Original Article

The Effect of Reflexology on Constipation in the Elderly

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Abstract

Background and Aim: Constipation is a health problem commonly seen in the elderly. In the present study, we examined the effect of reflexology on constipation in the elderly.
Methodology: The study sample consisted of 25 elderly people residing in a nursing home in the province of Manisa, Turkey. A case identification form; the Rome III Functional Constipation Diagnosis Criteria Form; the Bristol Stool Scale, consisting of The Recall Bias and Visual Scale Analog; and the Standard Diary Constipation Monitoring Form developed by Pamuk et al. were used to collect data. During data collection, reflexology was applied twice a week for a period of 25 days, a total of eight times. The effect of reflexology on constipation was measured by comparing the averages of the scores obtained before, during and after its application.
Results: It was established that reflexology increased the frequency of defecation and the amount of feces, and reduced the hardness of feces, straining during defecation, and the feeling of not having completely evacuated after defecation.
Conclusions: In light of the findings of this study, it is suggested that reflexology can be helpful in relieving constipation in the elderly.

Key Words: Reflexology; Constipation; Aged.

Introduction

The many and complex health problems which appear with advancing age adversely affect the quality of life of elderly people. One health problem frequently encountered in elderly people is constipation (Yont et al.2011). Constipation, which is one of the problems related to evacuation, affects between 2% and 28% of the population (Bleser et al. 2005; Fleming & Wade, 2010; Hsieh, 2005; Cunha, et al., 2011). In the United States, 2.5 million people a year go to a doctor with the complaint of constipation (Bleser, et al., 2005). The prevalence of constipation in people 65 years of age and over is between 30% and 40% (Dennison et al. 2005; Frank, Flynn & Rothman, 2001). Studies of the Turkish population show a constipation rate of 22% to 40% (Turan et al.2011; Uysal, Khorshid & Eser, 2010). The observed increase in constipation with advancing years causes an increase in the use of laxatives (Fleming & Wade, 2010; Annells & Koch, 2002; Koch & Hudson, 2000). In the USA, the rate of laxative use by people age 29 and below is 31.5%, but for those aged 60 and above it was found to be 51.7% (Fleming & Wade, 2010).

Laxatives lose their effectiveness with time, and can have side effects such as abdominal pain and bloating (Woodward, Norton & Barriball, 2010). The positive and negative effects of the methods applied show the importance of selecting the correct treatment for constipation, and the necessity for new research in this area.

Interest in the use of proven complementary therapies and complementary and alternative

medicine has increased greatly in the past 20 years (Woodward, Norton & Gordon, 2009). The many reasons why patients prefer complementary and alternative medicine include dissatisfaction with traditional treatments, concern about the toxicity of medications, and an unwillingness to undergo invasive techniques (Quinn, Hughes & Baxter 2008).

Reflexology is one of the widely-used techniques of complementary and alternative medicine (Ernst, Posadzki & Lee, 2011), and a study carried out in Britain reported that reflexology is the method most frequently used (35.2%) in complementary and alternative medicine (Sharp et al., 2010). Reflexology is a method of complementary and alternative treatment in which reflex points in the hands and feet corresponding to all the areas of the body, the organs, and the endocrine glands are subjected to pressure by the hands and fingers (Soutar 2010; Tabur & Basaran, 2009).

In a survey of possible approaches to treating the constipation frequently seen in elderly people, reflexology, one of the complementary and alternative treatments now used widely in the medical world, was reported as a new method (Woodward, Norton & Barriball, 2010).

This present study was conducted to examine the effect of reflexology on constipation in the elderly.

Methodology

This experimental study was carried out between June 2012 and February 2013 with 25 elderly people with constipation who resided in a nursing home in the province of Manisa, Turkey.

Before commencing the research, written permission was obtained from Ethics Committee and the institutions where the research was performed. Permission was also obtained from Pamuk, Pamuk & Celik (2003) for the use of the constipation monitoring form which they developed, and finally from the elderly people who took part in the study.

To select the sample, the institution physician was first consulted, and the elderly people with constipation were identified. The research sample was then selected from among this group, and those with a definite diagnosis of constipation according to the ROMA III criteria, and who agreed to take part in the study, were selected as the research sample. Individuals were accepted into the study if they were age 65 and over, did not have dementia, were able to communicate and cooperate, had no lesion, infection, etc. to hinder reflexology, did not have acute diarrhea, did not have significant intestinal pathologies such as incontinence or fecal impaction, did not have inflammatory bowel disease, had not previously had intestinal surgery, and did not use laxatives during the study.

