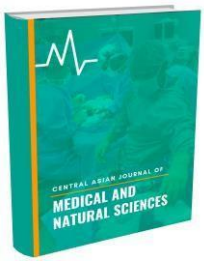

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Effect of Acupressure Technique on Constipation in Patients with Acute Phase of Stroke

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Abstract: Constipation is actually a common problem after stroke, it can pose a significant risk to stroke survivors. The reasons for constipation after stroke can be multifactorial, including reduced mobility, changes in diet, and medications. The purpose of this study is to determine whether acupressure can improve bowel movement in patients with stroke. A quasi-experimental study was conducted from September 4, 2023, until June 9, 2024, at Imam Al-Hussein Medical City. A purposive sampling was used to enroll fifty-eight patients with stroke, who afterwards were allocated into intervention and control groups. For three days, patients in the intervention group were taught to apply acupressure technique, spending three minutes each day on the acupressure points of LI4, LI3, and SJ6. On the other hand, patients in the control group only received conventional therapy. The Wexner constipation questioner, the constipation assessment scale, and the sociodemographic and clinical data constituted the three elements of the study tool. Both a descriptive and inferential statistical procedures, such as the independent sample t-test and paired sample t-test, were employed to assess and establish the outcomes of the study. A p-value less than 0.05 was deemed to indicate statistical significance. At pre-test results showed that most patients in the control and intervention groups (92.9%) and (96.7%%) had severe constipation, whereas post-test results showed that 0.0% and 92.9% of patients in the intervention group had severe constipation. A significant difference at a p-value of 0.000 was found between the two-time assessment of intervention group after the application of acupressure technique. Acupressure technique was applied for 9 minutes, 3 minutes on each of LI4, LI3 and SJ6 acupressure points, twice a day for three days' duration are effective methods for improving bowel movement in patient with stroke.

Keywords: Stroke, Constipation, Acupressure technique

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Introduction

Stroke is one of the most common reasons of infirmity and death globally, costing health care systems a lot of money and causing issues with public health (Katan & Luft, 2018). According to Ma et al. (2024), the numbers of strokes has consistently greater than before, with the age of onset being younger in recent times. This can be attributed to several causes such as changes in lifestyle and increasing societal aging. Stroke, is the main worldwide factor causing adult impairment. It is decreasing the patient's ability to perform activity of daily living, 40% of stroke patients are

completely dependent on others to perform daily tasks (Ibrahim & Athbi 2023).

In clinical practice, constipation is one of the most frequent and harmful outcomes after a stroke, occurring between 22.9% and 79% (Ma et al., 2024). When the basal ganglia and thalamus are the site of a stroke, constipation is more likely to happen (Li, et al,2022). It is a symptom that varies from person to person and can lead to physiological problem like nausea, tenseness, and general discomfort in addition to stomach pain (Durmuş İskender, & Çalışkan, 2022). Blood pressure rises quickly when straining occurs during defecation because it raises intra-abdominal pressure. The resulting intracranial pressure increases the incidence and fatality rates of stroke (Li, et al., 2022). Constipation lowers a patient's quality of life because it effects the patients physically and psychologically (Włodarczyk et al., 2021). 45% of stroke patients experienced constipation during the acute phase of their illness. In another, 45.1% of patients and 31.8% of patients in the critical care unit did not defecate within three to 3-6 days after admission (Kamali et al., 2022). Constipation can cause hemorrhoids, rectal tearing, appetite loss, abdominal distension, intestinal blockage, fecal impaction, and even sepsis if it is not managed (Shin and Park, et al., 2018).

Common pharmacological therapies for constipation have been shown to temporarily alleviate symptoms, but long-term use of these medications has been to a number of unfavorable side effects, such as diarrhea and metabolic abnormalities (Wang, et al., 2019).

One of non-pharmacological treatment for constipation is acupressure. This study is first one in Iraq, acupressure is a basic, non-invasive method that traditional Chinese medicine uses to apply pressure to specific body areas along energy meridians. According to Chinese medicine, all matter—living or inanimate—is always changing. When applied to the right locations, acupressure can enhance gastrointestinal motility and digestive fluid. Its application involves treating and preventing constipation by stimulating the sacral nerve, which regulates excrement (Şahan, and Yıldız, 2020).

Objectives: To determine whether acupressure can improve bowel movement in stroke with patients.

