trial; reflexology

The ageing process is of course a biological reality which has its own dynamic, largely beyond human control. An individual over 65 years of age is defined as an elderly person in many developed countries.¹ Aging is an important phase in human life. Constipation is considered to be a feature of geriatric syndrome, and as populations around the world continue to age, the prevalence of constipation symptoms is rising. Constipation is associated with impaired quality of life among patients, and might also have negative impact on the patients' caregivers and nurses.²

Constipation is defined as an annoying, chronic, and recurring condition that affects nearly 50–73% of those staying in nursing homes. According to the Rome II diagnostic criteria for constipation, 51.9% of the elderly living in Turkey have problems with constipation.³ In a large-scale study conducted by Kasap and Bor in 20 provinces in Turkey, which covered 52% of the general population, the rate of functional constipation was 8.3% ($n = 3214$).⁴ At present, therapies provided for constipation include fiber intake, use of concomitant medication, laxatives, gastrokinetic agents, bile acid transporter inhibitors, physical activity and probiotics. Also, complementary and alternative therapies including biofeedback, acupuncture, herbal medicine and reflexology also used.⁵

Reflexology is a complementary and alternative therapy. Reflexology is a systemic practice performed by massaging specific parts of the hands and feet.^{6–8} The International Reflexology Institute (IRI) defines reflexology as a technique performed using the hands and targeting reflex points in the feet, hands, and ears corresponding to the glands, organs, and parts of the body, thereby facilitating the normalization of body functions.^{6–9} It is thought that a response is generated by the organs owing to the stimulation of their reflex points through a massage. When a relevant reflex point is pressed, electrochemical nerve stimuli are activated accompanied by the stimulation of the nervous system, the peripheral nervous system is activated, and a message is sent. This message is sent to the central nervous system through afferent neurons in a ganglion. The message passing through the ganglion is transmitted to specific organs or glands via afferent neurons, and a response is thus generated to this message. By stimulating inactive sites or by calming excessively activated

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Received 2020 March 20

Accepted 2020 April 22

Online published 2020 May 18

Abbreviations: CO, colon obstruction; CQLS, Constipation Quality of Life Scale; CSI, Constipation Severity Instrument; IRI, International Reflexology Institute; P, pain; SO, stool obstruction

sites, reflexology helps balance all systems in the body.⁹ Numerous studies and clinical practices have demonstrated that reflexology plays a positive role in pain,^{9, 10} reductions in systolic blood pressure and diastolic blood pressure¹¹ and psychological tension among elderly with dementia¹² and sleep problems,^{13–15} as well as improving digestive system functioning and preventing constipation.^{16–18} Nurses serve as critical members of multidisciplinary teams in managing symptoms. Also, since reflexology is one of the branches of integrative medicine, reflexology can be considered as an aspect of nursing care. Due to negative effects of constipation on quality of life in elderly patients, the aim of this study was to investigate the effect of foot reflexology on constipation and quality of life in elderly patients.

MATERIALS AND METHODS

Study design, setting and participants

The study population comprised elderly people staying at a private nursing home in Ankara province. According to CONSORT guidelines, 103 elderly people were first assessed for eligibility for this study. Among the 103 elderly people, 43 patients were excluded. Sampling was performed by selecting elderly people who stayed at the nursing home and met the Roma IV constipation criteria. To diagnose constipation according to Rome IV criteria, constipation complaints should have begun 6 months ago, and these complaints should occur at least three times per month within an interval of 3 months.¹⁹ Only those elderly people who were able to speak and orientate themselves, without laxative use, and did not have Parkinson's disease, Alzheimer's disease or dementia were recruited to our study sample. At the beginning of the study, participants were asked about exercises, mobility status, diet and fluid intake. Responses indicated that none of the participants had a specific exercise program. Also, patients in both groups listed their diet for the last 3 months. During the study, participants were asked not to change their diet, fluid intake and exercise, and report to the researchers if any new change was created in their daily programs. If any of the above cases changed for any patient, they were excluded. One elderly participant developed an emergency situation and had to be administered a laxative; consequently, the participant was removed from the study (Fig. 1).

