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The Effectiveness of Independent Family Group Model to Reduce Caregiver Burden and Improve the Caregiver Ability on Providing Care for Elder Person in Community

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Abstract *: Development of independent family group model is a model of family empowerment which aims to reduce caregiver burden and improve the caregiver ability on providing care for elder person in community. Experimental with control group design was employed in this study with total sample 196 people in five areas in Jakarta selected by random selection method. The result shows significant decreasing of caregiver burden after application of this model and improvement of knowledge, attitude, and skill on intervention group after six months model application. In conclusion, independent family group model is effective to reduce caregiver burden and improve the caregiver ability on providing care for elder person in community. As one of family empowerment model in community, it can be duplicated in other provinces*
Keywords *: caregiver, independent family group, caregiver burden, caregiver ability*

I. Introduction

Elder population in Indonesia is continue to rise, in which on 2020 predicted will reach into 28.8 million or 11,34% from 254 million people, with life expectancy rate 71,1 years of age,[1] and will be the third biggest population in the world after China and India. [2]However, social and health condition of elder person in Indonesia is considered poor. Neglected elder person is about 2.7 million (15% from total elder person population) which does not obtain appropriatecare either from family or community. On health aspect, elder person sick rate shows increasing on 2003 as 28.48% to 31,11% on 2007[3]. About 87% elder person are on fragile condition due to some disease results in increasing dependency to family member[4].

Family support from children to their parents is still significantly needed in Indonesia. Extended family pattern is still recognized in Indonesia, in which facilitating elder person to live with their family (child, son/daughter in law, grandchild or any other family members). Most of elder person in Asia lives with their family[5]. In Taiwan 83%elder person live within family, 92% in Thailand and Philippine, 83% in China, 82% in Malaysia and 69% in Japan. Family as caregiver has significant role and act as main support system for elder person in community. The effectiveness of family support is key component of elder person well-being. Family as caregiver to elder person tends to stress due to physiology and psychology changes and chronic disease on elder person. Providing care to elder person whose chronic diseases create strain or burden feeling on caregiver affect quality of family life. [6] Caregiver burden mainly caused by subjective or objective difficulties related to family member with long-term problem[7]. Caregiver burden on providing care for elder person significantly related to elder person abuse.[8] High workload caregiver, more likely to abuse elder person.

Family and community empowerment is important to improve elder person ability reach their optimum function within community. One of developed family empowerment model is independent family group model which integrated model of self-help group and support group. Self-help group consist of families as main caregiver for elder person, help each other, share experience to solve problem.Whereas, support group consist of public figure and elder person cadre as facilitator and motivator for family and health professionals as supervisor.The aim of this activity is providing emotional support to its member to learn new coping method, find strategy to solve problem, improve confidence and communication skill, and increase social contact. Through participation within group, people will be more open, worth and able to decide in order to reduce family burden, lonely and guilty feeling.

In Indonesia, integrated care center for elder person has been developed, but there is no facilitation for family gathering, sharing experiences and feeling during provide care forelder person, so they are lack information of health knowledge related to management of elder person care, results in conflict between family and elder person. Based upon that condition, we were interested in developing independent family group model as one of family empowerment model in community.

1.1 Purpose

General purpose of this research is to obtain independent family group model which effectively reduce caregiver burden and improve caregiver ability on providing care for elder person in community

Specific purpose:

1.1.1 To determine the effectiveness of independent family group model to reduce caregiver burden

1.1.2 To determine the effectiveness of independent family group model to improve caregiver ability (knowledge, attitude, and skill)

1.2 Research Question

In order to reach the purpose, the researchquestions are:

1.2.1 Does the independent family group model effectively reduce caregiver burden on providing care for elder person?

1.2.2 Does the independent family group model effectively improve caregiver’s knowledge, attitude, and skill on providing care for elder person?

