



Sundanese culture-sensitive family nursing model improves behavior in controlling blood sugar in elderly patients with diabetes[☆]

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Abstract Diabetes is a chronic disease that has associations with an unhealthy lifestyle. The purpose of this study was to determine the effect of a Sundanese culture-sensitive family nursing model on improving family behavior in controlling blood sugar in elderly patients with diabetes. This study used a quasi-experimental design, involving 57 respondents in the intervention group and 57 respondents in the control group of families containing elderly members with diabetes. Samples were taken by multistage cluster sampling, and univariate, bivariate, multivariate statistical analysis was applied. The results showed an increase in mean family behavior and a decrease in mean blood sugar levels after the intervention model, with p -value = 0.000. Sundanese culture-sensitive family nursing models can improve family behavior in controlling blood sugar in elderly patients with diabetes and it is recommended as a pattern of a culture-based approach in the treatment of the elderly with diabetes.

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Introduction

Diabetes (DM) is known as a chronic disease that has cultural connotations due to an unhealthy lifestyle; thus, a cultural approach is needed to overcome it.¹ In the Sundanese culture, one of the cultures of Indonesia, parents are highly respected figures. Respect and obedience to parents are shown by pampering and pleasing parents, despite the risk this may bring in increasing blood sugar levels.^{2,3}

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Tasikmalaya is one of the areas in West Java, Indonesia that is Sundanese. Dr. Soekardjo hospital reported has seen an increase in cases of elderly patients with diabetes, rising from 313 in 2013 to 570 cases in 2014, with an increase in hospitalization cases from 64 patients in 2013 to 262 patients in 2014. Also, it has been observed that, in order to make parents happy, families tend to let the elderly do whatever they want, including in terms of their eating habits which can cause their blood sugar to rise.⁴ Therefore, efforts to change behavior with the Sundanese culture *silih asah, silih asuh, silih asih* (the form of collaboration between nurses and families to improve the ability of the family to care for older people with DM) in negotiating and restructuring unhealthy habits and preserving the habits of a healthy culture.^{3,5} Thus, this study aimed to identify the effect of a Sundanese culture-sensitive family nursing model on improving family behavior in controlling blood sugar in elderly patients with DM in Tasikmalaya, West Java, Indonesia.

Methods

The study used a quasi-experimental design to investigate the effect of Sundanese culture-sensitive family nursing model interventions on family attitudes to controlling blood sugar, as compared to a control group. The population in this study consisted of 570 families with elderly patients with diabetes. Samples were calculated by hypothesis testing the difference between two means, and the result was 60 respondents for the intervention group and 60 respondents for the control group. The following inclusion criteria were applied: the presence of a caregiver who lives with the elderly patient(s), the ability to communicate well, and the ability to understand Bahasa and Sundanese language. The study was conducted in the Cipedes sub-district for the intervention group and the Purbaratu sub-district for the control group.

The intervention model was given in the form of training for caregivers or families with elderly patients with diabetes for 4 days, including a training material on food planning, physical activity, and stress control, in the context of the Sundanese culture. The training was followed up with monitoring activities by nurses and cadres through home visits after training. The schedule of home visits is once a week in the first month, twice a week in the second month, and once a month in the third month. Then, in the fourth, fifth, sixth month, monitoring was carried out independently, such that the nurse only received reports from the caregivers if problems were found when caring for the elderly patient at home. During the six months, caregivers had to fill in the worksheet detailing food and drink intake, physical activity, and stress control for the elderly patient; this was reported to the nurses and cadres to provide feedback.

Data was collected through knowledge questionnaires, attitudes questionnaires, action questionnaires, and blood sugar checks,^{6,7} using an Accu-Chek Active glucometer at both three months and six months after the intervention. Data collection was carried out from December 2017 until May 2018. During the study, some respondents dropped out so that the number in the intervention and control groups each became 57 respondents. Data analysis was carried out using univariate, bivariate, and multivariate analysis. The

analysis bivariate using independent *t*-test and Chi-square test, and multivariate with General Linear Model Repeated Measure.