The elderly people were randomly assigned into experimental ($n = 30$) and control ($n = 30$) groups according to inclusion criteria using randomize.org.²⁰ This study was a randomized clinical trial conducted from April 2018 to October 2018 at a private nursing home in Ankara province.

Measurement tools

To evaluate elderly people who were staying at the nursing home and were grouped into the experimental and control groups, the following tools were used: Information Request Form for the Elderly, Constipation Severity Instrument (CSI), and Constipation Quality of Life Scale (CQLS).

Information Request Form

The form was designed by the researchers according to the literature. The form included questions concerning demographic characteristics of the elderly individuals. The information request form included age, sex, level of education, history of constipation, and medical history that led to constipation.

Constipation Severity Instrument (CSI)

The validity and reliability of the Turkish version of the scale was studied by Kaya and Turan. There is a total of 16 questions on the scale. Higher scores indicate that the symptoms are serious. The CSI has three sub-dimensions: stool obstruction (SO), colon obstruction (CO), and pain (P). The SO sub-dimension scores range between zero and 8, the scores for the CO sub-dimension range between zero and 29, and the scores for the pain sub-dimension range between zero and 16. The total score of the CSI ranges between zero and 73. High scores from the scale indicate serious symptoms. The Cronbach's alpha value is 0.92.²¹

Constipation Quality of Life Scale (CQLS)

The validity and reliability of the Turkish version of the scale were investigated by Dedeli. Cronbach's alpha was found to be 0.91. The CQL consists of 28 items divided into four scales: worries/concern (11 items), physical discomfort (4 items), psychosocial discomfort (8 items), and satisfaction (5 items). It is a 5-point Likert-type scale. The highest possible score is 140, and the lowest possible score is 28 points. As the scores obtained from the scale increase, the quality of life related to constipation is thought to be adversely affected.²²

Intervention

One of the researchers participated in a 3-day training course. The researcher received reflexology training from the Thai Massage Institute. The course involved reflexology & healing, anatomy and biomechanics of the feet, reflexology points, reflexology techniques, reflexology & the nervous system and when not to use reflexology.

