# Comparison the Effect of Golghand and Foot Reflexology on Constipation in Elderlies


## Abstract

**Objective**: Constipation is one of the most common problems of the elderly, causing many complications and high costs for these individuals and affecting their quality of life. This study aimed to compare the effect of Golghand (a pharmaceutical composition of roses and honey) and foot reflexology on constipation in the elderly.

**Method:** This clinical trial was conducted on 60 elderly people with constipation in 2017. Subjects were selected through simple and purposive sampling and were randomly allocated to two Golghand and foot reflexology groups by permuted block method. For the test group, foot reflexology was carried out in the specific area of constipation twice a day and each time for five minutes for two weeks. On the other hand, the intervention group received Golghand half an hour before lunch (one teaspoon of Golghand in one cup of cooled boiled water). Constipation assessment scale was filled for the subjects before and at the end of the intervention by an evaluator, who was unaware of the intervention approaches of the groups. Data analysis was performed in SPSS version 20 using statistical tests of Chi-square, Fisher's exact test, Mann-Whitney U, and Friedman test at the significance level of <0.05.

**Findings**: In this research, mean age of the participants was 66±8.66 years. According to the results of Mann-Whitney U, no significant difference was observed between the groups in terms of the frequency of bowel movements on the first day after intervention (P=0.246). However, on days 2-14 after the intervention, a significant difference was observed between the study groups in this regard (P<0.05). Similarly, results of the Friedman test were indicative of a significant difference between the intervention and control groups regarding the frequency of bowel movements (P<0.001), in a way that after the passing of the mean period, the number of bowel movements increased in both groups. However, this increase was higher in the Golghand group, compared to the foot reflexology group (P<0.001). Moreover, independent t-test demonstrated a statistically significant difference between the groups regarding mean intensity of constipation (P=0.01).

**Conclusion**: According to the results of the study, consumption of Golghand increased the frequency of bowel movements and reduced the intensity of constipation in elderly individuals. This method had greater impacts on constipation, compared to the foot reflexology technique.


**Keywords**: Golghand, Constipation, Foot Reflexology, Elderly

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## Introduction

The phenomenon of aging and related concerns is an important issue that has attracted the attention of various scholars in different sciences, so that addressing various aspects of the issue has come to the forefront.[1] Improving living conditions, preventing diseases and providing health services have positive effects on longevity and life expectancy that lead to

prolonging a certain life stage of aging.[2] The World Health Organization considers elderly people over the age of 60 years in Third World countries.[3] The growth of the elderly population in the world is increasing, according to estimates that the number of elderly Americans will be over 72 million by 2040, of which more than 14 million people will be older than 85 years. Based on the census of the Statistical Center of Iran and studies, the Iranian population aged over 60 years is estimated to be over 10% by 2021, which seems to exceed 20% by 2050.[4] The aging rate in developing countries is much higher than in developed countries, which makes these countries unable to adapt to the consequences of this issue.[3]

Constipation is a common and noticeable health problem in the elderly, which has an adverse effect on their quality of life. The prevalence of this complication is 33.5% in the elderly aged 60 years and over, accounting for about 80% of the elderly admitted to institutions and 45% of the elderly living in the community.[5] The constipation annually leads to 2.5 million doctor visits. The economic burden of health care for each patient with constipation is estimated at an average of $ 2,752.[1] Among outpatient visits, the constipation is one of the five common findings in the diagnosis of gastrointestinal disorders diagnosed by physicians.[6] The constipation can lead to complications such as anal bleeding, bowel obstruction, false diarrhea, fecal incontinence, hemorrhoids, anal fissures, rectal prolapse, diverticulitis, and even urinary retention and urinary tract infections. On the other hand, straining during bowel movements in the elderly can cause an abnormality in coronary artery bypass and cause ischemia and syncope.[1]

