Sundanese Culture Sensitive Family Nursing Model Improves Family Support in Controlling Blood Sugar Elderly with Diabetes

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ABSTRACT

Diabetes is a chronic disease that has connotations of culture or unhealthy lifestyle, so to overcome this a cultural approach is needed that leads to better behavioural patterns.

Objective: The purpose of this study was to determine the effect of Sudanese culture-sensitive family nursing model on improving family support in controlling blood sugar in elderly with diabetes

Method: This study used quasi-experimental design pre and post-test involving 114 respondents of families with elderly diabetes consisting of 57 respondents in the intervention group and 57 respondents in the control group. Samples were taken by multistage cluster sampling and statistical analysis using univariate, bivariate with independent t-test and chi-square, multivariate with General Linear Model Repeated Measure (GLM-RM).

Result: The results showed an increase in the mean of family support (informational, instrumental, appreciation and emotional support) and a decrease in the mean of elderly with diabetes blood sugar levels between 3 months and 6 months measurement after the application of the model in the intervention group compared to the control group with each p-value = 0.000.

Conclusions: Sundanese culture-sensitive family nursing models can improve family support in treating the elderly with diabetes and have an impact on controlling blood sugar. It is recommended
to be replicated using various culture that is adapted to local culture conditions in Indonesia

Keywords: Sundanese culture, family support, diabetes

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Introduction

One of the indicators of the success of a country's development is higher life expectancy. The Central Bureau of Statistics has reported an increase in the life expectancy of Indonesians from 70.1 years in 2010 to 70.9 years in 2015 (Badan Pusat Statistik, 2013). This has resulted in a year-on-year increase in the proportion of older people, leading to a higher risk of the emergence of various health problems, such as diabetes.

Diabetes is known as a chronic disease that has cultural connotations due to an unhealthy lifestyle, so a cultural approach is needed to overcome it (Margaret M. Andrews and Boyle, 2011). In Sundanese culture, one of the cultures in Indonesia is a culture that places parents as highly respected figures. Respect and obedience to parents are shown in the form of pampering and pleasing parents even though they are at risk of increasing blood sugar levels (Badriah and Junaiti Sahar, 2017; Ekadjati, 2005). This condition if left unchecked, will increase the risk of complications due to diabetes.

Some complications due to diabetes as reported by Cipto Mangunkusomo Hospital, one of the national referral hospitals in Indonesia include: Diabetic Retinopathy 33.40%, Neuropathy 34%, Amputation 1.3%, Heart Disease (Angina: 5.3%, MCI: 5.3%, Heart Failure: 2.7%) Stroke: 5.3% and Peripheral Arterial Disease 10.90%. Meanwhile, for handling diabetes and its complications, the government has incurred costs of 3.27 trillion or 33% of total health financing (Infokemenkes, 2014). That conditions indicate the need for appropriate interventions to solve the problem of diabetes in Indonesia.

In Indonesia, cases of diabetes in older people increased from 1.1% in 2007 to 2.1% in 2013. In Tasikmalaya specifically, the incidence increased from 313 cases in 2013 to 570 cases in 2014, with the number of patients who received inpatient treatment due to diabetic complications rising from 64 in 2013 to 262 in 2014 (Dr Soekarjo Hospital Health information System, 2013,2014). The increase in the number of patients with diabetes, and with diabetes complications, has revealed the need for making serious efforts in the treatment of the disease, with regard to instilling the habits or culture that enable control of risk factors for increased blood glucose, such that further complications can be prevented, and the prevalence will not increase.

Tasikmalaya is a city in West Java, Indonesia in which the dominant tribe is Sundanese. In Sundanese culture, parents occupy a high status, as stated in an idiomatic expression *indung tunggul rahayu bapa tangkal darajat* (the mother as the source of salvation and the father as the source of success). This implies that parents are highly respected people who will be a source of happiness for their children. Therefore, in order to gain happiness, safety, and prosperity, the children must be respectful of, and obedient to, their parents, and they do so by making their parents happy and pleased. However, if a child meets all of their parents' dietary requests to please them, despite the risk of increasing their blood glucose levels, it could be a risk factor in triggering health problems in older people with diabetes(Ayip Rosidi, 1984; Satjadibrata, 2005; Suparlan, 2004). This phenomenon implies that the culture of parental devotion, which is embodied via the action of pleasing them and making them happy, should be able to improve the healthcare of older people, including those with diabetes. However, the

reality in Tasikmalaya shows that the incidence of diabetes is still increasing, along with that of various diabetes complications.