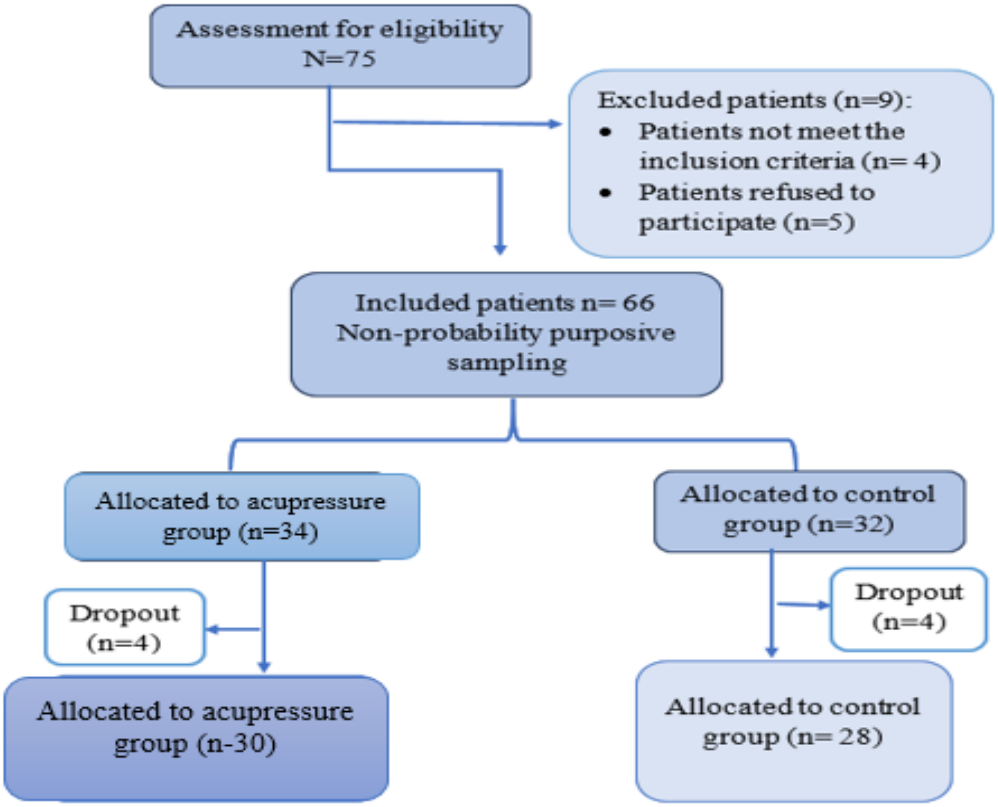
Study design and participants: A quasi-experimental study was initiated from September 4th, 2023, to, to 9th June, 2024. A total of 58 patients with acute stroke who have constipation, and those who agree to take part were enrolled in this study.

Study design and participants:

A nonprobability sample involves 58 patients with acute stroke, have decrease bowel movement, and those who agree to participate in this study. The patients were distributed into two groups: the control and intervention groups. The control has 28 and intervention groups had 30 patients. Purposive sampling was used to select the sample.

Data collection instruments:

The data were collected using the instrument involves three sections: First section: socio-demographic and clinical data that consist of ages, marital status, genders, level of education, occupation, chronic diseases, type and location stroke, duration of stroke, and recurrence of stroke. The second section was used to evaluate the constipation level by using Wexner constipation questionnaire, this scale was developed by Agachan et al., (1996) is from Cleveland Clinic Florida's Department of Colorectal Surgery in Fort Lauderdale, Florida. This scale has seven option like how often opening bowel, painful or difficult to open bowel, feeling not completely empty bowels when go to the toilet, unsuccessful attempts to empty bowel have in 24 hours, feeling pain in abdomen, time to take open bowels, need assistance to open bowel. The third section is constipation assessment scale, this scale design by Isenring et al., (2005), department of Nutrition and Dietetics, Flinders University, Australia, this scale consists from eight options, each question have from (1-3), one (no problem), two (mild constipation), three (sever problem). A panel of seventeen experts created the study instrument's content and face validity, and a pilot study using Cronbach's alpha to evaluate the study instrument's reliability of Wexner constipation questionnaire is 0.854 and Cronbach's alpha of constipation assessment scale is 0.823.



Eligibility criteria for study sample.