Collection of data was accomplished by face-to-face interview, using a case identification form, the Rome III Functional Constipation diagnosis criteria, the Bristol Stool Scale, Visual Scale Analog Questionnaire (VSAQ), and a constipation monitoring form derived from the Standard Diary. The form consisted of questions to determine the subjects' identifying characteristics, their illnesses, the medications they used, their eating habits, and their evacuation activities (Arslan & Eser, 2011).

The Rome III Functional Constipation Diagnosis Criteria is a diagnosis criteria form developed to diagnose constipation, with questions on the patient's defecation characteristics. The presence of at least two of these criteria indicates the existence of constipation.

The Bristol Stool Scale provides information on the changing physical characteristics of the feces according to the time they remain in the colon. A total of seven fecal forms are given in the scale to determine fecal consistency. This helps individuals to determine the form of their own feces.

The Constipation Monitoring Form was developed by Pamuk et al. The scale is divided into two sections: a Recall Bias and Visual Scale Analog Questionnaire (RB-VSAQ), and a Standard Diary. The Visual Scale Analog Questionnaire has six questions on the severity of discomfort brought about by the symptoms of constipation in the elderly. Each question has a scale which the person can mark from zero to ten. A score of 0 indicates that there is no discomfort caused by constipation, and 10 that the discomfort is very serious. Individuals are asked to mark these questions from 0 to 10 according to the seriousness of the discomfort

that they are experiencing. In scoring the scale, each question is evaluated separately (Pamuk, Pamuk & Celik 2003).

In the Standard Diary there is a daily monitoring chart for the diagnosis of constipation that records the number of defecations, the amount of feces, the consistency of feces, straining while defecating, and the feeling of not having fully evacuated after defecation. The scale is scored from 1 to 5 according to the consistency of feces: small and hard like marbles (1); bulky and hard (2); normal (3); soft (4), and watery (5). Thus, the score increases with looser fecal consistency. Straining during defecation is scored from 1 to 4: defecation with no straining (1); straining at the beginning of defecation (2); straining halfway through defecation (3), and straining throughout defecation (4). The feeling of not having completely evacuated after defecation was scored from 0 to 1: there was no such feeling (0), and there was such a feeling (1). The quantity of feces was scored from 1 to 3: the quantity of feces was less than the previous evacuation (1); normal (2), and a large amount (3). The number of evacuations per day was recorded in the section on number of evacuations.

The size of the sample was determined by power analysis. The analyses were carried out on the mean differences between total scores on the Standard Diary before the application of reflexology (four days), during the application (25 days), and after the application (four days), and the results were found to be 88% to100% reliable at a level of $\propto = 0.05$.

Analysis of the study data was performed using the Statistical Package for the Social Sciences (SPSS) 15.0. Numerical and percentage distributions and the Wilcoxon marked rank test were used in the evaluation of the data.

Application of Reflexology

Symptoms of constipation were monitored in the participants by means of the Standard Diary for four days from the day when data collection began. After these four days, reflexology was applied for 25 days, twice a week for 15 minutes to each foot for a total of 30 minutes a session, using suitable techniques to the parts of the foot corresponding to the brain, hypothalamus, pituitary gland, stomach, pancreas, diaphragm and the sympathetic nervous system (solar plexus) because they have a substantial effect on emotions and the digestive system, the small intestine, the large intestine, and the liver because it produces bile.

For the 25 days when reflexology was applied, the constipation symptoms of the participants were monitored daily using the Standard Diary. Then on the four days following the end of the reflexology massage sessions, participants' constipation symptoms were again monitored using the Standard Diary. Thus the Standard Diary was used for a total of 33 days: for four days before the application of reflexology, for 25 days during the application, and for four days afterwards.

The reflexology treatments were all administered by a researcher who had a certificate in performing reflexology.

Results

Table 1 shows the identifying characteristics of the elderly people who took part in the study. It can be seen that 52.0% were female and 44.0% were aged 80 years or over. The largest proportions were as follows: 28.0% of the participants had a diagnosis of diabetes and hypertension, 49.0% were using a diuretic or an antihypertensive drug, 52.0% needed help to move around, 60.0% sometimes took exercise, 48.0% occasionally consumed food containing fiber, and 44.0% consumed 1600ml or more of liquid a day.