Several intervention models for people with diabetes and the elderly have been carried out, such as the model of SESAMA (Segitiga Bersama) is a form of community empowerment model between nurses, cadres and people with prediabetes (Rumoharbo, Sitorus, Irawaty, and Prasetyo, 2012). Model of independent family groups that integrate self-help groups and elderly support groups (Riasmini, Kamso, Sahar and Prasetyo, 2013). The Cordial Older Family Nursing Model in increasing family support, coping strategies, and the family's ability not to abuse the elderly (Rekawati, Yani, Sahar and Kamso 2014). Culture-sensitive nursing care models for the satisfaction of diabetic patients (Novieastari, Nurachmah and Irawaty, 2013). Various approaches are more dominant in the system outside the family by empowering cadres and nurses, while family involvement as primordial prevention based on the tribal culture in controlling blood sugar has not been widely studied.

Cultural studies such as the cultural nursing of several intervention strategies such as preserving good culture or habits by the pattern of managing elderly diabetes, restructuring and negotiating family and elderly habits that are at risk of increasing blood sugar levels are essential aspects in efforts to resolve diabetes problems (Miller, 2012). Meanwhile, the family centre nursing (FCN) considers that the family is the basic unit in the care of family members including helping the elderly in overcoming health problems, changing health status and supporting lifestyle changes (Friediabetesan, Bowden and Jones, 2010). Therefore nurses must make collaboration with families to achieve success in providing care to family members (Stanhope and Lancaster, 2016). This form of collaboration between nurses and family is in harmony with the philosophy of Sundanese culture, which is *silih asah, silih asuh, silih asih*. *Silih asah* is to improve the ability of the family to care for older people with DIABETES, *silih asuh*, assist the family while caring for the elderly at home, and *silih asih*, always provide support when families get problems when caring for the elderly [6]. Thus the value of *silih asah, silih asuh, silih asih* is the foundation of the Sundanese family nursing care model. Therefore, the cultural approach to caring for older people with diabetes in Tasikmalaya is necessary. Thus this study aimed to identify the effect of Sudanese culture-sensitive family nursing model on improving family support in controlling blood sugar in elderly diabetes in Tasikmalaya, West Java, Indonesia, with the research questions is "does the sundanese culture-sensitive family nursing model influence family support in controlling blood sugar elderly with diabetes In Tasikmalaya, Indonesia?"

Methods

The study used a quasi-experimental design with a pre-post test group design with a control group approach to see the effect of Sundanese culture-sensitive family nursing model interventions on family behaviour in

controlling blood sugar compared to the control group. The population in this study were 570 elderly with diabetes in Tasikmalaya. Samples are calculated by hypothesis testing different two mean, with the strength of the test β = 90% and α = 5%, correction drop out 10%. This number obtained 60 respondents for the intervention group and 60 respondents control group with inclusion criteria: dominant family members caring (caregiver) for the elderly and living with the elderly, able to read and write, able to communicate well, understand Indonesian and Sundanese, be willing to become respondents by giving informed consent. Through multistage random sampling and simple random sampling techniques, it was determined by Cipedes sub-district for the intervention group and Purbaratusub-district for the control group.

The model intervention was given in the form of 4 days of training for families with elderly diabetes. The content of the training, including food planning material, physical activity, and stress control in the context of Sundanese culture. After the training followed by mentoring activities by nurses and cadres in the form of home visits. The home visite schedule once a week in the first-month post-training, twice a weeks at the 2nd month, and once a month at the 3rd month. 4th, 5th, 6th month is carried out independently where the nurse only receives reports from the caregivers if problems are found when caring for the elderly at home. During the six months of caregivers, assistance must fill in the worksheet records of food and drink intake, physical activity, and stress control activities of the elderly who will be reported to nurses and cadres to be given feedback during monitoring and evaluation activities every month.