This study received approval from the Ethics Committee of Faculty of Nursing Universitas Indonesia with the number 38/UN2.F12.D/HKP.02.04/2017. The implementation met the required ethical principles, such as families being explained the purpose of the study, signing the consent sheet to be involved in research, maintaining the confidentiality of the respondent, providing sufficient free time, and creating an atmosphere as comfortable as possible when retrieving data.

Results

The characteristics of respondents between the intervention group and the control group showed that the majority were women, had the same level of education and relationships as children. The average age and length of stay showed no difference between groups, with *p*-value >0.05, as shown in Table 1.

The analysis of differences in behavior (knowledge, attitudes, and actions) of caregiver and blood sugar levels before and after model intervention shown in Table 2.

The results of statistical tests in the intervention group showed there were significant differences in the knowledge, attitudes, and actions between measurements after three months and after six months in the intervention group (*p*-value = 0.000). The average blood sugar level in the elderly diabetic intervention group decreased between before and three months after the intervention (*p*-value = 0.000).

Discussion

The results showed a significant increase in appropriate behavior after the intervention model. The same condition was found in families with older people after the Family Cwerers Training Program (FCTP) intervention and independent family group model interventions.^{6,8} Training activities provided to adults tend to increase knowledge and promote changes in attitudes and perceptions of disease to facilitate adjustments to new situations in everyday life.^{9,10} A good understanding of caregivers in recognizing habits or cultural problems that can cause health problems in older people with DM is inseparable from the educational background of caregivers. In our study, more than 50% had a junior high school background up to college-level. The result is supported by Kurt's et al. research, that the level of education correlates with the level of awareness in recognizing the disease and its risks.¹¹ The same was observed in another study, which showed that the level of education is one of the factors that influences a person's awareness of health problems.¹²

Understanding the proper educational background of a caregiver provides an opportunity for nurses to carry out their roles and functions as educators and advisors in improving knowledge about diabetes management.¹³ The local wisdom-based approach to providing knowledge is a source of innovation that can be developed for community welfare so that it can actualize the health potential of the family.¹⁴ Based on this matter, the model *silih asah, silih asuh, silih*

Table 1 Differences in the characteristics of caregivers and elderly patients in the intervention and control groups ($n = 114$).

Variable		Intervention group ($n = 57$)		Control group ($n = 57$)		p^* value
		n	%	n	%	
1. Gender	Male	8	14	10	17.5	0.797
	Female	49	86	47	82.5	
2. Education	Elementary school	19	33.3	26	45.6	0.557
	Junior high school	13	22.8	12	21	
	Senior high school	22	38.6	16	28.1	
	College	3	5.3	3	5.3	
4. Kinship relationship	Child	46	80.7	47	82.5	0.799
	Spouse	9	15.7	9	15.7	
	Brother/sister	1	1.8	0	0.0	
	Grandchild	1	1.8	1	1.8	
		Mean (SD)	Median (range min–max)	Mean (SD)	Median (range min–max)	p^{**} value
Age		42.14 (10.89)	43 (19–58)	41.48 (11.42)	43 (20–57)	0.700
Length of stay with elderly		27.28 (13.43)	32 (2–45)	26.34 (13.03)	29 (5–47)	0.693

* p -value based on Chi-Square.

** p -value based on independent t -test.

Table 2 Analysis of differences in behavior (knowledge, attitudes, and actions) of caregiver and blood sugar levels before and after model intervention in the intervention group and the control group ($n = 114$).