Intervention:

The interventional protocol was established by the researcher after look over scientific literature and previous studies, as well as the researcher's experience. This interventional regimen is intended to offer instructions on how to improve bowel movement and treatment of constipation for patients with stroke. Therefore, this interventional protocol includes using acupressure technique. All patients in the intervention group were given am explanation about how to perform acupressure technique to improves gastrointestinal motility, acupressure technique was applied for nine minutes on average, three minutes on each acupressure points. The LI4 acupressure point is located in the right and left hands in the soft skin between thumb and index finger on the top of hand, the LI3 acupressure point is located on the radial side of the second finger, close to the head of the second metacarpal bone, and The SJ6 point is located in the center of the forearm, close to the width of four fingers. Acupressure technique at these points were applied twice a day for three days' duration. The patient was placed in the sitting position. Acupressure points were located using the patient's fingers and then marked with a pencil. All participants continued to obtain their conventional therapy.

The patients were examined by the researchers two times a day to notify them of the process and to kindly remind them to complete the intervention. The follow-up method included calling patients as well as forming an online group on social media platforms including WhatsApp in addition to communicate with patients through telephony (SIM-card). The researcher examined the patient's adherence to the intervention and how they respond to it during this follow-up. Patients in the control group just received the conventional therapy that is given to all patients on a regular basis. The levels of constipation were evaluated for all patients in the intervention and control groups prior the intervention and directly after the accomplishment of the intervention. The data collection process was carried out from January 17th to March 16th, 2024.

Materials and Methods

The data was analyze using IBM SPSS Statistics version 26. To assess the normality of the data, the Shapiro-Wilk test was employed, indicating that the data followed a normal distribution. The study's results were summarized using a descriptive statistical analysis procedure such as frequency, percentages, and average scores. Additionally, inferential statistical techniques were utilized, including paired t-tests to compare related groups, independent t-tests for unrelated group comparisons, and Chi-square tests to evaluate differences between groups. A p-value threshold of 0.05 was established to indicate statistical significance.

Results and Discussion

Table 1. Comparing the socio-demographic data in the two groups:

Socio-demographic Characteristics		Groups				
		Acupressure		Control		X^2
		f	%	f	%	P-value
Age groups	40-59	6	20.0	5	17.9	0.39 NS
	60-80	19	63.3	19	67.9	
	More than 80	5	16.7	4	14.3	
	MS ± SD	69.1+9.30		70.4+11.6		
Gender	Male	13	43.3	9	32.1	0.54 NS
	Female	17	56.7	19	67.9	
Marital status	Married	23	76.7	25	89.3	0.33 NS
	Widow/Widower	6	20.0	3	10.7	
	No Reads and write	15	50.0	17	60.7	0.66

Educational level	Reads and write	7	23.3	7	25.0	NS
	Primary school	3	10.0	2	7.1	
	Middle school	0	0	1	3.6	
	Diploma	2	6.7	0	0	
	Bachelor's and above	3	10.0	1	3.6	
Occupation	Gainer	12	40.0	15	53.6	0.31 NS
	Retired	7	23.3	5	17.9	
	Housewife	11	36.7	8	28.6	

Table (1) indicates that most of patients in the acupressure and control groups were within age group (60-80) years old and accounted 63.3%, 67.9% respectively. 56.7% of patients in the acupressure group and 67.9% in the control group is female. Regarding the marital status, the majority of the patients in the control and acupressure technique groups were married and accounted 89.3% and 76.7% respectively. In concern to the education level 50% of patient in the acupressure technique group and 60.7% in control group have not read and write. This table also exposed that are 40%, and 53.6% of patients enrolled in the acupressure technique and control groups respectively were gainer.

Table 2: Distribution of patients in two groups based on their clinical data:

Variables		**Groups**			
		Acupressure		**Control**	
		f	%	f	%
Previous stroke	Yes	12	40.0	9	32.1
	No	18	60.0	19	67.9
Type of stroke	Ischemia	29	96.7	25	89.3
	Hemorrhage	1	3.3	3	10.7
Location of stroke	Left side	14	46.7	12	42.9
	Right side	12	40.0	12	42.9
	Both	4	13.3	4	14.3
Number of previous stroke	Not found	12	40.0	9	32.1
	1-2	14	46.7	14	50.0
	More than 2	4	13.3	5	17.9
Defecation before stroke	Daily	21	70.0	19	67.9
	Every 1-2 days	9	30.0	9	32.1
Method of defecation	Diapers	30	100	27	96.4
	Oriental toilet	0	0	0	0
	Western toilet	0	0	1	3.6
Mobility	Need assistance with movement	21	70	13	46.4
	Don’t Movement	5	16	14	50.0
	Wheelchair	4	13	1	3.6
Nutritional Intake	Dysphagia	20	66	10	35.7
	Need assist to eat	6	20	9	32.1