Data was collected in the intervention and control groups by providing Informational support questionnaires, instrumental support questionnaires, appreciation support questionnaires, emotional support questionnaires and random blood glucose using Accu-Chek Active's glucometry three months and six months after the intervention. Data collection was carried out in December 2017 until May 2018. During the study, three respondents dropped out so that the number of intervention and control groups each became 57 respondents. Data analysis using univariate, bivariate with independent t-test and chi-square, multivariate with General linear Test Model Repeated Measure (GLM-RM) to see differences in variables measured repeatedly on behaviour and blood sugar levels.

This study has received approval from the Ethics Committee of the University of Indonesia Faculty of Nursing with number 38 / UN2.F12.D / HKP.02.04 /2017. The implementation has met ethical principles such as being given an explanation of the purpose of the study and signing the consent sheet to be involved in research, maintaining the confidentiality of the respondent, providing sufficient free time and the atmosphere as comfortable as possible when retrieving data. Also, this study provides direct benefits for families, which can increase knowledge, skills and support in controlling blood sugar in the elderly. This study also applies the principle

of justice, namely giving equal treatment to respondents by not distinguishing gender, ethnicity, religion, both before, during, and after the research ends.

RESULTS AND DISCUSSION

In this study the characteristics of respondents caregivers and the elderly between the intervention group and the control group Table 1 showed that the majority of caregivers were women, with the same level of education, majority relationships as children with average age, length of stay between groups showed no difference with p value> 0.05, which means the two groups are equal. Meanwhile, for the elderly, the majority of women with comorbidities, taking blood sugar-lowering drugs irregularly, as well as the average age and duration of diabetes disease showed no statistically different p> 0.05, only at the level of elderly education were statistically different so that it has the potential to be confounded which will be controlled by multivariate analysis.

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

Variable		Intervention group (n=57)		Control group (n=57)		p* value
		N	%	N	%	
Caregivers						
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	
Elderly						
1. Gender	- male	24	42,1	14	24,6	0,074
	- female	33	57,9	43	75,4	
2. Pendidikan	- no school	0	0	0	1,8	0,020
	- elementary school	37	64,9	50	87,7	
	- junior high school	12	21,1	2	3,5	
	- senior high school	7	12,3	3	5,3	
	- college	1	1,8	1	1,8	
3. comorbidities	- yes	38	66,7	36	63,2	0,844
	- no	19	33,3	21	36,8	
4. medication	- regular	17	29,8	31	54,4	0,082
	- irregular	40	70,2	26	45,6	
		Mean (SD)	Median (Range min-max)	Mean (SD)	Median (Range min-max)	p** value

	Mean (SD)	Median (min-max)	Mean (SD)	Median (min-max)	p
Caregivers					
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
Elderly					
Age	66,98 (6,08)	65 (60-84)	67,14 (6,94)	65 (60-86)	0,897
long suffering from diabetes	4,58 (4,76)	3 (1-20)	3,09 (3,76)	1 (1-20)	0,066