In modern medicine, the constipation therapy begins by providing non-pharmacological recommendations such as increasing physical activity, fluid intake, regulating bowel movements, and increasing fiber consumption. Drugs such as bulk-forming, osmotic and stimulant laxatives are prescribed if necessary and methods such as biofeedback and surgery are used if not responding to drug treatments.[5] Diets rich in fiber such as bran cause complications such as tympanites and increased flatulence; and hyperosmotic drugs such as sorbitol also cause tympanites, cramp and flatulence. Stimulants such as bisacodyl and glycerin cause rectal stimulation and fecal incontinence; and saline laxatives such as magnesium hydroxide cause magnesium poisoning, water loss, abdominal cramps and fecal incontinence. Laxatives such as liquid paraffin cause lipoid pneumonia, malabsorption of lipid soluble vitamins, body water loss and fecal incontinence. The enema liquid paraffin causes damage to the rectal mucosa; the enema containing phosphate increase the damage to the rectal mucosa, hyperphosphatemia and mechanical trauma; enema soap causes damage to the rectum, water poisoning and electrolyte imbalance; and surgery is also associated with complications, such as small bowel obstruction and prolonged Ileus.[5] There are many strategies in complementary and alternative medicine (CAM) to treat constipation in the elderly. Some of the benefits of using these treatments include the cost-effectiveness and easy to use of most of these interventions and their low side effects, increasing patient compliance ability and activity, increasing family adherence to care and reducing patient anxiety and medical expenses. In this regard, these methods are used today as an independent therapy or combined with other therapies.[7]

Today's nursing focuses on comprehensive care and complementary therapies. Part of nursing care and this treatment is nursing profession and art. Once the nursing profession and art are merged, the quality of care will reach its highest level; and this care must be changed with

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new discoveries and inventions. Foot reflexology is one of the most commonly used complementary interventions in the Hand Therapy group. Reflexology, although considered an old treatment, has recently been included in the list of well-known complementary therapies and is one of the six treatments for highly-used CAMs in Norway, Denmark and the United Kingdom.[8]

The reflexology essentially focuses on studying how one part of the body is linked to another part. The reflexology contains a map of the whole body on the hands and feet that can be manipulated and stimulated directly and through special massage techniques. The related areas located on the feet are easier and more specific in terms of identification because they cover a large area, and also access to them is easier than hands.[9]

There are many studies available on the effects of reflexology on the control of various diseases, including improvement of sleep disorders, depression, physiological indices,[10] reduction of menopausal symptoms , reduction of chronic low back pain,[11] improvement of pain and anxiety in cancer patients.[12]

Medicinal plants have been applying for a long time because of the availability, ease of use, inexpensiveness and lower side effects compared with chemical drugs for the treatment of certain diseases.[13] The use of medicinal herbs has long been common among people in Iran and other countries, and at different times, the amount of herbs used has changed considerably according to the time requirements. Thus, the use of medicinal plants has increased by about 8.3 times between 1990 and 1997 in the United States. Additionally, the famous researchers in the field of pharmacy have named the 21st century the "returning to nature" or "consumption of herbal medicines".[14]

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Damask rose or *Rosa damascena* belonging to the Rosaceae family is commonly known as Persion Rose and Gol-e-mohammadi in Iran. The drug parts are petals and essential oils. Fatty oils and organic acids have been extracted from flowers, petals and fruits.

It has a cold and dry nature whose dried petals are astringent due to tannin content. The mixture of rose petals with sugar (Golghand) or honey (Jelanjabin) has been a safe and mild laxative in pregnant women in traditional medicine.[15] *R. damascena* has reportedly anti-inflammatory, anti-oxidant, anti-depressant, anti-cough, analgesic and antibacterial properties.[16]

Studies have been done on the effects of reflexology on the treatment of the constipation, especially the constipation in the elderly.[1,17] Some investigations have been conducted on the effects of *R. damascena* extract on post-operative pain in elective cesarean sections[18] and the effect of "Gol-e-ghand/Golghand", a mixture of rose petals and honey, on migraine attacks,[19] and no study was found on the effect of Golghand on the constipation. Therefore, the researchers decided to conduct this study considering the growing population of the elderly and the prevalence of constipation, given that reflexology effects on the constipation is a time consuming method and the elderly himself may be unable to do it.

Research purposes:

This study was conducted to compare the effect of Golghand and foot reflexology on constipation in the elderly.

## Methods

The present randomized clinical trial was conducted to compare the effect of Golghand and foot reflexology on elderly the constipation in 2017. The sample consisted of 60 elderly people with the constipation according to the criteria of Rom III who were referred for treatment to the clinic of the 22nd of Bahman Hospital of Gonabad in Iran. The participants were selected using convenience and purposive sampling methods based on the study inclusion criteria. They were randomly assigned to two groups of reflexology and Golghand.