Table 1: Distribution of experimental subjects by age, sex, diseases, medication used, mobility, exercise, diet and fluid intake

Table 2: Distribution of experimental subjects by severity of constipation symptoms according to the VSAQ

The measure of severity of constipation symptoms of the elderly people in the study was collected by means of the VSAQ. This showed that 52% of the subjects had a constipation severity of 7-10, 76% had a straining severity of 7-10, 56% had a severity of 4-6 for incomplete evacuation, 48% had a severity of 4-6 for a feeling of pressure in the anus, 44% had a severity of 0-3 for pain in the anus, and 12% had a severity of 7-10 for flatulence (Table 2).

Table 1: Distribution of experimental subjects by age, sex, diseases, medication used, mobility, exercise, diet and fluid intake

Variables	n	%
Age Group (years)		
65-70	5	20.0
71-80	9	36.0
80 or ↑	11	44.0
Sex		
Female	13	52.0
Male	12	48.0
Diseases		
Hypertension	6	24.0
DM + hypertension	7	28.0
No disease	4	16.0
Other (*Parkinson's disease, rheumatism, coronary artery disease, cancer)*	8	32.0
Medication Used*(n=41)		
Not taking medications	1	2.5
Diuretic + Antihypertensive	20	49.0
Antithrombotics	8	19.5
Antidiabetics	7	17.0
Antidepressant	3	7.0
Fe preparations	2	5.0
Mobility		
Independent mobility	10	40.0
Dependent mobility	13	52.0
Bedridden	2	8.0
Exercise		
Never	9	36.0
Sometimes	15	60.0
Always	1	4.0
Frequency of consuming food containing fiber Sometimes		
Frequently	12	48.0
Always	10	40.0
	3	12.0
Fluid intake		
500-1000 ml	9	36.0
1000-1500 ml	5	20.0
1600 and ↑	11	44.0
Total	**25**	**100.0**

***The number of elderly increased because of multidrugs.**

Table 2: Distribution of experimental subjects by severity of constipation symptoms according to the VSAQ

Constipation Symptoms	*Scores*	n	%
Constipation severity	***0-3***	1	4.0
	4-6	11	44.0
	7-10	13	52.0
Straining severity	***4-6***	6	24.0
	7-10	19	76.0
Incomplete evacuation severity	***0-3***	1	4.0
	4-6	14	56.0
	7-10	10	40.0
Feeling of pressure severity in the anus	***0-3***	1	4.0
	4-6	12	48.0
	7-10	12	48.0
Pain severity in the anus	***0-3***	11	44.0
	4-6	5	20.0
	7-10	9	36.0
Flatulence severity	***0-3***	11	44.0
	4-6	11	44.0
	7-10	3	12.0
Total		**25**	**100.0**

Table 3: Mean scores in the Standard Diary on the days before, during and after reflexology

Standard Diary Constipation Symptoms	The days before reflexology application $\bar{X}$ ±Ss	The days of reflexology application $\bar{X}$ ±Ss	The days after reflexology application $\bar{X}$ ±Ss	p
The number of defecations	0.33±0.13	0.53±0.12	0.58±0.24	0.000* 0.135** 0.001***
The amount of feces mean score	1.42±0.53	1.69±0.20	1.80±0.42	0.026* 0.033** 0.012***
The consistency of feces mean score	1.48±0.63	2.53±0.33	2.93±0.72	0.000* 0.001** 0.000***
Straining while defecating mean score	3.50±0.90	2.34±0.40	1.50±0.61	0.000* 0.000** 0.000***
Incomplete evacuation mean score	0.70±0.45	0.31±0.15	0.02±0.10	0.001* 0.000** 0.000***

* Comparison between the days before reflexology and the days of reflexology application, p value (Wilcoxon marked rank test)

** Comparison between the days of reflexology application and the days after application, p value (Wilcoxon marked rank test)

*** Comparison between the days before reflexology and the days after application, p value (Wilcoxon marked rank test)

Figure 1: Mean scores for constipation symptoms in the Standard Diary on the days before, during and after reflexology