IV fluid	2	6.7	1	3.6
NG tube	2	6.7	8	28.6

Table 2 indicates that are 60.0% and 67.9% of patients in acupressure and control groups don't have previous stroke, 89.3%, and 96.7% of patients in the control and the acupressure technique groups respectively are have ischemic stroke. With regard to the location of stroke 46.7%, and 42.9% of patient in the acupressure and control groups have left side stroke. Concerning to the number of previous stroke, 46.7%, and 50% of patients in the acupressure and control groups respectively have exposed previously to stroke one-two time. According to defecation before stroke 70.0%, and 67.9% of patient in acupressure technique and control groups have daily bowel movement. 100% and 96.4% of patient in the acupressure technique and control groups used dipper method of defecation. Concerning to mobility status, 70.0% and 46.4% of patient in the acupressure technique and control groups are need assistance to movement. According to the nutritional status 66% and 35.7% of patient in the acupressure technique and control groups have dysphagia.

T**able 3.** Comparison of constipation in two group between pre-test and post-test period:

Groups	Test	MS	SD	t-value	df	p-value	Sig.
Control group	**Pre-test**	2.45	0.41	1.76	27	0.08	**NS**
	Post-test	2.37	0.45				
Acupressure technique group	**Pre-test**	2.44	0.35	23.5	29	0.000	**S**
	Post-test	0.47	0.26				

MS="Mean of Score"; SD="Standard Deviation"; df="Degree of Freedom"; S="Significant" (p-value≤0.05), and NS="Non-significant" (p-value>0.05).

Table (3) exposed a non-significant difference in the constipation between the first and second assessment of the control group at p-value =0.08. While there is a statistically significant difference in the constipation between the first and second assessment at p-value =0.000 for the acupressure group. Therefore, implementing the acupressure technique were significantly reducing the constipation level in patients with stroke.