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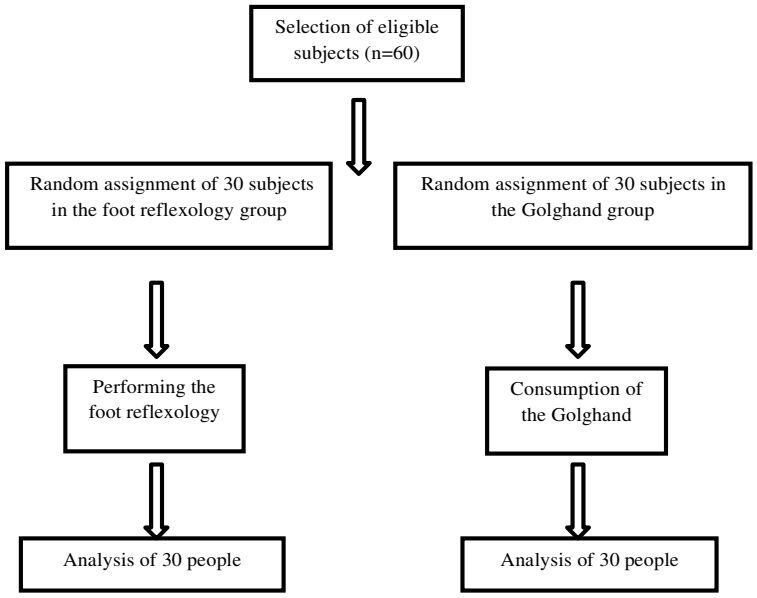


Figure 1. Clinical trial flowchart

## Inclusion criteria

inclusion criteria were mentally conscious and able to answer questions, ages 60 to 75 years, diagnosis of the constipation based on Rom III criteria, no history of known metabolic disorders such as diabetes, no history of spinal cord injuries, no taking anti-diarrheal, sympathomimetic, opioid and psychedelic drugs, no alcohol consumption, no history of important diseases affecting constipation such as obstructive and inflammatory diseases of the gastrointestinal tract, hypothyroidism and no taking of an effective medication on constipation such as calcium.

## Exclusion criteria

Exclusion criteria included unwillingness to continue to participate in the research in any phase, the occurrence of acute complications during the intervention, diet changes, and the

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use of laxatives to eliminate constipation during the study, the occurrence of any event of allergic reaction to Golghand and no taking Golghand according to schedule.

The study samples were homogenized in pairs for some confounding variables, including fluid intake, fiber intake, recent stressful events, history of disease and drug use, smoking, and narcotics.

**Instruments**

The present study instruments were demographic profile, background information and Constipation Assessment Scale (CAS) questionnaires. The CAS is a prestigious scientific tool designed for the first time in 1989 by Williams and Mc.millan to check the presence and severity of constipation. The tool that evaluates the severity of constipation clinically consists of 8 items, including abdominal distention or bloating, change in amount of gas passed rectally, less frequent bowel movements, oozing liquid stool, rectal fullness or pressure, rectal pain with bowel movement , small volume of stool and unable to pass stool within 24 hours. The score for this tool is calculated based on the five-point Likert scale ranging from zero to four and the total score range of 0 to 32 calculating from the sum of the above items, 0-8 no or minimal, 9-16 mild to moderate , 17-24 severe, and 25-32 more severe. This tool is reliable, as the reliability of this tool has been modified and evaluated to verify the severity of constipation in pregnancy (r = 0.92). A study in 2007 also confirmed the tool validity (r = 0.84) with a Pearson's correlation coefficient.[1]

**Interventions**

After selecting patients and obtaining informed written consent and subjecting them in two groups of reflexology and Goleghand, the constipation degree was determined in two groups and then intervention was performed. In the reflexology group, firstly, with maintaining patient safety, the units were requested to be in comfortable (supine) position. The patient's pants were raised to the knee and the researcher was positioned in the front of patient while sitting on a chair.

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After warming the hands, the patient's legs (shins, ankles, soles, and fingers) were oily with sweet almond oil (neutralized therapeutically) to facilitate massage. The relaxation techniques were performed to relax the feet and prepare for reflexology. Then, the constipation points based on reflexology technique were massaged, according to valid sources including stomach, liver, gallbladder, pancreas, and intestines, especially ileocecal valve and rectosigmoid colon.

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The reflexology was performed twice daily for 15 minutes each time for 2 weeks. This practice was done by female researcher for women and by male research assistant for men. A researcher and male research assistant received the necessary training for foot reflexology from a Chinese medicine specialist. In the group receiving Golghand, the Golghand was taken half an hour before lunch (a teaspoonful mixed in a cup of cooled boiled water) for 2 weeks. The Golghand consumption was reminded daily by telephone and was assured of appropriate usage.

The study was blinded and the CAS was completed by an assessor unaware of the intervention method for both groups at the end of the second week. The units were requested

to record their own bowel habits (frequency, tympanites, abdominal pain and vomiting) daily in the checklist. Data were collected in person.