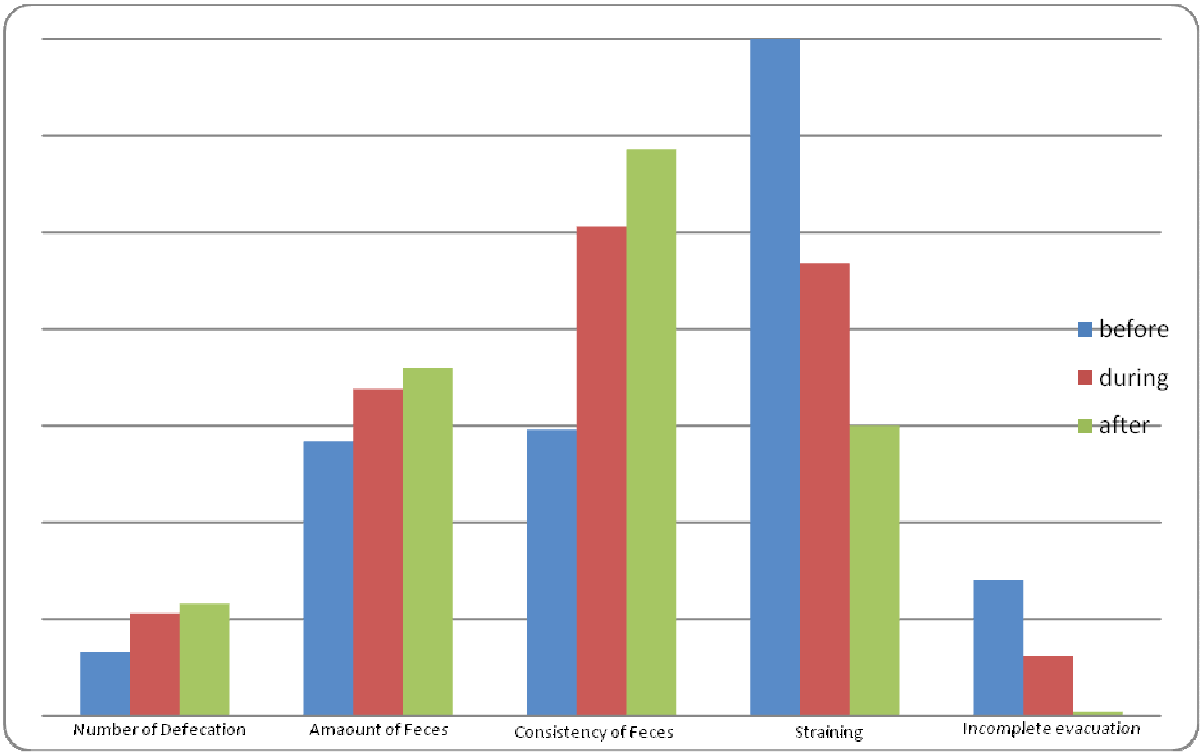

Table 3: Mean scores in the Standard Diary on the days before, during and after reflexology

In order to evaluate the effectiveness of the application of reflexology on the elderly people in the study, their mean scores for constipation symptoms before, during and after the application were compared. The mean scores for number of evacuations were 0.33±0.13, 0.53±0.12 and 0.58±0.24 before, during and after the application, respectively. There was a statistically significant difference between pre-application and application days ($p<0.001$) and application and post-application days ($p<0.05$), but the difference in number of evacuations between application and post-application days was found not to be statistically significant ($p>0.05$). The mean scores for the other constipation symptoms before, during and after the application of reflexology were, respectively, 1.42±0.53, 1.69±0.20 and 1.80±0.42 for amount of feces, 1.48±0.63, 2.53±0.33and 2.93±0.72 for consistency of feces, 3.50±0.90, 2.34±0.40 and 1.50±0.61 for straining while defecating, and 0.70±0.45, 0.31±0.15 and 0.02±0.10 for incomplete evacuation after defecation. Analysis showed that the differences in mean scores for pre-application and application, application and post-application, and pre-application and post-application for amount of feces, consistency of feces, straining while defecating and incomplete evacuation after defecation were statistically significant ($p<0.05$, Table 3).

