



Investigating the Effect of Home-Based Training for Family Caregivers on the Incidence of Bedsores in Patients with Stroke in Ali Ebne Abitaleb Hospital, Zahedan, Iran: A Clinical Trial Study

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Abstract

Background: Bedsores are a common problem in patients with stroke, causing an increased number of hospitalizations, increased healthcare costs, and mortality of these patients. Typically, due to their numerous problems, these patients are not able to take care of themselves and thus their care providers play an important role in providing care at their home.

Objectives: The present study was conducted with the aim of investigating home-based training on the incidence of bedsores in patients with stroke, during year 2017.

Methods: In the present clinical trial study, 70 family caregivers of stroke patients that had referred to Ali Ebne Abitaleb Hospital, Zahedan, Iran, were chosen through available sampling and then randomly assigned to control and intervention groups. In the intervention group, explanations were provided for the family caregivers about stroke, its resulting problems, bedsores, methods for preventing and caring for bedsores at home. The explanations were provided at the place of residence of the patient at the time of discharge as well as two and three weeks after discharge at home, and on the patient's bedside. In the control group, on the other hand, routine trainings of the ward were given. After 12 weeks, both groups were evaluated in terms of incidence of bedsores, based on scoring presented by the National Pressure Ulcer Advisory Panel (NPUAP). Data analysis was performed by chi-square and *t*-test, using SPSS 21.

Results: The number of individuals in each group was 35. Frequency of incidence of bedsores after the intervention in the intervention and control groups was 25.7 and 48.6%, respectively. The statistical results indicated that there was a significant difference between the two groups in terms of frequency of bedsores ($P = 0.046$).

Conclusions: Home-based training is a practical and inexpensive method for participation of family members in providing care for patients with stroke and reducing incidence of bedsores in these patients.

Keywords: Bedsores, Cerebral Vascular Accident, Home-Based Training, Patient Training, Family Caregivers

1. Background

Pressure ulcer, which is known as bedsores or decubitus (1), refers to local damage to the skin and the sub-dermal tissue. It develops when the soft tissue between a protruding part of the bone and an external surface is under pressure for a long time (2). Bedsores cause pain, depression, diminished functioning and independence, increased incidence of sepsis and infection (3). All these result in incurring staggering costs to patients as well as healthcare and governmental centers (1). In this regard, following cancers and cardiovascular disease, this condition claims the third rank of costly diseases (4).

Stroke is among diseases associated with paralysis, disability, and increased risk of bedsores (5, 6). A total of 85% of stroke patients develop bedsores during their lifetime, 8% of whom die due to this lesion, which is the main cause of bedsores-induced death (7). In Iran, annually, 327 out of 100,000 people experience stroke, which is considered as the most common cause of disability in Iranian adults (3). Patients with stroke are hospitalized until their therapeutic conditions become stabilized, after which they can be discharged (8). Furthermore, 30% to 50% of these discharged patients suffer from severe disabilities, making them completely independent in terms of care provision (9), which is assigned to families after discharge (8). In

Iran, due to shortage of governmental centers for rehabilitation and care after discharge of patients with stroke as well as the high healthcare costs in private centers and care provision at home, taking care of stroke patients by the family is very common, and most families accept the responsibility of providing care for the patients (10). The reason is that such patients mostly prefer to be taken care of at home, and typically one of the family members becomes the main caregiver of the patient (11). Nevertheless, most families feel a sense of unpreparedness due to sudden confrontation with stroke and adoption of a new role as the patient caregiver. Accordingly, due to the absence of educational programs, they experience various problems for providing care to the patient (10). In a research conducted by Kao et al. in Taiwan, the main need of family caregivers of these patients was education and awareness about providing care for these patients at home (12). In similar studies performed in Peru, Vietnam, and the United States, family caregivers of patients with stroke needed education and awareness about providing care for these patients (13-15). The reason for ineffectiveness of care provided by family caregivers of these patients may be attributed to their lack of awareness about care related to bed sore (16). For provision of high quality care, family caregivers of stroke patients should know the risk factors of bed sore, risk zones, and preventive strategies, and can employ them in practice (17). If educational programs can convert this information to effective solutions to prevent and treat bed sore and if this information is in line with patient characteristics and knowledge of the learner, they will be very effective (18). Home-based care is a method for planning, implementing, and assessing health care services, which takes place through mutual effective participation between caregivers, patients, and families (19). The home-based care method empowers individuals and families and strengthens independence in them. It also supports decision-making and care provision by the family, respects the choices of the family and patient as well as their values, beliefs, and cultural backgrounds, and overall results in better and greater effectiveness in mitigating subsequent complications of the patient (20, 21).

