

# Abdominal massage for constipation relief in stroke patients: A Participatory action research

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ORIGINAL ARTICLE

## Abdominal massage for constipation relief in stroke patients: A participatory action research<sup>☆</sup>



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### KEYWORDS

Abdominal massage;  
Community engagement program;  
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### Abstract

**Objective:** To improve knowledge and skills of family members and community health volunteers in applying abdominal massage to stroke patients with constipation.

**Method:** A participatory action research, involving family members and community health volunteers to participate in the training and supervision sessions about abdominal massage for constipation relief in stroke patients. Knowledge enrichment was assessed using questionnaire, while the abdominal massage skill was evaluated using direct observation. Qualitative interviews were conducted to evaluate patients' experiences regarding the intervention program.

**Results:** The program showed the improvement of participants' knowledge and skills in applying abdominal massage for stroke patients with constipation. Likewise, patients confirmed their constipation relieved after the application of abdominal massage.

**Conclusion:** This study showed that training and supervision sessions about abdominal massage for constipation alleviation in stroke patients are feasible, efficient, and beneficial programs to enhance knowledge and skill of family members and community health volunteers.

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## 5 Introduction

Stroke is one of the common causes of death and disability in Indonesia.<sup>1</sup> It is reported that stroke prevalence increased from 7% in 2013 to 10.9% in 2018, meaning that the prevalence of people with stroke in Indonesia was ten per one thousand population.<sup>2,3</sup> In 2016, number of Indonesians died due to stroke was 212,963 and the highest prevalence was reported in the South Sulawesi province (17.9%).<sup>4,5</sup>

Besides disability, one of the most common complications among people with stroke is constipation which can lead to increased disability and death.<sup>6–8</sup> Constipation in stroke patients occurred mainly due to lack of physical mobility, difficulty to swallowing fluid and fiber, dependence on others to use the toilet, and the use of laxatives.<sup>8</sup> If the stroke patient with constipation has a history of heart failure, hypertension, or myocardial infarction; straining during defecation can lead to increased burden of the heart, rupture of blood vessels, and premature death.<sup>9–11</sup> Concerning these complications, it is crucial to prevent constipation.<sup>6,9</sup>

Abdominal massage is revealed as one of several interventions to prevent and to treat constipation among elderly, people with stroke, and those with musculoskeletal disorders, cardiovascular diseases, chronic blood disease, and post-operative ileus.<sup>6,12–15</sup> Abdominal massage has been proved as an inexpensive and safe non-pharmacologic therapy to relieve constipation.<sup>16</sup>

Likewise, a previous study has confirmed that applying abdominal massage can prevent constipation in stroke patients hospitalized in one of Indonesian public hospital and can avoid the patients taking laxatives.<sup>6,9</sup> However, studies specifically focusing on how abdominal massage performed by family members and community health volunteers to prevent constipation in stroke patients at home is rare. Hence, this study aimed to implement abdominal massage performed by family members and community health volunteers to alleviate constipation in stroke patients at their homes.

## Method

This study was participatory action research (PAR) using mix-methods data collection including interviews, FGDs, and questionnaires. The participants consisted of 11 family members of stroke patients and five community health volunteers. The intervention including training and supervision participants about the application of abdominal massage to stroke patients as well as conducting evaluation of the process and outcomes. The training was delivered in the forms of modules, audiovisual media, skill demonstration. Participants performed abdominal massage to stroke patients under the supervision of the research team. Home visits were conducted to evaluate knowledge and skills of participants in applying abdominal massage independently to stroke patients.

Regarding the ethical considerations, this study was a follow up study from the initial intervention study that was conducted at one of Indonesian public hospitals and had obtained ethical approval from the Research Ethics Committee of Faculty of Medicine, Universitas Hasanuddin (No. 513/H4.8.4.5.31/PP36-KOMETIK/2017). Furthermore, prior

to data collection, the researchers reported to the Ministry of Health of Makassar City to obtain permission to conduct research at the Antara Public Health Center. Finally, informed consent was obtained from all participants prior to their participation in this study.

In conducting the training session, the principal investigator (PI) initially explained the purpose of the activity, then followed by a pre-test to assess the knowledge of family and community health volunteers about constipation and abdominal massage. After that, the research team provided health education to patients' families, community health volunteers, and the staff of public health center about stroke, constipation, and abdominal massage for constipation relief using educational videos. Next, one of the co-PIs re-demonstrated the steps of abdominal massage directly to stroke patients. After the training conducted, families and community health volunteers were required to complete the post-test to evaluate the level of knowledge of family and community health volunteers about constipation and abdominal massage.