Figure 1: Mean scores for constipation symptoms in the Standard Diary on the days before, during and after reflexology

Discussion

Constipation is not a life-threatening condition, but because of the social, economic, hygienic and emotional stress which it creates and the high reported rates in this country, it is seen as a significant health problem that affects the quality of life (Dedeli et al. 2007). Non-pharmacological treatments for constipation include bowel management, a diet rich in fiber,

sufficient liquid intake and regular exercise (Howard, West & Ossip-Klein, 2000; Kurniawan & Simadibrata, 2011). When the participants in this study were investigated for factors such as diet, liquid intake, exercise, and activity levels which might be related to their constipation, it was found that 40% could move around independently, 4% (one individual) exercised regularly, 52.0% said that they frequently or always ate food containing fiber, and 44.0% reported consuming 1600ml or more of liquid a day (Table 1). Generally, it can be said that these results prepare the ground for constipation. Yont et al. found that the risk factors and identifying characteristics of constipation were present in 97.5% of the elderly people residing in a nursing home, and that 53.4% of them did not have enough activity, 62.9% took insufficient liquids, and 46.6% consumed too little fiber. The sample in the present study consisted of people who had already been diagnosed with constipation, so we propose that the results obtained support the link between constipation and diet, liquid intake, exercise and activity levels.

The participants in the study were asked to rate the severity of constipation complaints on the RB-VSAQ, and the results with the highest rates were as follows: 52% reported that the severity of consistency and 76% that the severity of straining was unbearable, 56% that the severity of incomplete evacuation was medium, and 48% that that the feeling of pressure on the anus was at a medium level, while only 44% reported that the severity of anus pain and flatulence was bearable (Table 2). It may be suggested that the fact that one or more of the complaints of constipation are at an unbearable level is the best indicator that constipation is a health problem that adversely affects the quality of life.

When we examine the various methods which can be used in the treatment of constipation, which is seen at such high levels in elderly people, one new method which stands out as a complementary or alternative treatment that has been widely used in medicine recently is reflexology (Woodward, Norton & Barriball, 2010). The present study concluded that the application of reflexology increased the mean scores for the number of evacuations, the amount of feces and consistency of feces, and reduced the mean scores for straining while defecating and incomplete evacuation after defecating. The increase in the mean scores for number of evacuations, amount of feces and fecal consistency and the reduction in the mean scores for straining while defecating and incomplete evacuation after defecating are desirable results and indicate the resolution of constipation. It can be concluded from these results that a positive change was achieved in constipation symptoms. It has been reported in the literature that reflexology has an effect on the digestive system and bowel function (Woodward, Norton & Gordon, 2009; Tabur & Basaran, 2009). It is suggested that the effect of reflexology in reducing the complaints of constipation in this study is an expected result, given the information in the literature. In a literature search for studies on this topic, no study was found on the effect of reflexology on a similar sample. There were, however, studies of different groups. Guiling performed foot reflexology on a man aged 70 and two women aged 62 and 67 who complained of constipation, and reported that reflexology was beneficial in the treatment and prevention of constipation (Guiling, 2004). In another pilot study by Woodward et al., the effect of reflexology on constipation was studied in women, and it was reported that it had positive effects (Woodward, Norton & Barriball, 2010). The findings of the present study are similar to those of Guiling and Woodward et al. Thus, it may be said that reflexology is an approach that can be used in relieving constipation.

Conclusion

In conclusion, we established that the application of reflexology increased the number of evacuations and the amount of feces, and reduced fecal hardness, straining while defecating and the feeling of not having completely evacuated after defecation. It has been reported that the long-term use of laxatives can have serious side-effects such as liquid electrolyte imbalance, cramping, bloating, dehydration, anal irritation, fecal incontinence and defecation syncope (Howard, West & Ossip-Klein 2000). Taking all these risks into consideration, it is considered that reflexology, which is a non-invasive technique and which has no side-effects, is an application which can be effective in relieving constipation and improving

quality of life. For this reason, it would be beneficial to broaden the use of reflexology.

However, this study had a number of limitations. Firstly, it was carried out on only 25 individuals in two nursing homes, and so cannot be said to represent the whole population of elderly people. Other limitations are that the data on defecation was gathered from the subjects' own statements and observational evaluations were not performed, and there have been no other studies in this country examining changes in constipation brought about by reflexology. There is a need for studies with a broader sampling base.

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References

Annells M. & Koch T. (2002). Older people seeking solution to constipation: The laxative mire. Journal of Clinical Nursing, 11: 603-612.