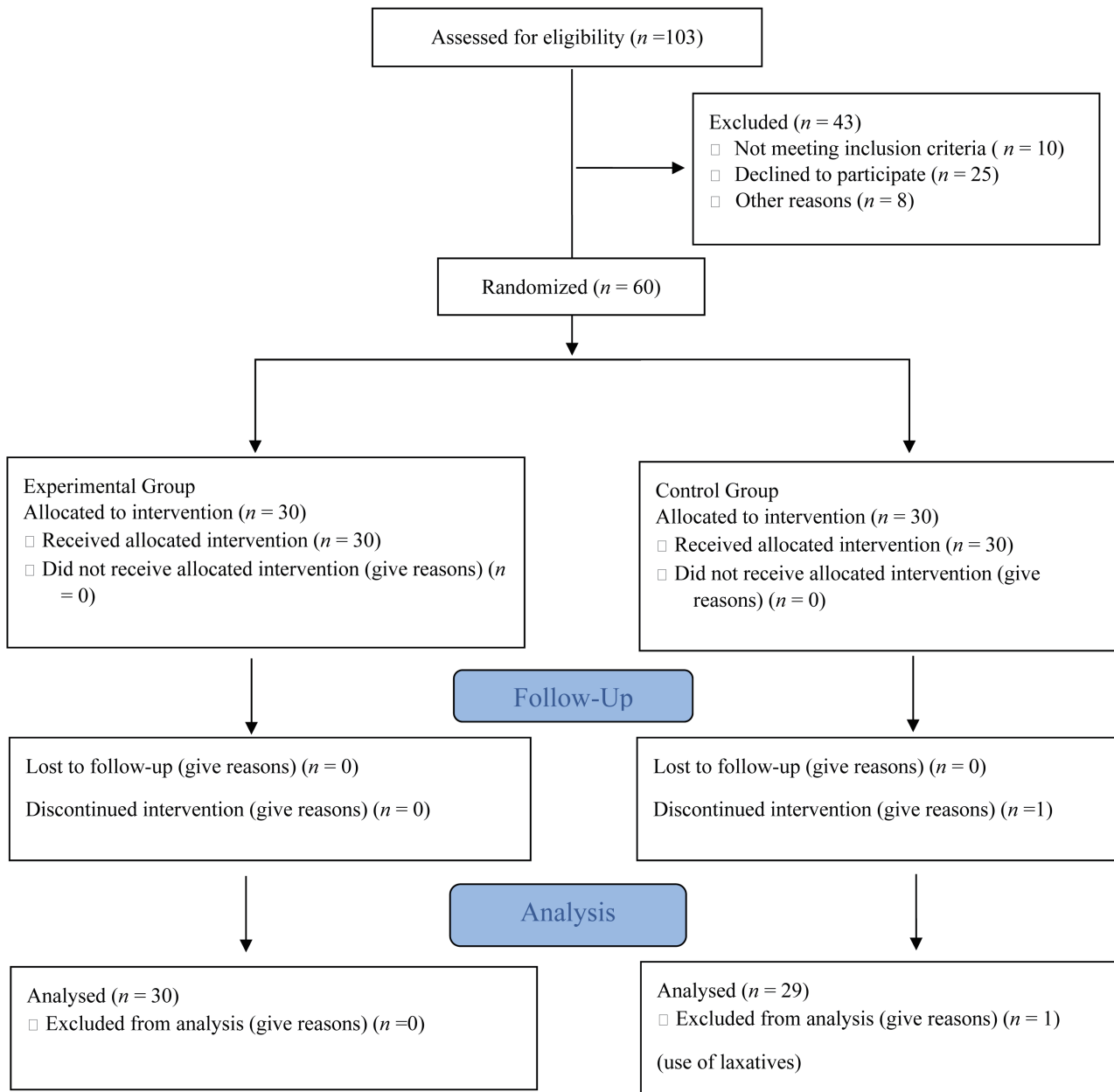


Fig. 1. Steps of research by CONSORT flow diagram. CONSORT, Consolidated Standards of Reporting Trials.

Experimental group protocol

Those in the experimental group were asked to complete the forms and then feet reflexology massages targeting clockwise circular movements for the colon were performed for 30 min three times per week for 1 month.

The experimental group received foot reflexology while reclining in a supine position on a bed. The researcher stood at the end of the patient's bed during the treatment. We used five-ten drops of cold-pressed olive oil to make the application straightforward. The practice

was initiated for the patient's right foot. Reflexology sessions started with a relaxation massage along with ankle rotations. The foot was relaxed primarily by applying effleurage followed by shaking, rotation, and stretching methods. At first, general massage was done on the right foot for 5 min and then reflexology was done for 10 min by performing specific movements of two hands on the area related to the gastrointestinal system (stomach, liver, small intestine, large intestine and solar plexus).²³ After this step, reflexology was performed with the same technique on the left foot. Reflexology massage

Table 1. Sociodemographic characteristics of the elderly people

	Control	Experimental	<i>P</i> value
Median age (range)	72 ± 6.30	79 ± 5.23	n.s.
Gender			
Female: Male	14 (48.3): 15 (51.7)	17 (56.7): 13 (43.3)	<i>P</i> = 0.701
Education			
Illiterate	2 (6.9)	0 (0)	
Literate	6 (20.7)	7 (23.3)	
Middle school	12 (41.4)	13 (43.3)	<i>P</i> = 0.541
High school	9 (31)	10 (33.3)	
Chronic disease			
Yes: No	25 (86.2): 4 (13.8)	28 (93.3): 2 (6.7)	<i>P</i> = 0.424

n.s., not significant.

was performed for 30 minutes after breakfast in order to benefit from the effect of gastro-colic reflex.