*   * p value based on *Uji Chi Square*
** p value based on *Independent t test*

Table 2 Analysis of differences in family support (informational, instrumental, appreciation and emotional support) 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) (n = 57)			
	Mean	**Median**	**95% CI**	**Mean**	**Median**	**95% CI**	**Nilai p**
Informational support							
before	58,4	57,1	56,0– 60,8	56,9	57,1	54,7 – 59,2	0,369
after (3 months)	79,6	78,6	78,6 – 80,6	57,0	57,1	54,6 – 59,3	0,000
affter (6 months)	85,6	85,7	84,8 – 86,4	57,5	57,1	55,3 – 59,5	0,000
		p interaction < 0,001			*Partial Eta (R) Squared* = 0,548		
Informational support before the intervention and three months after intervention (p = 0.000)							
Informational support at three months and six months after intervention (p = 0.000)							
Instrumental support							
before	54,9	55,6	52,6-57,1	54,7	55,6	52,6-56,8	0,924
after (3 months)	66,3	66,7	64,2-68,4	55,4	55,6	53,5-57,2	0,000
affter (6 months)	74,5	75,0	72,3-76,6	55,8	55,6	81,8-57,6	0,000
		p interaction = 0,001			*Partial Eta (R) Squared* = 0,550		
instrumental support before intervention and 3 months after intervention (p = 0.000)							
Instrumental support at 3 months and 6 months after intervention (p = 0.000)							
Appreciation support							
before	71,9	75,0	69,2-74,6	71,4	72,2	68,7-74,1	0,819
after (3 months)	82,7	80,6	80,0-85,4	71,7	72,2	69,0-74,4	0,000
affter (6 months)	84,4	80,6	82,1-86,6	71,8	75,0	69,1-74,5	0,000
		p interaction = 0,001			*Partial Eta (R) Squared ^{2}* = 0,232		
Appreciation support before intervention and 3 months after intervention (p = 0.000)							
Appreciation support at 3 months and 6 months after intervention (p = 0.000)							
Emotional support							
before	71,9	75,0	69,2-74,6	71,4	72,2	68,7-74,1	0,819
after (3 months)	82,7	80,6	80,0-85,4	71,7	72,2	69,0-74,4	0,000
affter (6 months)	84,4	80,6	82,1-86,6	71,8	75,0	69,1-74,5	0,000
		p interaction = 0,000			*Partial Eta (R) Squared ^{2}* = 0,195		
Emotional support before intervention and 3 months after intervention (p = 0.000)							

Emotional support 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
affter (6 months)	166,65	144	148,70-184,60	273,67	273	249.67 - 298.15	0,000
		p interaction = 0,001		*Partial Eta (R) Squared* = 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) Test.

The results showed an increase in the mean value of informational, instrumental, appreciation and family emotional support in the 3 months and 6 months after the model intervention. Rekawati, Yani, Sahar, and Kamso (2014) showed the same result, namely an increase in the value of informational, instrumental, appreciation and emotional support after being given the intervention of the elderly polite nursing model. The similarity of the two studies is the approach used, namely training for families followed up with mentoring activities. Khosravizade Tabasi et al. (2014) found that there was a significant increase in the score of Diabetes Social Support Questionnaire (DDSQ) after 3 months of educational intervention in small groups of families with elderly diabetes. The same thing was reported by Mustika and Harini (2018) that there were significant differences in family support for the elderly with depression before and after being given education to the family.

Friedman (2010) mentions the family is the primary source in delivering information and promoting health to the family members including elderly diabetes. Various communication techniques in conveying information have been learned by nurses in training activities such as how to invite, advise and forbid in the context of Sundanese culture, speak in *lemes* (smooth), tidak *togmol* (not directly to the target but there are trite basics first) forbid in a firm but polite manner (*tegeus tapi teuregeus*) and all care material in elderly diabetes has been framed with appropriate communication and language techniques in the Sundanese cultural context. Language can significantly influence the habits of people invited to speak the same language(Liliweri, 2015) Bagnasco et al., (2014); Kirkman et al., (2012) that the provision of appropriate information helps elderly diabetes take responsibility for self-care and are motivated to use their knowledge and skills in problem-solving. The importance of mastering information as a supporting basis for elderly health is reinforced by Mayberry and Osborn (2012) who mention the need for families to obtain information about diabetes and how to treat it to ensure supportive family support for family members with diabetes. Based on this technique the delivery of information through the right language can guarantee the message can reach the target

and that information support from families is very important for the elderly to maintain their health.

In addition to information support, maintaining healthy and stable blood sugar in the elderly also requires instrumental support which is a family effort to meet daily needs and provide financing for all the needs of the elderly. Mccleary and Blain (2013) in their research on Confucian ethnicity that sense of worship is the basis for values of Confucian ethnicity that respects parents and places them above personal interests such as caring for parents' health, respecting parental freedom and providing financial support.These findings are similar to the values of Sundanese culture in Rosidi (2010) that in Sundanese culture a child will tend to spoil parents as a form of obedience to their parents. So the high position of parents in several cultural views, including Sundanese culture, has placed parents first in meeting their needs.