**Ethical considerations**

The present study was adopted from the Master's thesis in nursing approved by the Research Council of Gonabad University of Medical Sciences on 27/01/2018; it was approved also by the Research Ethics Committee of Gonabad University of Medical Sciences, IR.GMU.REC.1395.74. The selected seniors and their legal guardians received necessary explanations on the objectives, methodology, being free to leave the research at any time, and then written consent was obtained. This study was registered in Iranian Registry of Clinical Trials (IRCT2017031233020N1).

**Statistical analysis**

In this study, SPSS V.20 software was used to analyze the data. Normal distribution of the data was examined by Kolmogorov-Smirnov test. Independent t-test, Fisher's exact and Chi-square tests were used to compare the demographic variables in two groups. Mann-Whitney and Friedman's tests were applied to compare the frequency of bowel movements in two groups. Comparison of the mean severity of constipation between two groups was performed by independent t-test. The data analysis was performed at a significance level of 5% and a statistical power of 80%.

**Results**

In this study, 30 people were in the Golghand group and 30 in the reflexology group. Based on the findings of the study, the mean age of the study units was 66 ± 8.66 years.

Table 1 shows the demographic data of the participants in two groups of study (Table 1).

Table 1. Comparison of some demographic variables in two intervention groups

| Variables | Groups | | | | Test results |
|---|---|---|---|---|---|
| | Golghand | | Reflexology | | |
| | Frequency | percentage | Frequency | percentage | |
| Educational level | 16 | 53.3 | 16 | 53.3 | P= 0.424 |
| No smoking and narcotics | 28 | 93.3 | 28 | 93.3 | P=1.000 |
| Physical activity | 17 | 56.7 | 15 | 50 | P=0.068 |
| Low fiber intake | 17 | 56.7 | 19 | 63.3 | P=0.242 |
| Consumption of 1 to 2 glasses of water | 14 | 46.66 | 17 | 56.7 | P=0.289 |
| No taking drug | 11 | 36.6 | 16 | 53.33 | P=0.220 |
| No stress | 28 | 93.3 | 28 | 93.3 | P=1.000 |

Chi-square test was used to compare the levels of constipation severity in the two intervention groups. The results showed that the mean severity of constipation in mild to moderate conditions showed no significant difference between the two groups (P>0.05) and

the severity of constipation in both intervention groups decreased at an identical ratio (Table 2).

Table 2. Comparison of the severity of constipation after intervention in two intervention groups

| The severity of constipation | Groups | | | | Chi-square test results |
|---|---|---|---|---|---|
| | Golghand | | Reflexology | | |
| | Frequency | percentage | Frequency | percentage | |
| Mild | 28 | 93.33 | 27 | 90 | $\chi 2=0.21$ |
| Moderate | 2 | 6.66 | 3 | 10 | df= 1<br>P=0.64 |

The independent t-test was used to compare the mean severity of constipation in the two intervention groups and the results showed that there was a significant difference in the severity of constipation between the two groups after intervention (P<0.001), so that the severity of constipation after the intervention in the Golghand group has had further reduction compared to the reflexology group (Table 3).

Table 3. Comparison of the mean severity of constipation before and after the intervention in the two intervention groups

| Times | Groups | | Independent t-test results |
|---|---|---|---|
| | Golghand | Reflexology | |
| | Mean ± SD | Mean ± SD | |
| Before intervention | 11.53±4.87 | 11.70±2.40 | t=0.16<br>df= 58<br>P=0.86 |
| After intervention | 4.43±2.19 | 5.83±1.93 | t=0.16<br>df= 58<br>P=0.01 |

The Mann-Whitney test was used to compare the frequency of bowel movements at different times in two intervention groups. Based on the results, there was no significant difference in the frequency of bowel movements in the first day after intervention between the two intervention groups (P>0.05). The results showed a significant difference in the frequency of bowel movements between 2 to 14 days after the intervention between the two intervention groups (P<0.05). The result of the Friedman's test revealed that the mean frequency of bowel movements between the two groups was statistically significant (P<0.001), so that the mean frequency of bowel movements in both groups increased with the passage of time, which was higher in the Golghand group (Table 4).