The next activity was home visit, through which the research team and the community health volunteer visited the patients and evaluated the ability of the family members and the community health volunteers to apply abdominal massage for stroke patients. During this visit, the researcher team observed and checked using questionnaire whether the participants correctly performed the steps of abdominal massage. Participants could repeat the procedures until they re-demonstrated it properly. At the end, patients were asked about their condition after receiving abdominal massage. The last activity of this PAR was inviting all participants to the final meeting at the public health center to evaluate the overall program using focused-group discussion.

Regarding data analysis, knowledge changes was analyzed using paired t-test, while participants knowledge about constipation and abdominal massage was analyzed using repeated measures ANCOVA. The patients' experiences after receiving abdominal massage were analyzed using qualitative analysis.

## Result

The demographic characteristics of participants in the counseling and training sessions is shown in Table 1. The average age of the stroke patients' families was 36.8 and the community health volunteers was 46.8. Participants were predominated by women and most of them were high school graduates. Two third of the participants were housewives and the rest were teachers and entrepreneurs.

Table 2 shows that after participating in the training and supervising sessions, patients' families gained better knowledge about constipation ( $p=0.001$ ) and abdominal massage ( $p=0.000$ ), while the community health volunteers attained better knowledge only for abdominal massage ( $p=0.023$ ).

Table 3 depicts the ability of participants to perform abdominal massage. As clearly seen in Table 3, not all families and community health volunteers can provide correct and complete abdominal massage. The participants complained that they had difficulty in memorizing abdominal massage procedures due to age, lack of practice, lack of

**Table 1** Demographic characteristics of the participants in the training and supervision sessions ( $n = 16$ ).

Characteristics	Family ( $n = 11$ )		Community health volunteer ( $n = 5$ )	
	Mean (SD)	$n$ (%)	Mean (SD)	$n$ (%)
Age	36.82 (8.32)		46.8 (11.78)	
Gender				
Female		10 (90.9)		5 (100.0)
Male		1 (9.1)		
Education				
Junior high school		2 (18.2)		
Senior high school		6 (54.5)		5 (100.0)
Diploma III		1 (9.1)		
Bachelor		1 (9.1)		
Master		1 (9.1)		
Occupation				
Housewife		5 (45.5)		3 (60.0)
Private employee		2 (18.2)		
Entrepreneur		2 (18.2)		1 (20.0)
Lecturer		1 (9.1)		
Teacher		1 (9.1)		
Retired				1 (20.0)

SD, standard deviation.

**Table 2** Participants' knowledge of constipation and abdominal massage application on stroke patients before and after counseling ( $n = 16$ ).

Knowledge	Family ( $n = 11$ )			Community health volunteer ( $n = 5$ )		
	Pre-test Mean (SD)	Post-test Mean (SD)	$p^a$	Pre-test Mean (SD)	Post-test Mean (SD)	$p^a$
Constipation	6.55 (1.75)	8.36 (0.92)	0.001*	6.60 (2.07)	8.00 (0.71)	0.113
Abdominal massage	6.18 (1.25)	9.00 (0.89)	0.000*	5.40 (3.21)	8.60 (1.14)	0.023

SD, standard deviation

<sup>a</sup> Using paired  $t$ -test.\*  $p < 0.05$ .**Table 3** The evaluation of participants in applying abdominal massage on stroke patients ( $n = 12$ ).

Ability to perform abdominal massage	Family ( $n = 7$ )	Community health volunteer ( $n = 5$ )
	Well performed, $n$ (%)	
Step 1: Stroke upwards 3 times	7 (100)	5 (100)
Step 2: Stroke towards the bottom of the abdomen 3 times	7 (100)	4 (80)
Step 3: Effleurage or circular stroking	4 (57.1)	4 (80)
Step 4: Palmer kneading	7 (100)	5 (100)
Step 5: As Step 4, but moving up the stomach	6 (85.7)	4 (80)
Step 6: Repeat Steps 4 and 5	4 (57.1)	3 (60)
Step 7: Stroking	7 (100)	5 (100)
Step 8: Hand vibrations over the umbilical area	7 (100)	5 (100)
Step 1–8	2 (28.6)	3 (60)

reading the provided modules, and rarely watching provided simulation videos and YouTube. The participants reported that the abdominal massage was only applied to patients when they complained about the onset of constipation.