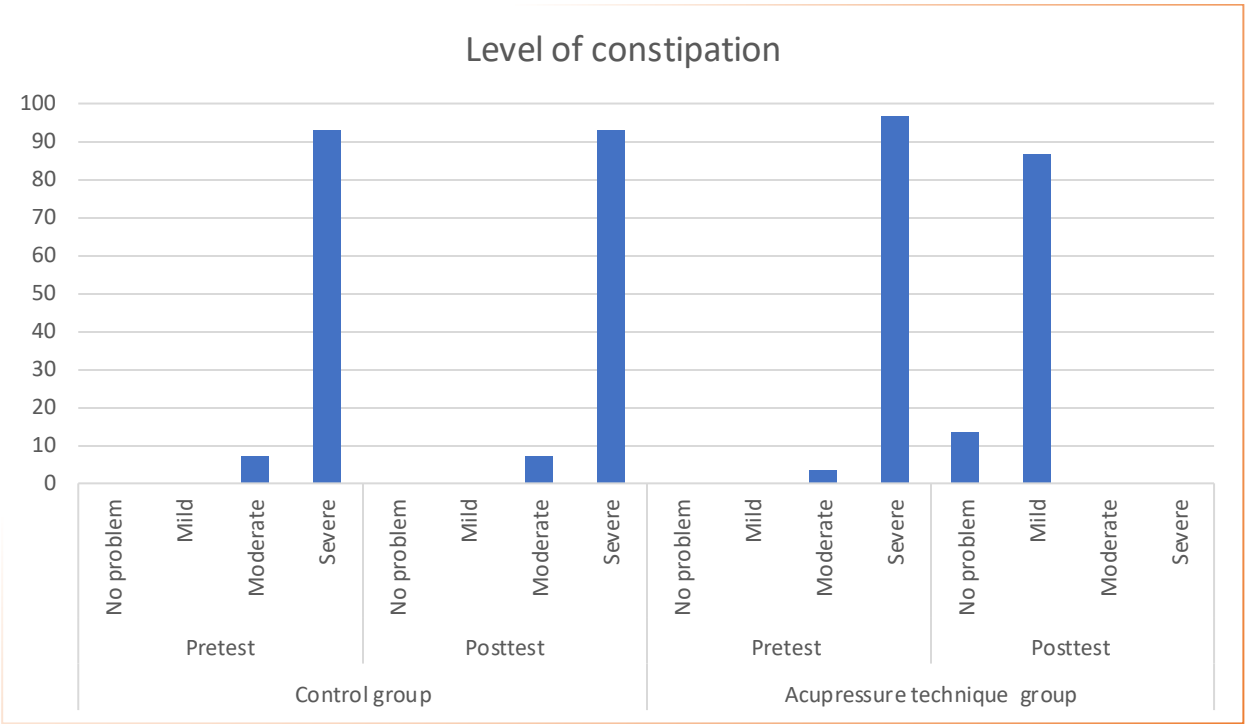


Figure 1. Comparison the statistical result of severity of constipation for the control and acupressure technique groups at pre-test and post-test period.

Figure (1) exposes the percentage of constipation severity in the control, and acupressure technique groups. It is evident that the acupressure technique has an effective on improving the bowel movement when compared to control group.

Table 4. Differences between the effect of acupressure technique on constipation with patient's socio-demographic and clinical data:

Variables	Comparative patterns	df	F-value	P-value	Sig.
Age	Between groups	5	0.826	0.56	NS
	Within groups	24			
Marital status	Between groups	5	0.446	0.84	NS
	Within groups	24			
Educational level	Between groups	5	0.605	0.72	NS
	Within groups	24			
Occupation	Between groups	5	1.06	0.41	NS
	Within groups	24			
Location of stroke	Between groups	5	1.116	0.38	NS
	Within groups	24			
Number of previous stroke	Between groups	5	1.808	0.14	NS
	Within groups	24			
Motility status	Between groups	5	1.467	0.23	NS
	Within groups	24			

Nutritional status	Between groups	5	0.377	0.88	NS
	Within groups	24			

df="Degree of Freedom"; and NS="Non-significant" (p-value>0.05).

Table (4) show a non-significant statistical association was observing between the effect of acupressure technique on constipation with patient's age, marital status, education level, occupation, location of stroke, number of previous stroke, motility status, nutritional status at p-value >0.05.

Table 5. Association between the effect of acupressure technique on constipation with patient's gender and previous stroke, type of stroke, defecation before stroke and method of defecation:

Variables	Classes	f	MS	SD	df.	p-value	Sig.
Gender	**Male**	13	1.56	0.50	6	0.518	NS
	Female	17					
Previous stroke	**Yes**	12	1.6	0.49	6	0.141	NS
	No	18					
Type of stroke	**Ischemia**	29	1.03	0.18	6	0.522	NS
	Hemorrhagic	1					
Defecation before stroke	**Daily**	20	1.3	0.47	6	0.623	NS
	1-2 days	10					
Method of defecation	**West toilet**	**0**	1.0	0.00	6	0	NS
	Diapers	**30**					

MS="Mean of Score"; SD="Standard Deviation"; df="Degree of Freedom"; and NS="Non-significant" (p-value>0.05).

Table (5) show a non-significant statistical association between the effect of acupressure on the constipation level with patient's gender, previous stroke, type of stroke, defecation before stroke, method of defecation at p-value >0.05.

Discussion:

In this quasi-experimental research, patients in the acupressure group were advised to perform acupressure technique for nine minutes on average, three minutes on each acupressure points (LI4, LI3, and SJ6 acupressure point. Acupressure technique at these points were applied twice a day for three days' duration. while they are not used for the control group. As per the data existing in table 2, our results propose that a majority of patients in both the acupressure group

(60.0%) and the control group (67.9%) had not experienced a previous stroke. Additionally, 96.7% of patients in the acupressure group and 89.3% in the control group had ischemic strokes.

Regarding the site of stroke as shown in table 2, 46.7%, and 42.9% of patient in the acupressure and control groups had a stroke on the left side of the brain. Ibrahim & Athbi (2023) stated that 53.3% of patients in the control group had hemorrhagic strokes, compared to 63.3% in the experimental group. The right lobe of the brain was affected in 63.3% of the experimental group and approximately 50% of the control group.