The results showed that there was an increase in the mean value of appreciation, support and emotional support after the model intervention. According to the analysis of researchers, this is inseparable from the views and philosophy of Sundanese culture that is very respectful and respectful of parents, especially on biological mothers. Rosidi, (2010) explains that the role of "*indung*" (mother) always takes precedence over the role of "*Bapa*" (father) because the Sundanese believe that unforgiving sin is a sin to biological mothers.

In this study, more than 50% of the sexes of elderly diabetes are women. This finding is similar to Kobayashi and Marui (2017) who reported that the sex of diabetics in Japan 54.3% were women, as well as Eh, McGill, Wong, and Krass (2016); Le, Rong, Dingyun, and Wenlong (2016) that the most significant gender distribution of respondents in elderly Chinese diabetics was women. This condition is following the results of (Kemenkes, 2018)RISKESDAS in 2018 which shows the number of diabetics more women is 1.8% compared to men by 1.2% (Ministry of Health, 2018). According to the analysis of researchers, the number of female diabetics in Sundanese society is inseparable from the view of Sundanese culture that upholds a respectful and obedient attitude towards parents, especially mothers, so as to make happy and happy a child is willing to do anything including giving the desired food even though it risks increasing blood sugar level. Besides, a child's very high adherence to parents cannot be separated from the belief that the wrath of a spoken mother will make the fate of her child wretched because what parents say is prayer. Based on this negotiation effort which is part of the cultural approach strategy can be a bridge to provide a change in the way a child views parents especially in caring for the elderly with diabetes, without having to eliminate the nature of the cultural values of respect and submission to parents

Family support especially in providing information related to diabetes care in the context of Sundanese culture and follow-up support for the activities of nurses contributing is to decreasing blood sugar levels. The management

of diabetes mellitus aims to prevent the occurrence of acute and chronic complications so that elderly diabetes still has a good quality of life (Ayele, Tesfa, Abebe, Tilahun, and Girma, 2012). This is reinforced by the finding that regular accompaniment is effective in improving glycemic control, weight loss, and lipid profile (Bhurji, Javer, Gasevic, and Khan, 2016). Other studies have shown that the most significant decrease in HbA1c occurred at measurements six months and 12 months after patient assistance was provided by scheduled professional staff Chrvala, Sherr and Lipman (2016).

Overall, the results showed that the mean increase in family support (informational, instrumental, appreciation and emotional) in the intervention group was more significant in the measurement of 3 months compared to 6 months after the adoption of the Sundanese Culture *silih asah, silih asuh, silih asih*. This condition is inseparable from the impact of training and mentoring conducted in the first 3 months post-training. The components of family support are part of the material delivered at the caregiver training followed by follow-up support in the form of home visite. Based on this, family support felt by the elderly is in line with the increase in caregiver's ability to care for the elderly after model intervention. This condition is in line with the blood sugar levels of the elderly who have decreased diabetes after given model intervention

CONCLUSION

Family Support is part of the form of embodiment of Sundanese cultural values *silih asah, silih asuh, silih asih* as a form of support for members of the Sundanese community to guarantee a better life. Based on this, effective interaction through the process of assisting in the frame of Sundanese culture (silih asah, silih asuh, silih asih) is effective in controlling the blood sugar levels of older people with diabetes. However, Random blood glucose during this study is a limitation because the results shown have not been able to describe the actual management of diabetes, therefore in future studies, it is necessary to check blood sugar levels using HBA1c.

In the end it can be concluded that Sundanese culture-sensitive nursing models have proven effective in improving family behaviour in caring for elderly diabetes and play a significant role in reducing blood sugar levels which means that the family nursing model with a culture *with asah, silih asuh, silih asih* has a role in improving sugar levels the elderly. Therefore a culturally sensitive family nursing model can be used as a pattern of approach in treating patients with diabetes mellitus to improve their culture or lifestyle to be healthier.

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