Control group protocol

Firstly, forms were completed by the individuals in the control group. For elderly people in the control group, foot surface massage without pressure was applied to simulate the interventions similar to the experimental group. At the end of the first month, forms were completed again. The results of the two groups were compared.

At the end of the first month, forms were completed again, and instruments and scales were used to re-evaluate the individuals in the control and experimental groups; ultimately, the results of the two groups were compared.

Statistical analyses

IBM SPSS Statistics Version 21.0 (IBM Corp., Armonk, NY) program used Microsoft Office Excel 2013 for graphic drawing.

Age, time spent in the nursing home, and scale score distributions were assessed using the Shapiro–Wilk test and normality graphs. All of the continuous variables were represented by median values (min-max), whereas the categorical variables were represented by numbers (%). The Mann–Whitney *U* test was used to compare the demographic characteristics. Scale scores and changes in defecation periods relative to the pre-reflexology period were compared using a non-parametric F1-LD-F1 design among the groups. Wilcoxon test was used for intra-group comparisons. Statistical significance was set at a *P*-value of < 0.05.

Ethical considerations

The ethical suitability of this research was approved by the Ethical Council for Clinical Research of Yenimahalle Research and Training Hospital of Ankara Yıldırım Beyazıt University (Protocol number: 2017/39). All elderly people provided written informed consent before participating in the study.

RESULTS

According to the results of the current study, the average age of the elderly people in the experimental group was 78.93 ± 5.23 years, whereas the elderly people in the control group were mean 73.34 ± 6.30 years. In the experimental group 33.3% of the elderly people had high school degrees, whereas 30% of the participants in the control group had high school degrees (Table 1). In this study, the percentage of female elderly was 56.7% in the experimental group and 48.3% in the control group.

The defecation status of the elderly before and after reflexology is given in Fig. 1. It was found that after the implementation of reflexology, 20% of the experimental group and 72.4% of the control group evacuated their bowels every 3 days, whereas 0% of the experimental group and 20.7% of the control group emptied bowels at intervals of 4 or more days.

According to the results of the current study, the bowel-evacuation (defecation) pattern of the elderly people in both groups was similar at the beginning. After the implementation of reflexology, the rate of emptying bowels on alternate days increased in the experimental group ($P < 0.001$) compared to the control group; furthermore, the bowel-evacuation period was prolonged in the control group, although this did not reach statistical significance (Fig. 2).