2. Objectives

Since in Iran the main focus of the healthcare system is on treating stroke at the acute stage of the disease, and home-based healthcare is taken less seriously, and as lack of awareness about preventing bed sore causes increased incidence of bed sore in patients and increased costs and re-hospitalization of the patient, the present study was

performed with the aim of examining the effect of home-based training on the incidence of bed sore in patients with stroke discharged from Ali Ebne Abitaleb Hospital, Zahedan, Iran, in 2017.

3. Methods

This study was of a two-group clinical trial, performed in 2017, in Zahedan city, Iran. After the proposal was approved by the Ethics Committee of Zahedan University of Medical Sciences with the ethics code of IR.zaums.rec13960287 and after coordination with the head of this hospital, and explaining the study objectives and receiving informed consent from the eligible patients and main caregivers, subjects were included in the study through available sampling. The sample size with confidence of 95% and test power of 85% was determined as 35 for each group and 70 subjects overall, according to the formula of estimating the prevalence in both groups and based on the results obtained from the study by Benedict et al. (22).

Then, subjects were randomly assigned to 35-subject intervention and control groups. Specifically, colored cards, including red (intervention) and blue (control), including 70 in total (35 of each card) were randomly placed inside a box and given to the family caregivers. Then, everyone picked a colored card randomly from inside the box. Eventually, this procedure was continued without substituting the card until completion of the colored cards.

The inclusion criteria for the patients in this study included absence of any signs suggesting bed sore or skin disorders in the patient at the beginning of this study, being a resident of Zahedan, age of 45 to 75 years old, and bed sore risk score of less than or equal to 14 (being moderately or severely at risk of bed sore, according to Braden scale). Meanwhile, the inclusion criteria for the family caregivers included age of above 18 years, having a caregiver that provided care for a longer time compared to other caregivers, and being literate (ability of writing and reading). On the other hand, exclusion criteria for the patients included re-hospitalization of the patient during the study, death of the patient during the study, having suspicious ulcers or any skin disease. Furthermore, exclusion criteria for the family included absence of more than one session from the educational sessions.

The data collection instrument in this study was a three-part questionnaire. The first part included the personal information of the patient, the second part was the Braden bed sore scale, and the third part was the international form of bed sore. Braden scale was utilized to determine the risk of developing bed sore. The range of

the score of this scale, which is determined based on six factors of sensory perception, skin moisture, activity, nutrition, stretching, and friction, is 6 to 23 (Table 1), with lower scores representing higher risk of developing bedsores. Based on this scale, a score of less than 12 represents high risk while 13 to 14 determines moderate risk (23). A score of less than or equal to 14 (moderate and severe risk) was considered as the entrance criterion of the patients. Incidence of bedsores was determined based on a four-point scale of bedsores, proposed by the National Pressure Ulcer Advisory Panel (NPUAP) and approved by the Australian Wound Management Association (AWMA). In this scale, degree one represents initial sign of bedsores, which includes redness in light skins, and purple blue in darker skins. Higher scores, suggesting a specific ulcer with different degrees of intensity (5), were considered as presence of bedsores.

For data collection in the intervention group, before discharging the patient from the hospital, an educational session as group lecture was held for two hours at the hospital for the patient and their family members and specifically for the main caregiver of the patient about stroke, risky factors, and problems caused by stroke. Next, the address and telephone number of the patient's caregiver were obtained, and again a two-hour educational session was held in the second week after discharge about the ways that bedsores develop, as well as in the third week after discharge about recognizing different types of bedsores and methods for preventing bedsores for the main caregiver of the patient, as face-to-face education. Furthermore, an educational pamphlet was prepared about the explained points and provided to the main caregiver of the patient. After three months, the patients in the intervention and control groups were re-evaluated in terms of bedsores. The patients of the control group only received routine care.