1.3 Research Hypothesis

1.3.1 Mean of caregiver burden getting decline on group who undergoing intervention of independent family group model compared to counterpart group

1.3.2 Mean of knowledge, attitude and skill on providing care getting improved on group who obtain intervention of independent family group model compared to counterpart group

II. Methods

2.1. Design

This study, which assessed intervention of independent family group model, was conducted by experimental pre and post-test with control group design. Caregiver burden and caregiver ability (knowledge, attitude, and skill) were measured before and after model application (3 months and 6 months).

In assessing the effectiveness of this independent family group model, one group consisted of 10 caregivers who provide care for elder person. Group facilitators were cadre, while supervisor were the coordinator of elder person program in public health center. On early stage, training was conducted for health professional (nurse), cadre and caregiver to discuss these modules: 1) communication skill to elder person, 2) problem solving due to aging process, 3) managing common health problem in elder person (hypertension, rheumatoid arthritis, and gastritis) and 4) problem solving process; 5) work book for caregiver; 6) guideline for facilitator and supervisor. Then, fortnight meeting was conducted on first three months (health professional companionship) and monthly meeting on following three months (independent). Monitoring and evaluation were carried out to observe caregiver performance on providing care for elder person at home by home visit and observe activities of independent family group.

2.2. Population and Sample

To be eligible for inclusion in the study, caregivers and elder person must have either lived together at same home in Jakarta. All respondents must meet these criteria: 1) adult to pre-elder person age (20-59 years of age), 2) live with elder person at same home, 3) act as main caregiver, 4) agree to be respondent and 5) not-illiterate. The eligible caregiver’s care recipient had to be 60 years of age or older with chronic health problems but no immobilization. Cluster multistage method was employed as sampling strategy in this research. Sample number was obtained from hypothesis task of mean difference on two independent groups, with 99 samples on each group, intervention and control group. During research, 2 respondents were drop out, so respondent become 98 people on each group.

2.3. Measurement tools

Data were collected by questionnaire instrument for the following family demographic characteristics: age, gender, marital status, tribes, education, job, household monthly expenses, family composition, relationship between elder person and caregiver and duration of provided care. Instrument to measure family ability related to knowledge and skill was self-developed by the researcher, which consisted of 15 questions on each questionnaire. Those instruments had been passed reliability test, results in reliability item inter score on knowledge variable was 0.352-0.843 and Cronbach Alpha was 0.909, skill variable was 0.383-0.888 and Cronbach Alpha was 0.919. Then, attitude during providing care was measured by modification of Facts on Aging Quiz (FAQ) questionnaire which consisted of 15 questions, with reliability item inter score was 0.352-0.856 and Cronbach Alpha was 0.929. Moreover, caregiving burden was measured by The Zarit Caregiver

Burden Interview (ZBI) questionnaire which consist of 22 questions. It was translated to Bahasa

Indonesia and legalized by MAPI research. Trial score shows reliability item inter score was 0.467-0.805 and Cronbach Alpha was 0.947.

2.4. Data analysis

Bivariate analysis was carried out to determine equity on two groups (intervention and control) toward all research variables. Statistical tests for this research include independent t-test (numeric data which normal distributed) and chi-square test (categorical data). In addition, McNemar test was carried out on variable of knowledge, attitude, and skill (categorical data) to determine the differences of caregiver's knowledge, attitude and skill before and after undertake intervention of independent family group model. Moreover, multivariate analysis was carried out by General linier Model Repeated Measure (GLM-RM) test toward variable of caregiver burden to determine the difference on repetitive measured variable. Statistical test aims to determine means differences between some observations and mean differences between two groups.

III. Result

Result of this study describe family characteristic, caregiver burden, caregiver ability before and after undertake independent family group model.

3.1 Respondent characteristic

Mean of respondents' age on both groups were 40 years of age with highest proportion on 20-34 years of age as a whole, 45-59 years of age on intervention group and 35-44 years of age on control group. The most dominant respondents on both groups are woman, married, "Betawi" tribes, and extended family. Most respondents on intervention group has education background senior high school graduated, while on control group unfinished high school. Based on job and household monthly expenses, highest proportion was on unemployed on both groups and household monthly expenses was less than or same with 1 $/capita/day. The respondents had provided care for elder person during last ten years and highest proportion the numbers of family member who involve providing care of elder person was less than three people on both groups. Most caregivers were own children of elder person on both groups.