A significant decrease in CSI and CQLS scores

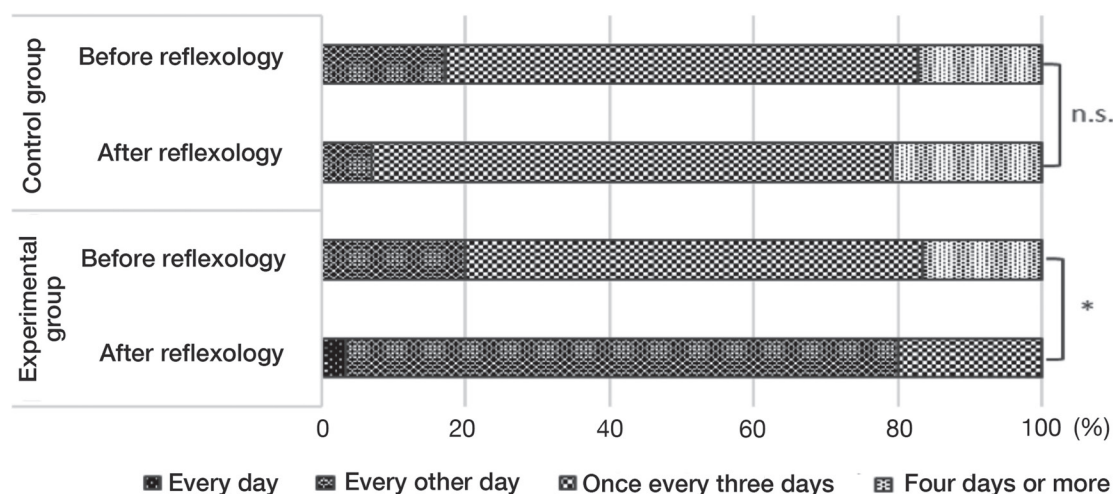


Fig. 2. Prevalence of defecation of the elderly before and after reflexology. n.s., not significant. * $P < 0.001$.

occurred in the experimental group after reflexology application, whereas in the control group, scale scores remained unchanged and no statistically significant difference was found (Table 2). In the experimental group, satisfaction scores increased considerably (from 12.70 ± 1.95 to 16.10 ± 1.93), but the scores of other subscale dimensions of CSI decreased significantly. In the control group, these scores remained the same, with no significant differences (Table 3).

DISCUSSION

This study evaluated the effect of foot reflexology on constipation and quality of life in elderly people. The result of study showed foot reflexology had a positive effect on management of constipation in elderly people.

Before reflexology application, the rates of defecation among the elderly were 63.3% and 65.5% in the experimental and control groups, respectively. In a previous study, it was reported that the prevalence of constipation among elderly people aged ≥ 65 years was 24.4%.¹⁹ In a systemic review, it was revealed that the prevalence of constipation among the adult population ranged from 2% to 35% in Europe, South America, and Australia. Moreover, in the same studies, it was established that the prevalence of constipation increased with aging and that although constipation prevalence was high at the age of ≥ 60 years, it peaked at the age of ≥ 70 years.²⁴

According to the findings, the bowel defecation pattern of the elderly people in both groups was similar at the beginning. After the implementation of reflexology, the frequency of bowel emptying on alternate days increased in the experimental group. In this study, the rate of bowel evacuation on alternate days in the

experimental group increased after reflexology application, whereas in the control group, the bowel evacuation period was prolonged, but this did not reach statistical significance. For example, the study conducted by Cevik and Zaybak (2018), which involved 25 elderly individuals, revealed that reflexology improved scores in terms of frequency of defecation and amount. Furthermore, various studies have emphasized the positive effects of reflexology on the digestive system, bowel functions, and frequency of defecation.^{16, 17, 25, 26} In the study conducted by Woodward et al. (2009), the authors examined the effect of reflexology on patients with chronic constipation and concluded that patients reduced their laxative intake by 80% and revealed potential benefits of reflexology.¹⁷ A study by Fakhrzadeh et al. (2013) involving 56 elderly women with constipation revealed the positive effect of foot reflexology on the attenuation of constipation severity among elderly women, which is in line with our results. Our study results were consistent with those of the study mentioned above.²⁷

Mean scores for quality of life in two study groups before the intervention were not statistically significant. In this research, there were significant changes in CSI and CQLS scores of the elderly people in the experimental group, but those in the control group remained similar with no statistically significant difference. Besides, quality life scores in the experimental group increased considerably, but scores for other subscale dimensions of CSI decreased significantly. The results of the study showed that reflexology could decrease the severity of constipation in the elderly people. In this case, it shows that constipation-related complaints are reduced. As for the control group, these scores were similar without any statistically significant difference.

Table 2. Comparison of the CSI and CQLS scores of the elderly before and after reflexology

Scales /Group	Control		Experimental		P value
CSI (Before)	39.69 ± 9.35	] n.s.	43.67 ± 8.62] *	<i>P</i> = 0.664
CSI (After)	39.83 ± 7.94		21.97 ± 5.71		<i>P</i> < 0.001
CQLS (Before)	93.38 ± 9.70	] n.s.	94.37 ± 8.04] *	<i>P</i> = 0.618
CQLS (After)	93.14 ± 9.97		69.67 ± 8.02		<i>P</i> < 0.001

CQLS, Constipation Quality of Life Scale; CSI, Constipation Severity Instrument. *Wilcoxon test.