At the end, the obtained data were analyzed by the chi-square and *t*-test, using SPSS 21.

4. Results

During the study, no attrition occurred in the samples either from patients or caregivers, and all 17 subjects remained in the study up to the final stage. The results of this study indicated that most patients (52.9%) were female. Also the mean age of the studied patients was 61.97 years and most of them were married (98.57%). Statistical analysis indicated no significant difference in terms of personal characteristics (Table 2).

The mean age of the main caregiver of the family was 38.14 years, most of whom were female (65.7%), with educational level of diploma and above (44.28%), and 52.85%

of them were unemployed. Comparing the two groups in terms of demographics of the family caregivers, no significant difference was obtained (Table 2).

Comparison of the two study groups showed that the incidence of bedsores was significantly lower in the intervention group compared to the control group ($P = 0.046$), which was 25.7% and 48.6% in the intervention and control groups, respectively (Table 3).

5. Discussion

The results of the present study showed that home-based care and relying on training of the main caregiver of the patient can be effective in reducing incidence of bedsores in patients with stroke, which is one of the most common secondary complications associated with their diseases.

Concerning incidence of bedsores, the results of the present study showed that the frequency of bedsores incidence decreased significantly in the patients of the intervention group, whose caregivers had received home-based care training at the time of discharge as well as two and three weeks after discharge, when compared to the patients in the control group, who had received only routine trainings of the ward at the time of discharge. Some studies have also reported similar findings. Soozani and Hasani concluded that training of standard care guide and pressure ulcer treatment to caregivers of spinal cord injury patients with pressure ulcer under at-home care, which was received from the welfare organization of Shahrood city, can be effective in reducing the prevalence and improving bedsores (16). In the study of Thompson et al. performed with the aim of investigating the effect of a skincare protocol, such as washing the site and protecting the skin of under-pressure sites (including the sacrum, shoulders, and heel) in taking care of pressure ulcers, concluded that implementation of this protocol significantly decreases the incidence and prevalence of bedsores and shortens the healing time of pressure ulcers (24).

Moody et al. investigated the effect of skincare program training of hospital staff on the progression of bedsores in cases above 65 years old. They observed that this training can mitigate progression of bedsores by up to 63%. It can also cause saving time of occupation of beds at the ICU and saving time and costs for patients and their families (25). In contrast to the results of the above studies, which were congruent with the current study, Jamand et al. concluded that constant presence of one of the family members on the patient's bedside did not have any significant relationship with incidence of bedsores (26), which was incongruent with the conclusion of the present study.

Table 1. Braden Pressure Ulcer Risk Assessment

Factors	Barden Scale			
Sensory perception	1. Completely limited	2. Very limited	3. Slightly limited	4. No impairment
Moisture degree to which skin is exposed to moisture	1. Constantly moist	2. Very moist	3. Occasionally moist	4. Rarely moist
Activity degree of physical activity	1. Bedfast	2. Chairfast	3. Walks occasionally	4. Walks frequently
Mobility ability to change and control body position	1. Completely immobile	2. Very limited	3. Slightly limited	4. No limitations
Nutrition usual food intake pattern	1. Very poor: Never eats a complete meal.	2. Probably inadequate	3. Adequate	4. Excellent
Friction and shear	1. Problem	2. Potential problem	3. No apparent problem	

Table 2. Baseline Personal Characteristics of Patients and Family Caregivers in the Intervention and Control Groups^a