Arslan GG. & Eser I.(2011). An examination of the effect of castor oil packs on constipation in the elderly. Complementary Therapies in Clinical Practice, 17: 58-62.

Bleser S., Brunton S., Carmichael B., Olden K., Rasch R. & Steege J. (2005). Management of chronic constipation. The Journal of Family Practice, August: 691-698.

Cunha GH., Fechine FV., Santos LKX. et al. (2011). Efficacy of the tincture of jalapa in the treatment of functional constipation: a double-blind, randomized, placebo-controlled study. Contemporary Clinical Trials, 32: 153–159.

Dedeli O., Turan I., Fadiloglu C. & Bor S. (2007). A validity and reliability of adaptation patient assessment of constipation quality of life scale. MN Internal Medical Sciences, 2(1-2): 36-43.

Dennison C., Prasad M., Lloyd A., Bhattacharyya SK., Dhawan R. & Coyne K. (2005). The health-related quality of life and economic burden of constipation. Pharmacoeconomics, 23(5): 461-476.

Ernst E., Posadzki P. & Lee MS. (2011). Reflexology: An update of a systematic review of randomised clinical trials. Maturitas, 68: 116-120.

Fleming V. & Wade EW. (2010). A review of laxative therapies for treatment of chronic constipation in older adults. The American Journal of Geriatric Pharmacotherapy, 8(6): 514-550.

Frank L., Flynn J. & Rothman M. (2001). Use of a self-report constipation questionnaire with older adults in long-term care. The Gerontologist, 41(6):778-786.

Guiling S. (2004). Treatment and prevention of constipation by reflexotherapy. China Symposium Reflexology Report; 55-58. [Internet] Retrieved from: http://www.reflexologyresearch.net/Reflexology ConstipationResearch3.shtml. Accessed: 8.05.2013.

Howard LV., West D. & Ossip-Klein DJ. (2000). Chronic constipation management for institutionalized older adults. Geriatric Nursing, 21(2): 78-84.

Hsieh C. (2005). Treatment of constipation in older adults. American Family Physician, 72(11): 2277-2284.

Koch T. & Hudson S.(2000). "Older people and laxative use: literature review and pilot study report". Journal of Clinical Nursing, 9: 516-525.

Kurniawan I. & Simadibrata M. (2011). Management of chronic constipation in the elderly. Acta Medica Indones-Indones Journal Internal Medicine, 43(3): 195-205.

Pamuk ON., Pamuk GE. & Celik AF. (2003). Revalidation of description of constipation in terms of recall bias and visual scale analog questionnaire. Journal of Gastroenterology and Hepatology,18: 1417–1422.

Quinn F., Hughes CM. & Baxter GD.(2008). Reflexology in the management of low back pain: a pilot randomised controlled trial. Complement Ther Med, 16(1): 3-8.

Sharp DM., Walker MB., Chaturvedi A. et al.(2010). A Randomised, controlled trial of the psychological effects of reflexology in early breast cancer. European Journal of Cancer, 46: 312-322.

Soutar G. (2010). Reflexology for Hands and Feet, In: Evyapan T (Eds). (2nd ed.), (pp.6-15). Arkadas Publisher, Ankara, Turkey.

Tabur H. & Basaran EBZ. (2009). Introduction to Reflexology, (2nd ed.), (pp.16-20). Ezgi Matbaacilik, Istanbul, Turkey.

Turan N., Kaya N., Kaya H. Ozturk A., Eskimez Z. & Yalcin N. (2011). Constipation problems of nursing students with respect to certain variables. I.U.F.N. Nursing Journal, 19 (3): 168-178.

Uysal N., Khorshid L. & Eser I. (2010). The identification of constipation problem in healthy young individuals. TAF Preventive Medicine Bulletin, 9(2):127-132.

Woodward S., Norton C. & Barriball KL. (2010). A pilot study of the effectiveness of reflexology in treating idiopathic constipation in women.

Complementary Therapies in Clinical Practice, 16: 41–46.

Woodward S., Norton CS. & Gordon J. (2009). Reflexology for treatment of constipation. Cochrane Database of Systematic Reviews, 4(56): 1-6.

Yont HG., Türk G., Khorshid L. & Eser I. (2011). Evaluation of the diagnosis of constipation in elderly individuals nursing home residents. İ.U.F.N. Hemsirelik Dergisi, 19 (2): 83-88.