Table 3. Comparison of the CSI and CQLS subscale scores of elderly people before and after reflexology

Scale/Group	Control		Experimental		P value
CSI					
SO (Before)	18.17 ± 3.37	] n.s.	20.20 ± 2.60] *	<i>P</i> = 0.955
SO (After)	18.10 ± 3.40		10.77 ± 2.65		<i>P</i> < 0.001
CO (Before)	17.34 ± 3.40	] n.s.	18.37 ± 2.69] *	<i>P</i> = 0.947
CO (After)	17.28 ± 2.96		10.27 ± 2.55		<i>P</i> < 0.001
P (Before)	4.17 ± 2.96	] n.s.	5.03 ± 3.55] *	<i>P</i> = 0.655
P (After)	4.45 ± 2.48		0.93 ± 1.57		<i>P</i> < 0.001
CQLS					
PhD (Before)	14.45 ± 2.35	] n.s.	15.17 ± 1.93] *	<i>P</i> = 0.066
PhD (After)	14.90 ± 2.25		10.10 ± 1.76		<i>P</i> < 0.001
PsD (Before)	26.76 ± 4.22	] n.s.	27.80 ± 3.02] *	<i>P</i> = 0.940
3PsD (After)	26.76 ± 4.38		26.93 ± 3.40		<i>P</i> < 0.001
W (Before)	39.41 ± 5.06	] n.s.	38.70 ± 4.75] *	<i>P</i> = 0.532
W (After)	39.07 ± 3.99		26.93 ± 3.40		<i>P</i> < 0.001
S (Before)	12.70 ± 2.34	] n.s.	12.70 ± 1.95] *	<i>P</i> = 0.341
S (After)	12.41 ± 1.93		16.10 ± 1.93		<i>P</i> < 0.001

CO, colon obstruction; n.s., not significant; P, pain; PhD, physical discomfort; PsD, psychosocial discomfort; S, Satisfaction; SO, stool obstruction; W, worries. *Wilcoxon test.

We believe that the scores for the scales changed depending on the improvement in defecation frequency. In the study conducted by Gursen et al. (2015) involving patients with chronic constipation, it was revealed that the total scores and subscale scores for CSI and CQLS in the intervention group improved considerably.²⁸ The study conducted by Cevik et al. (2018) revealed that scores improved with regard to defecation frequency as well as amount.²⁵ The study by Woodward et al. (2010) revealed that reflexology was beneficial for relieving constipation among women and enhancing their quality of life.¹⁸ In this sense, our research results are similar to the literature. In this study, reflexology was found to improve the quality of life of the elderly.

As a result, it can be said that reflexology can be used as an alternative approach to relieve constipation.

Here we found that foot reflexology had a

positive effect on constipation among elderly people. Constipation-related quality of life scores were improved in the reflexology group.

In conclusion, considering the high cost of drugs, high hospitalization costs, and the undesirable side effects of drug intake, the use of non-pharmacological treatment methods, such as foot reflexology, is recommended to treat constipation in the elderly. Descriptive data regarding the effectiveness of foot reflexology in elderly people with constipation showed significant beneficial effects, such as an increase in the average frequency of bowel movements and decrease in constipation severity in the experimental groups with time. Our study revealed a considerably higher increase in bowel movement frequency in our experimental group, thereby validating the aim of our study.

Limitation of study

This study has several limitations. First, our sample size is relatively small. Second, this is a single-center study and is not representative of the whole society. Further large size and multi-center studies are needed to evaluate the constipation status of elderly people.

Acknowledgments: We thank the elderly individuals who participated in our research.

The authors declare no conflicts of interest.

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