Variable	Group (Patients)		P Value
	Control	Intervention	
Patient			
Age	62.46 ± 10.34	61.49 ± 10.71	0.70
Gender			0.23
Male	19 (54.3)	14 (40)	
Female	16 (45.7)	21 (60)	
Marital status			0.99
Single	1 (2.9)	0 (0)	
Married	34 (97.1)	35 (100)	
Family Patient Caregiver			
Age	40.23 ± 11.20	36.06 ± 10.87	0.11
Gender			1.00
Male	12 (34.3)	12 (34.3)	
Female	13 (65.7)	13 (65.7)	
Marital status			0.59
Single	9 (25.7)	11 (31.4)	
Married	26 (74.3)	24 (68.6)	
Educational status			0.58
Under diploma	18 (51.4)	21 (60)	
Upper diploma	17 (48.6)	14 (40)	
Occupation status			0.47
Unemployed	17 (48.6)	15 (42.9)	
Employed	18 (51.4)	20 (57.1)	

^aValues are expressed as mean ± SD or No. (%).

Possibly, the reason for this lack of effect brought by constant care on mitigation of bedsore can be attributed to not receiving any special training about preventing bedsore. In the present study, this training was given to the main caregiver, yet in the mentioned study, no special training

Table 3. Comparison of Frequency of Bed Sore in Two Intervention and Control Groups^a

Bed Sore	Groups		P Value
	Control	Intervention	
Yes	17 (48.6)	9 (25.7)	0.046
No	18 (51.4)	26 (74.3)	

^aValues are expressed as frequency (%).

had been provided by the researcher to the patient or caregiver.

Since stroke is a debilitating disease, the basis of controlling the disease is by enhancing the knowledge and function of caregivers about preventing incidence of complications. The family caregivers, who are aware of the causes of development of stroke, its complications, and ways to prevent complications, participate in care provision for the patient with greater motivation. Also, as mentioned in the present study and other studies, home-based training to caregivers and patients can significantly decrease the incidence of bedsore in stroke patients.

Lack of cooperation of some family members in receiving home-based training and difficulty of coordination for holding subsequent educational sessions at the patients' home were among the limitations of this plan. By explaining the possible benefits of this plan and making the patients and their caregivers aware before starting the plan, attempts were made to resolve these issues.

5.1. Conclusion

According to the results of the present study, one of the practical and economical methods for reducing bedsore is training family caregivers of patients, especially the main caregiver. It can be considered an effective solution to be implemented by nurses and physicians at the hospital to decrease the incidence of bedsore in stroke patients. It is suggested that further studies should be conducted about

the effect of home-based training on bedsore in other patients with a high risk of bedsore.

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Footnotes

Authors' Contribution: Hassan Askari: Design of the study and writing the paper; Aliakbar Keykhah: Participation in writing the paper; Fariba Yaghoobinia: Design of the study and data analysis; Fateme Karimi: Data collection and participation in design the study.