3.2 The differences of caregiver burden and caregiver ability between intervention group and control group

Description of difference variable of caregiver burden and caregiver ability on two groups is presented below

Table 1.The difference of caregiver burden and caregiver ability variable between intervention group and control group in Jakarta on August 2012–January 2013 (n=196)

Variable	Intervention (n=98)		Control (n=98)		P value*
	Mean	SD	Mean	SD	
1. Caregiver burden	28.00	8.78	27.96	8.27	p=0.658
	N	%	N	%	P value**
2. Knowledge					
Good	41	41.8	38	39.7	p=0.771
Poor	57	58.2	60	60.3	
3. Attitude					
Good	33	33.7	39	39.8	p=0.432
Poor	65	66.3	59	60.2	
4. Skill					
Good	40	40.8	42	42.8	p=0.373
Poor	58	59.2	56	57.2	

*Independent t-test
** Chi-Square Test

Table 1 shows no difference of caregiver burden and caregiver ability (knowledge, attitude, skill) between intervention and control group with p value > 0.05, which means both groups are homogenous.

3.3 Caregiver burden between before and after undergoing intervention of independent family group (3 and 6 months after intervention)

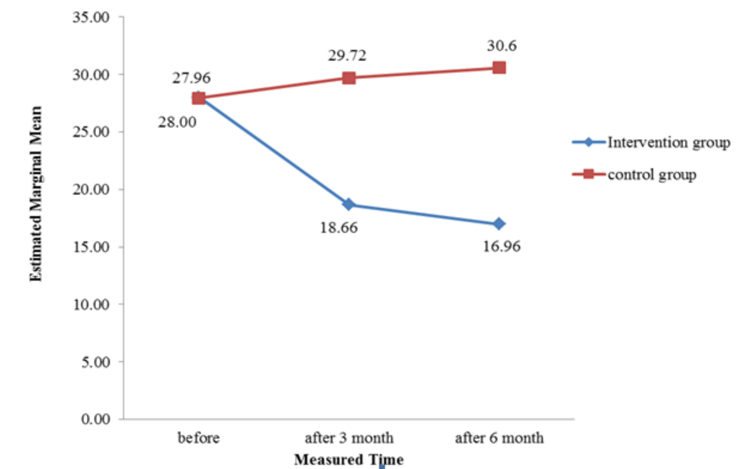
Table 2. Caregiver burden of providing care before and after intervention of independent family group model in Jakarta on August 2012 – January 2013 (n=196)

Variable	Intervention (n=98)			Control (n=98)			P value*
	Mean	Median	95% CI	Mean	Median	95% CI	
1.Caregiver burden							
Before	28.00	28.50	26.69-29.32	27.96	28.00	26.65-29.28	0.967
After (3 months)	18.66	18.00	17.68-19.64	29.72	29.00	28.74-30.69	<0.001
After (6 months)	16.96	17.50	15.60-18.32	30.60	31.00	29.24-31.96	<0.001
p interaction< 0.001 $R^2 = 0.288$							

-Caregiver burden before intervention toward 3 months after undergoing intervention ($p<0.001, R^2 = 0.330$)
-Caregiver burden on 3 months after undergoing intervention toward 6 months after intervention ($p=0.011$, $R^2 = 0.035$)

* General Linier Model Repeated Measures Test

Table 2 shows mean of caregiver burden between before intervention and after undergoing intervention was getting decline on intervention group, while on control group tend to improved. Statistical test shows no differences of caregiver burden between intervention and control group before intervention of independent family group model (p value = 0.967), but there was difference of caregiver burden after 3 months intervention (p value $p < 0.001$) with difference strength 56.6% and after 6 months intervention (p value $p < 0.001$) with difference strength 50.6% (Picture 1.1).