Table 4 demonstrates the enhancement of participants' knowledge and skills in applying abdominal massage for stroke patients with constipation. As depicted by Table 4, the family members' knowledge about constipation

**Table 4** Participants' knowledge of constipation and abdominal massage application on stroke patients before training, after training, and after program evaluation (n=9).

Knowledge	Family (n=4)				Community health volunteer (n=5)			
	Pre-test Mean (SD)	Post-test 1 Mean (SD)	Post-test 2 Mean (SD)	p <sup>a</sup>	Pre-test Mean (SD)	Post-test 1 Mean (SD)	Post-test 2 Mean (SD)	p <sup>a</sup>
Constipation	5.37 (0.91)	7.73 (0.36)	9.09 (0.37)	0.011*	6.70 (0.80)	8.02 (0.32)	9.53 (0.33)	0.011*
Abdominal massage	5.38 (1.39)	9.20 (0.53)	9.19 (0.36)	0.003*	5.30 (1.23)	8.44 (0.47)	8.85 (0.32)	0.003*

Pre-test: before training session, Post-test 1: after training session, Post-test 2: after program evaluation. SD, standard deviation.

<sup>a</sup> Using repeated measures ANCOVA.

\* p < 0.05.

(p=0.011) and abdominal massage (p=0.003) significantly rose from pre-test to post-test 2. Likewise, the knowledge of community health volunteers about constipation (p=0.011) and abdominal massage (p=0.003) significantly improved overtime.

Based on the qualitative interviews, patients confirmed that constipation was relieved after receiving abdominal massage for three times. They also said that having abdominal massage induced them to defecate.

## Discussion

This study is among the first studies that explored the effect of abdominal massage on constipation relief in Indonesian stroke population living in the community, and among the few studies of abdominal massage conducted in stroke population. The previous study has shown that abdominal massage is feasible and effective to prevent constipation in people with neurological condition.<sup>17</sup> Through that study, the physiotherapists taught the patients and their carer about abdominal massage and allowed them to practice. Information about abdominal massage was also provided in the CDs. Like current study, the previous study found that abdominal massage was effective to alleviate constipation.<sup>18</sup>

This study is also the first study in Indonesia to involve community health volunteers to apply abdominal massage to people with stroke. Community health volunteers are quite common in Indonesia and many developing countries, especially in villages and rural areas where health professionals are scarce.<sup>19</sup> They are valuable workforce in primary and community health care that assist health professionals to provide optimal care for patients.<sup>19</sup> They are involved in many aspects of health promotion, prevention, intervention, rehabilitation, and palliative care.<sup>20–22</sup> They have been working hand in hand with health professionals in providing community care for communicable diseases such as malaria,<sup>20</sup> tuberculosis,<sup>21</sup> and HIV/AIDS.<sup>22</sup> They also provided support for new mothers in maternal and antenatal care by working under supervision of community midwives.<sup>23</sup> Involving community health volunteers in providing abdominal massage for stroke patients with constipation is an efficient way to help people with stroke manage their constipation. Patients, family members and community health professionals has

been familiar with them and thus, collaboration can be ensured.

There are some limitations of this study: No control group and small sample size. During home visit, some patients were not received abdominal massage due to contraindication. Even so, this study showed that the application of abdominal massage to stroke patients with constipation is feasible by providing training and supervision sessions for family members and community health volunteers. It is considered more economically preferred as the application of abdominal massage does not require any expensive tools. Furthermore, as it is performed by family members, the adherence to the abdominal massage application is guaranteed as it only requires several minutes to apply to the patient.

## Conclusion

Participants experienced improved knowledge and skills of constipation and abdominal massage after attending training and supervision sessions. Likewise, patients confirmed ease of defecation after receiving abdominal massage. This implementation study proves that abdominal massage performed by family and health community volunteers was advantageous and effective in alleviating constipation in stroke patients. Further study is required with larger sample size, multicenter, and more rigorous methods to explore more about the effect of abdominal massage on constipation alleviation in people with stroke.

## Conflict of interest

The authors declare no financial or personal interests that could bias the work.

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