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References

1. Baghaei R, Salmani Azar N, Feizi A, Fereidooni J. [Pressure ulcer frequency and risk factors based on norton scale at education and treatment centers in Urmia University of Medical Sciences]. *J Urmia Nurs Midwifery Fac.* 2013;**11**(2):161-70. Persian.
2. Hunter IA, Edwards KJ. Managing pressure sores. *Surgery (Oxford)*. 2017;**35**(9):505-10. doi: [10.1016/j.mpsur.2017.06.008](https://doi.org/10.1016/j.mpsur.2017.06.008).
3. Amirifar S, Reza Masouleh S, Pourshikhian M, Monfared A, Kazemnejad Leili E. [Predictive value of braden scale in pressure ulcer occurrence in hospitalized patients]. *J Holist Nurs Midwifery*. 2013;**23**(2):8-15. Persian.
4. Afkar A, Mahboubi M, Mehrabian F, Farmanbar R, Ghahramani F, Nezhad EK, et al. Predictive factors of ICU bedsores using Braden scale. *J Kermanshah Univ Med Sci*. 2014;**18**(4):220-5.
5. Schoonhoven L, Haalboom JR, Bousema MT, Algra A, Grobbee DE, Grypdonck MH, et al. Prospective cohort study of routine use of risk assessment scales for prediction of pressure ulcers. *BMJ*. 2002;**325**(7368):797. doi: [10.1136/bmj.325.7368.797](https://doi.org/10.1136/bmj.325.7368.797). [PubMed: [12376437](https://pubmed.ncbi.nlm.nih.gov/12376437/)]. [PubMed Central: [PMC128943](https://pubmed.ncbi.nlm.nih.gov/PMC128943/)].
6. Pittayapong S, Thiangtam W, Powwattana A, Leelacharas S, Waters CM. A community based program for family caregivers for post stroke survivors in Thailand. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2017;**11**(2):150-7. doi: [10.1016/j.anr.2017.05.009](https://doi.org/10.1016/j.anr.2017.05.009). [PubMed: [28688501](https://pubmed.ncbi.nlm.nih.gov/28688501/)].
7. Chitambira B, Evans S. Repositioning stroke patients with pusher syndrome to reduce incidence of pressure ulcers. *Br J Neurosci Nurs*. 2018;**14**(1):16-21. doi: [10.12968/bjnn.2018.14.1.16](https://doi.org/10.12968/bjnn.2018.14.1.16).
8. Dehghan Nayeri N, Mohammadi S, Pedram Razi S, Kazemnejad A. [Adherence of family caregivers of patients with stroke to rehabilitation regimen]. *J Hayat*. 2012;**18**(1):30-41. Persian.
9. Oupra R, Griffiths R, Pryor J, Mott S. Effectiveness of Supportive Educational Learning programme on the level of strain experienced by caregivers of stroke patients in Thailand. *Health Soc Care Community*. 2010;**18**(1):10-20. doi: [10.1111/j.1365-2524.2009.00865.x](https://doi.org/10.1111/j.1365-2524.2009.00865.x). [PubMed: [19519873](https://pubmed.ncbi.nlm.nih.gov/19519873/)].
10. Ferri CP, Schoenborn C, Kalra L, Acosta D, Guerra M, Huang Y, et al. Prevalence of stroke and related burden among older people living in Latin America, India and China. *J Neurol Neurosurg Psychiatry*. 2011;**82**(10):1074-82. doi: [10.1136/jnnp.2010.234153](https://doi.org/10.1136/jnnp.2010.234153). [PubMed: [21402745](https://pubmed.ncbi.nlm.nih.gov/21402745/)]. [PubMed Central: [PMC317978](https://pubmed.ncbi.nlm.nih.gov/PMC317978/)].
11. Dalvandi A, Heikkila K, Maddah SS, Khankeh HR, Ekman SL. Life experiences after stroke among Iranian stroke survivors. *Int Nurs Rev*. 2010;**57**(2):247-53. doi: [10.1111/j.1466-7657.2009.00786.x](https://doi.org/10.1111/j.1466-7657.2009.00786.x). [PubMed: [20579161](https://pubmed.ncbi.nlm.nih.gov/20579161/)].
12. Kao MH, Tsai YF, Chang TK, Wang JS, Chen CP, Chang YC. The effects of self-management intervention among middle-age adults with knee osteoarthritis. *J Adv Nurs*. 2016;**72**(8):1825-37. doi: [10.1111/jan.12956](https://doi.org/10.1111/jan.12956). [PubMed: [27029950](https://pubmed.ncbi.nlm.nih.gov/27029950/)].
13. Tsai PC, Yip PK, Tai JJ, Lou MF. Needs of family caregivers of stroke patients: A longitudinal study of caregivers' perspectives. *Patient Prefer Adherence*. 2015;**9**:449-57. doi: [10.2147/PPA.S77713](https://doi.org/10.2147/PPA.S77713). [PubMed: [25834409](https://pubmed.ncbi.nlm.nih.gov/25834409/)]. [PubMed Central: [PMC4370911](https://pubmed.ncbi.nlm.nih.gov/PMC4370911/)].
14. Pesantes MA, Brandt LR, Ipince A, Miranda JJ, Diez-Canseco F. An exploration into caring for a stroke-survivor in Lima, Peru: Emotional impact, stress factors, coping mechanisms and unmet needs of informal caregivers. *eNeurologicalSci*. 2017;**6**:33-50. doi: [10.1016/j.ensci.2016.11.004](https://doi.org/10.1016/j.ensci.2016.11.004). [PubMed: [28989982](https://pubmed.ncbi.nlm.nih.gov/28989982/)]. [PubMed Central: [PMC5627498](https://pubmed.ncbi.nlm.nih.gov/PMC5627498/)].
15. Bakas T, Austin JK, Okonkwo KF, Lewis RR, Chadwick L. Needs, concerns, strategies, and advice of stroke caregivers the first 6 months after discharge. *J Neurosci Nurs*. 2002;**34**(5):242-51. doi: [10.1097/01376517-200210000-00004](https://doi.org/10.1097/01376517-200210000-00004). [PubMed: [12391740](https://pubmed.ncbi.nlm.nih.gov/12391740/)].
16. Soozani A, Hasani MR. [The effect of structured educational model on knowledge of caregivers and the process of pressure ulcer healing in veterans with spinal cord injury in Shahroud, Iran]. *Horizon Med Sci*. 2007;**12**(4):55-61. Persian.
17. Soozani A, Raei M, Montazeri AS, Nasiri E, Hamidzadeh A, Pourheidari M. [The effect of education on knowledge and performance of nurses in prevention and control of pressure sore]. *Mod Care J*. 2012;**9**(1). Persian.
18. Berg A, Palomaki H, Lonnqvist J, Lehtihalmes M, Kaste M. Depression among caregivers of stroke survivors. *Stroke*. 2005;**36**(3):639-43. doi: [10.1161/01.STR.0000155690.04697.c0](https://doi.org/10.1161/01.STR.0000155690.04697.c0). [PubMed: [15677575](https://pubmed.ncbi.nlm.nih.gov/15677575/)].
19. Dunst CJ, Trivette CM. Empowerment, effective helping practices and family-centered care. *Pediatr Nurs*. 1996;**22**(4):334-7. 343. [PubMed: [8852113](https://pubmed.ncbi.nlm.nih.gov/8852113/)].
20. Stanhope M, Lancaster J. *Community and public health nursing*. Mosby St. Louis; 2004.
21. Committee on Hospital Care. American Academy of Pediatrics. Family-centered care and the pediatrician's role. *Pediatrics*. 2003;**112**(3 Pt 1):691-7. [PubMed: [12949306](https://pubmed.ncbi.nlm.nih.gov/12949306/)].
22. Benedict RH, Wahlig E, Bakshi R, Fishman I, Munschauer F, Zivadinov R, et al. Predicting quality of life in multiple sclerosis: Accounting for physical disability, fatigue, cognition, mood disorder, personality, and behavior change. *J Neurol Sci*. 2005;**231**(1-2):29-34. doi: [10.1016/j.jns.2004.12.009](https://doi.org/10.1016/j.jns.2004.12.009). [PubMed: [15792817](https://pubmed.ncbi.nlm.nih.gov/15792817/)].