	Intervention group ($n = 57$)			Control group ($n = 57$)			p^* -value
	Mean	Median	95% CI	Mean	Median	95% CI	
Knowledge							
Before	35.8	33.3	31.3–40.3	36.9	33.3	34.3–39.7	0.658
After (3 months)	65.9	66.7	62.7–69.1	37.3	33.3	34.6–40.0	0.000
After (6 months)	77.9	80.0	74.7–81.1	37.3	33.3	34.6–40.0	0.000
				p interaction = 0.000			
				Partial $R^2 = 0.399$			
Knowledge before the intervention and three months after intervention ($p = 0.000$)							
Knowledge at three months and six months after intervention ($p = 0.000$)							
Attitudes							
Before	49.0	50.0	46.2–51.8	50.1	50.0	47.1–53.0	0.606
After (3 months)	76.8	76.7	75.9–77.7	50.5	50.0	47.7–53.2	0.000
After (6 months)	83.5	83.5	82.9–84.1	50.7	50.0	48.1–53.3	0.000
				p interaction = 0.000			
				Partial $R^2 = 0.476$			
Attitudes before intervention and 3 months after intervention ($p = 0.000$)							
Attitude at 3 months and 6 months after intervention ($p = 0.000$)							
Actions							
Before	46.9	46.7	44.0–49.8	45.7	46.7	42.7–48.7	0.573
After (3 months)	70.2	73.3	67.1–73.3	45.9	46.7	43.1–48.9	0.000
After (6 months)	81.1	80.0	79.2–82.9	46.1	46.1	43.1–49.0	0.000
				p interaction = 0.000			
				Partial $R^2 = 0.338$			
Actions before intervention and 3 months after intervention ($p = 0.000$)							
Actions at 3 months and 6 months after intervention ($p = 0.000$)							
Blood sugar level							
Before	292.96	280	261.96–323.69	256.05	244	234.47–277.04	0.053
After (3 months)	216.11	190	190.34–241.87	258.28	224	232.13–284.44	0.000
After (6 months)	166.65	144	148.70–184.60	273.67	273	249.67–298.15	0.000
				p interaction = 0.001			
				Partial $R^2 = 0.237$			
Blood sugar level before the intervention and three months after intervention ($p = 0.000$)							
Blood sugar at three months and six months after intervention ($p = 0.124$)							

* p -value based on the General Linear Model Repeated Measures (GLM-RM).

asih has been proven to be able to increase the knowledge of families in caring for older people with DM. The increased family knowledge observed in this study has had an impact on changes in attitudes and skills. This finding is corroborated by Sharma and Sokal's research, which showed the influence of training on changes in attitudes and the abilities of teachers in teaching in the classroom.¹⁵

Other studies indicate that training using demonstration and simulation methods has a positive impact on improving skills and self-efficacy of respondents.^{16,17} Based on this, knowledge correlates with attitudes and skills, meaning that the better the knowledge, the better the attitudes and skills.

Our study showed that increases in behavior were sharper at three months as compared to 6 months after the intervention; this could be because the assistance activities were only carried out in the first three months after training. This result proves that culture can be shared and transmitted through social interaction. Therefore, culture is not inherited genetically but is obtained by humans after birth through the learning process.¹⁸ Changes in behavior at three months after the intervention model in the intervention group were directly proportional to the decrease in sugar levels by 76.85 mg/dl and vice versa. In contrast, in the control group the mean blood sugar levels increased by 2.23 mg/dl. The information related to diabetes care in the context of Sundanese culture and the follow-up support provided by the activities of nurses contributed to decreasing blood sugar levels. The finding reinforces this, that regular assistance is required to improve glycaemic control, weight loss, and lipid profile.¹⁹

Conclusion

Effective interaction through the process of assisting nurses in the frame of the Sundanese culture (*silih asah, silih asuh, silih asih*) in this study was successful in controlling the blood sugar levels of older people with diabetes. However, one limitation of this finding was the checking of blood sugar levels during the study, because the results shown do not describe the actual management of diabetes. Therefore, in future studies, it will be necessary to check blood sugar levels using HBA1c measurements. In conclusion, we have shown that Sundanese culture-sensitive nursing models are effective in improving family behavior in caring for elderly patients with diabetes and play a major role in reducing blood sugar levels. Thus, the family nursing model with a culture *with asah, silih asuh, silih asih* has a role in improving sugar levels in the elderly. Therefore, a culturally-sensitive family nursing model can be used as an approach to treating patients with DM to improve their culture or lead to a healthier lifestyle.

Conflict of interest

The authors declare no conflict of interest.

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