Concerning to the type of stroke for patients enrolled in this study, 89.3%, and 96.7% of patients in the control and the acupressure groups correspondingly are having ischemic stroke. Pradhan et al., (2020) found that out of 40 stroke patients, 27.5% suffered from hemorrhages and 72.5% of patient had ischemic strokes. In terms of previous stroke occurrences, 46.7%, and 50% of patients in the acupressure and control groups respectively had experienced one to two strokes previously. With regard to bowel movements before the stroke, 70.0%, and 67.9% of patient in acupressure and control groups had daily bowel movements. All patients (100%) in the hot water-bag group and 96.4% in the control group used the dipper method for defecation.

The results in Table 2 also reveal that 70.0% of patient in the acupressure and 46.4% of patients in the control group required assistance for mobility. Furthermore, 66% and 35.7% of patient in the acupressure and control groups experienced dysphagia.

Table (3) reveled the mean constipation score was 2.45 during the pretest and 2.37 during the post-test time of the control group, it is exposed a non-significant difference in the constipation between the first and second assessment of the control group at p-value=0.08. Conversely, the mean constipation score for patient in the intervention group was 2.44 for constipation prior to the implementation of the intervention, and 0.47 for the same group following the implementation of the interventions, it is exposed a statistical significant difference in the constipation between the first and second assessment at p-value 0.000 for the acupressure group. Therefore, implementing the acupressure technique were significantly reducing the constipation level in patients with stroke. In a randomized controlled trial study conducted in Taiwan Boulevard Sect to look at the effect of acupressure on lowering constipation in stroke patients getting urgent care. 128 in patients with acute stroke from neurology departments were randomly divided into control and experimental groups, each consisting of 64 patients. Regarding the level of constipation post-intervention, the experimental group outperformed the control group. The experimental group experienced more bowel movements than the control group throughout the first seven days of the intervention (Nieh, et al., 2023). In a double-blind, randomized clinical trial study carried out in Iran, to find out how acupressure affected hemodialysis patients' constipation. a practical sample consisting of 75 hemodialysis patients, with 35 individuals in each group. To stimulate a bowel movement, apply acupressure, liv3, cv6, st36, and SP15 points. Depending on the degree of constipation after treatment, acupressure provides these individuals with alternative methods of lowering it, which can improve their quality of life and lessen negative health effects (Abbasi et al., 2019). A three-group randomized clinical trial investigation was carried out on 90 patients after cardiac surgery.

Within 48 hours following surgery, patients in the intervention group were given acupressure at LI4 and ST25 points twice a day, for three days' duration. The intestinal function indices were finished 48, 72, 96, and 120 hours following surgery (prior to intervention). 24 hours prior to intervention and 48 hours following surgery saw no defecation in any of the three groups—intervention, sham, and control. At 72 hours, 96 hours, and 120 hours' post-intervention, there was a notable distinction ($p<0.001$) in the stool count among the intervention, sham, and control groups. Additionally, 96 hours and 120 hours following the initiation of the intervention, respectively, showed a significant difference in the three groups' stool consistency ($p=0.032$ and $p<0.001$) (Khan-Mohammadi et al., 2023). In addition to that, the result of our study demonstrates that, at p-value >0.05, there is no statistically meaningful correlation between the patient's age, marital status, occupation, chronic disease, location of stroke, number of previous stroke, motility status, gender and previous stroke and defecation method and number of defecation before stroke and the effect of acupressure in improving bowel movement. In experimental investigation in which patients were assigned randomly to one of two groups: acupressure group (n = 30), control group (n = 31), the patients' age, marital status, education level, employment status, and gender that raise the risk of constipation did not significantly differ from one another (Durmuş İskender, & Çalışkan, 2022).

Study limitations:

The main limitation of this study was that participant performed acupressure at home, which might have led to a lack of strict adherence to the intervention due to physical or psychological challenges. Another limitation was the number of patients, as many declined to participate in the study. It is suggested that additional research be conducted to evaluate the long-term effects of acupressure on constipation following a stroke.

Conclusion

Performing acupressure technique for patients with stroke for 9 minutes/ two sessions a day for 3 days' duration would meaningfully decrease the constipation level and achieve enhance bowel movement.