23. Narimani D. *The effect of coping strategy on quality of life and burden family care giver's of stroke survivors who are referred to Taamin Hospital in Behbahan [dissertation]*. University of Social Welfare and Rehabilitation; 2014.
24. Thompson P, Langemo D, Anderson J, Hanson D, Hunter S. Skin care protocols for pressure ulcers and incontinence in long-term care: A quasi-experimental study. *Adv Skin Wound Care*. 2005;**18**(8):422-9. doi: [10.1097/00129334-200510000-00009](https://doi.org/10.1097/00129334-200510000-00009). [PubMed: [16217154](https://pubmed.ncbi.nlm.nih.gov/16217154/)].
25. Moody BL, Fanale JE, Thompson M, Vaillancourt D, Symonds G, Bonasoro C. Impact of staff education on pressure sore development in elderly hospitalized patients. *Arch Intern Med*. 1988;**148**(10):2241-3. [PubMed: [3178381](https://pubmed.ncbi.nlm.nih.gov/3178381/)].
26. Jamand T, Akaberian S, Khoramroodi R, Pooladi S, Hajivandi A, Bagherzadeh R, et al. [Assessment of risk factors associated with bedsores in patients admitted to Fatemeh Zahra and Salman Farsi Hospitals in Boushehr by using the braden indices (2007-2008)]. *ISMJ*. 2012;**15**(3):233-40. Persian.