Table 4. Frequency of bowel movements in two intervention groups at different times

| Test days | Groups | | Mann-Whitney test results |
|---|---|---|---|
| | Golghand | Reflexology | |
| | Mean ± SD | Mean ± SD | |
| 1 | 0.86± 0.68 | 0.66± 0.60 | Z=1.11<br>P=0.264 |

| | | | |
|---|---|---|---|
| 2 | 1.23± 0.62 | 0.76± 0.72 | Z=2.53<br>P=0.011 |
| 3 | 1.8±0.80 | 0.66±0.71 | Z=4.67<br>P<0.001 |
| 4 | 2.03±0.92 | 1.13±0.89 | Z=3.34<br>P<0.001 |
| 5 | 2.0±0.98 | 0.96±0.88 | Z=3.72<br>P<0.001 |
| 6 | 2.1±0.99 | 1.20±0.96 | Z=3.34<br>P<0.001 |
| 7 | 2.26±0.98 | 0.86±0.86 | Z=4.83<br>P<0.001 |
| 8 | 2.33±1.06 | 1.03±0.96 | Z=4.30<br>P<0.001 |
| 9 | 2.3±1.49 | 1.00±0.83 | Z=4.37<br>P<0.001 |
| 10 | 3.03±1.21 | 0.90±0.71 | Z=5.74<br>P<0.001 |
| 11 | 2.76±1.22 | 0.83±0.83 | Z=5.39<br>P<0.001 |
| 12 | 3.16±1.34 | 1.06±0.82 | Z=5.42<br>P<0.001 |
| 13 | 3.00±1.48 | 1.06±0.86 | Z=4.87<br>P<0.001 |
| 14 | 3.13±1.59 | 1.33±0.84 | Z=4.50<br>P<0.001 |
| Friedman's test result | $\chi2$=162.03<br>df= 13<br>P<0.001 | $\chi2$=18.76<br>df= 13<br>P=0.13 | |

## Discussion

The present study compared the effect of Golghand and foot reflexology on the constipation in the elderly. The findings of this study showed that most of the research units suffered from mild to moderate constipation before intervention. We found that the patients' mean scores of constipation after intervention have Significantly decreased compared with the mean score before intervention in refloxology and Golghand groups. Our results showed that patients' constipation conditions were better in Gholghang group compared with reflexology group after intervention.

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A study of Fakhrzadeh et al. on 56 elderly women with constipation indicated a positive effect of foot reflexology in attenuating the severity of constipation in elderly women, which is in line with our results.[1]

Attained results of Ghaffari et al. showed that the foot reflexology is an effective way to reduce the incidence of constipation during pregnancy, which confirms the results of this study.[17]

In a study entitled "A pilot study on the efficacy of reflexology in treating idiopathic constipation in women", with a single-group prospective design conducted in the United Kingdom by Woodward et al, nineteen women aged 18 years and over referring to a center for the treatment of constipation were chosen, and the results showed that the reflexology is effective in the treatment of idiopathic constipation in women. The results of this study were consistent with the findings of our study.[20]

Chao H-L et al. performed acupressure in the ST-36 region daily within 3 minutes for 5 days after surgery. This study also found that performing acupressure in the ST-36 region would shorten the time of the first intestinal passage, oral intake of fluids, and improve the function of the digestive system during the course of 2-3 days after surgery in the patients with colon cancer, confirming the results of this study.[21]

In a study by Elbasan et al. with the aim of investigating the effects of reflexology on constipation and motor functions in children with cerebral palsy on 40 children aged 3 to 15 years with cerebral palsy, the results showed improvement in motor function in two groups, as well as the severity of constipation was reduced in the second group, which was in agreement with the present results.[22]

Gharabaghi et al. carried out a double-blind clinical trial on 92 patients in two equal groups. The first group received the *R. damascena* extract capsule and the second group consumed placebo capsule at 15 minutes before anesthesia. The results showed no reduction in pain intensity in the group receiving *R. damascena* extract and no significant side effects were observed in none of them, similar to our study.[18]

Maddahian et al. showed that Goleghand reduced the frequency of migraine but did not affect the length and severity of attacks. This study has been conducted on migraine and had no effect on reducing the severity of pain, as well as no specific complication was found in line with our study.[19]

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In conclusion, considering the high cost of drugs used, the high cost of hospitalization and the unwanted side effects of taking medications, it is recommended to use non-pharmacological treatment methods such as foot reflexology and Golghand to attenuate the severity of constipation in the elderly. Descriptive data collected on the effectiveness of Golghand and foot reflexology on elderly with constipation showed significant effects of two interventions, in particular Golghand, on increasing the frequency of bowel movements and decreasing the severity of constipation, with an average increase in the frequency of bowel movements in both groups with time. This increase was higher in the Golghand group, which confirmed our study hypothesis on the basis of different effects of Golghand and foot reflexology on the constipation of elderly population.

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