Nursing implications: Patients who have stroke frequently experience numerous problems related to bowel movements, including constipation. So, it is essential for nurses to deliver holistic care to stroke patients by assisting them in attaining regular bowel habits and reducing constipation, which can improve their overall functional abilities and lower the chance of fecal impaction. Integrating acupressure into standard hospital care is vital for offering practical nursing support to these patients and potentially elevating the quality of nursing care provided. Acupressure can effectively relieve constipation in stroke patients, thereby improving their functional capabilities.

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Conflict of Interest: There are no conflicts of interest involved with any specific institutions or individuals.

Ethical considerations: On November 15, 2023, the College of Nursing/University of Kerbala's Ethical Committee approved an ethical authorization (code: UOK.CON 23.017). It is presumed that all patients involved in this study provided informed consent and have the freedom to withdraw from participation at any time.

References

1. Abbasi, P., Mojalli, M., Kianmehr, M., & Zamani, S. (2019). Effect of acupressure on constipation in patients undergoing hemodialysis: A randomized double-blind controlled clinical trial. Avicenna journal of phytomedicine, 9(1), 84.(114)
2. Agachan, F., Chen, T., Pfeifer, J., Reissman, P., & Wexner, S. D. (1996). A constipation scoring system to simplify evaluation and management of constipated patients. Diseases of the Colon & Rectum, 39(6), 681–685.
3. Durmuş İskender, M., & Çalışkan, N. (2022). Effect of acupressure and abdominal massage on constipation in patients with total knee arthroplasty: a randomized controlled study. Clinical nursing research, 31(3), 453-462.
4. Ibrahim, S. K., & Athbi, H. A. (2023). Effect of Early Balance Exercise on Dependency Level in Patients with Stroke. Migration Letters, 20(S6), 311-318.
5. Isenring, E., Bauer, J., & Capra, S. (2005). Modified Constipation Assessment Scale is an effective tool to assess bowel function in patients receiving radiotherapy. Nutrition & Dietetics, 62(2-3), 95–101.
6. Kamali, M., Bagheri-Nesami, M., Ghaemian, A., Moosazadeh, M., Esmaeili-Ahangarkelai, N., Charati, F. G., & Haghighat, S. (2022). The effect of acupressure on preventing constipation in patients with acute myocardial infarction under primary percutaneous coronary intervention. Middle East Journal of Digestive Diseases, 14(4), 422.(7)
7. Katan, M., & Luft, A. (2018). Global burden of stroke. Seminars in Neurology, 38(02), 208–211.
8. Khan-Mohammadi, F., Jafari, H., Bagheri-Nesami, M., Moosazadeh, M., Kamali, M., Esmaeili-Ahangarkelai, N., & Quds, K. (2023). Effects of acupressure on intestinal function in patients with coronary artery bypass graft surgery: a randomized clinical trial. Gastroenterology and Hepatology From Bed to Bench, 16(3), 282.(17)

9. Li, X., Peng, K., Meng, M., Han, L., Yang, D., Zhao, J., & Hao, Y. (2022). Methodological exploration on the construction of a traditional Chinese medicine nursing expert consensus based on evidence—taking stroke as an example. Journal of Traditional Chinese Medical Sciences, 9(2), 128-134.
10. Ma, C., Niu, P., Guan, H., Yu, Z., Xu, Q., Yu, J., Su, J., & Zhao, D. (2024). Efficacy and safety of auricular therapy in the treatment of post-stroke constipation: A protocol for systematic review and meta-analysis. *Plos One*, *19*(2), e0298537.
11. Nieh, H. C., Wu, P. O., Ou, S. F., Li, H. P., & Chen, J. P. (2023). Effect of acupressure on alleviating constipation among inpatients with stroke during the acute phase: A randomized controlled trial. Complementary Therapies in Clinical Practice, 53, 101801.(11)
12. Pradhan, Z. S., Deshmukh, S., Dixit, S., Sreenivasaiah, S., Shroff, S., Devi, S., Webers, C. A. B., & Rao, H. L. (2020). A comparison of the corneal biomechanics in pseudoexfoliation glaucoma, primary open-angle glaucoma and healthy controls using Corvis ST. *PLoS One*, *15*(10), e0241296.
13. Şahan, S., & Yıldız, A. (2020). The effect of acupressure on constipation: a systematical review.(10)
14. Shin, J., & Park, H. (2018). Effects of auricular acupressure on constipation in patients with breast cancer receiving chemotherapy: a randomized control trial. Western journal of nursing research, 40(1), 67-83.
15. Wang, P. M., Hsu, C. W., Liu, C. T., Lai, T. Y., Tzeng, F. L., & Huang, C. F. (2019). Effect of acupressure on constipation in patients with advanced cancer. Supportive Care in Cancer, 27, 3473-3478.(8)
16. Włodarczyk, J., Waśniewska, A., Fichna, J., Dziki, A., Dziki, Ł., & Włodarczyk, M. (2021). Current overview on clinical management of chronic constipation. Journal of Clinical Medicine, 10(8), 1738.(5)
17. Ali, A. A. E., Hassan, S. A. A., & ... (2019). Effectiveness of acupressure Technique on Chemotherapy Induced Nausea and Vomiting among Breast Cancer Women: An Intervention Study. Indian Journal of …. https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=09760245&AN=141853054&h=%2FPWv44eLl5YJJnSzr%2F1HzLcEZ6aNqYCWXYV%2BElR4iCgyGP23%2BG3OTby7sIo5k%2BG6ib8S0ahCgwMSPP3R2pZeOA%3D%3D&crl=c
18. Alwan, Z. J., & Athbi, H. A. (2023). Effects of the Wrist Band Acupressure Technique on the Severity of Nausea among Patients Receiving Highly Versus Moderately Emetogenic Chemotherapy. Kufa Journal for Nursing Sciences. https://www.iasj.net/iasj/download/ab56961d8a534490
19. Basuony, G. M., Bahgat, R. S., Elkhedr, S. M., & ... (2022). Effect of Implementing Acupressure Technique on Gastrointestinal Problems and Pain Control for Children Post Abdominal Surgeries. The Malaysian Journal …. https://ejournal.lucp.net/index.php/mjn/article/view/1693
20. Idhayanti, R. I., & Purwaningsih, A. Y. (2020). Acupressure Technique to Reduce Dysmenorrhea. Midwifery and Nursing Research.
21. Jasem, B. A. A., & Dawood, H. A. (2024). Effect of Acupressure Technique with Wristband on Postoperative Nausea and Vomiting in Laparoscopic Cholecystectomy Patient. Kufa Journal for Nursing Sciences. https://www.journal.uokufa.edu.iq/index.php/kjns/article/view/15904
22. Jin, C. (2020). Clinical observation of Chinese medicine auricular acupressure and acupuncture technique in the treatment of elderly patients with essential hypertension …. CJGMCM.
23. Mohamed, N. K., Zaki, N. A. E., & ... (2022). Efficacy of Implementing Acupressure Technique on Weight Reduction among Obese Adolescent. Assiut Scientific Nursing …. https://asnj.journals.ekb.eg/article_278320.html

24. Mohammed, H. G., & ... (2023). Nurses' Performance Regarding Application of Acupressure Technique for Children undergoing Chemotherapy: An Assessment Study. Egyptian Journal of …. https://ejhc.journals.ekb.eg/article_294241.html
25. Nikolenko, O., Nesterchuk, N., Tryfonyuk, L., & ... (2021). Effect of physical therapy, Thai acupressure technique, and Nordic walking on the autonomic dysfunction syndrome. Journal of Physical …. https://efsupit.ro/images/stories/octombrie2021/Art%20387.pdf
26. Padmapriya, D., & Jenifer, B. S. (2020). Effectiveness of emotional freedom technique tapping an acupressure on post-operative pain reduction among post-operative clients. Drug Invention Today. https://www.researchgate.net/profile/Padma-Priya-9/publication/346095966_Effectiveness_of_emotional_freedom_technique_tapping_an_acupressure_on_post-operative_pain_reduction_among_post-operative_clients/links/5fbb679392851c933f50125e/Effectiveness-of-emotional-freedom-technique-tapping-an-acupressure-on-post-operative-pain-reduction-among-post-operative-clients.pdf
27. Sivasankari, K., & NS, J. V. (2023). Acupressure, Lavender oil massage and deep breathing technique on pain perception and level of satisfaction among primipara mothers. Latin American Journal of …. http://actafarmbonaerense.com.ar/index.php/latamjpharm/article/view/883
28. Zeid, N. A. M., & Aly, S. E. B. (2020). The Effect of Acupressure Technique on Sleep Quality among Patients Undergoing Hemodialysis. IOSR Journal of Nursing and Health Science …. https://www.academia.edu/download/62482340/F090112546320200325-46804-s2y89s.pdf