Picture 1.1. Graph of Interaction between measure time and group toward caregiver burden

There was difference of caregiver burden between measurement before intervention and measurement after three months intervention (p value < 0.001) with difference strength 33.0%. In accordance with previous finding, there was difference of caregiver burden between measurement on three months after intervention and measurement on six months after intervention. Overall, there was difference of caregiver burden between measurements (before intervention and on 3 months after intervention and 6 months after intervention) on intervention and control group (p value < 0.001) with difference strength 28.8%.

3.4 Caregiver ability (knowledge, attitude, and skill) before and after intervention of independent family group model (3 months and 6 month after intervention)

Table3. Caregiver ability before and after intervention of independent family group model in Jakarta on August 2012 – January 2013 (n=196)

Variable	Intervention (n=98)		Control (n=98)		95% CI	P Value *
	N	%	N	%		
1.Knowledge						
Before						
Good	41	41.8	38	39.7	0.497-1.559	0.771
Poor	57	58.2	60	60.3		
After (3 months)						
Good	72	73.5	57	58.2	0.275-0.916	0.035
Poor	26	26.5	41	41.8		
After (6months)						
Good	75	76.5	58	59.2	0.240-0.824	0.014
Poor	23	23.5	40	40.8		
-Knowledge before toward after 3 months intervention	p**<0.001		p**=0.008			
-Knowledge on 3 months and 6 months after intervention	p**=0.728		p**=1.00			
2.Attitude						
Before						
Good	33	33.7	39	39.8	0.727-2.331	0.459
Poor	65	66.3	59	60.2		
After (3 months)						
Good	62	63.3	47	47.9	0.302-0.947	0.044
Poor	36	36.7	51	52.1		
After (6months)						
Good	69	70.4	53	54.1	0.275-0.891	0.027
Poor	29	29.6	45	45.9		
-Attitude before intervention toward after 3 months undergoing intervention	p**<0.001		p**=0.280			
-Attitude on 3 months and 6 months after intervention	p**=0.360		p**=0.480			
3.Skill						
Before						
Good	40	40.8	42	42.8	0.616-1.919	0.885
Poor	58	59.2	56	57.2		
After (3 months)						
Good	69	70.4	54	55.1	0.286-0.929	0.039
Poor	29	29.6	44	44.9		
After (6months)						
Good	73	74.5	56	57.1	0.249-0.911	0.016
Poor	25	25.5	42	42.9		
-Skill before intervention toward after 3 months undergoing intervention	p**<0.001		p**=0.065			
-Skill on 3 months and 6 months after undergoing intervention	p**=0.585		p**=0.885			

*Chi-Square Test
**McNemar Test

Table 3 shows chi-square test result toward knowledge, attitude and skill as there was no difference of caregivers' knowledge before undergoing model intervention on both group (p value = 0.771). However, there was significant difference of caregiver's knowledge after 3 months and 6 months undergoing intervention of independent family group model with $p < 0.05$. In pair test using McNemar test, it shows significant differences of caregiver's knowledge before intervention toward 3 months after intervention measurement on both intervention and control group with p value < 0.025. Somehow, measurement between 3 months and 6 months after undergoing interventionshows no difference of caregiver's knowledge on both groups, with p value > 0.025.

Chi-square test results ofattitude on providing careis there was no difference of caregiver's attitude before undergoing model intervention on both group (p value = 0.459). Nevertheless, there was significant difference of attitude on providing care after 3 months and 6 months undergoing intervention of independent family group model with $p < 0.05$. In pair test using McNemar test, it shows significant differences of attitude

on providing care before intervention toward 3 months after intervention on intervention group with p value < 0.001, while on control group, there was no significant difference (p value = 0.280). Somehow, measurement between 3 months and 6 months after undergoing intervention, it shows no difference of attitude on providing care on both groups, with p value > 0.025.

Skill on delivering of care shows similar result with two previous finding, in which no significant difference on both group before undergoing model intervention (p value = 0.885). Nevertheless, there was significant difference of skill on delivering of care after 3 months and 6 months undergoing intervention of independent family group model with p value< 0.05. In pair test using McNemar test, there was significant difference of skill on delivering of care on intervention group before intervention toward 3 months after intervention (p value = 0.065). However, there was no significant difference of skill of care on 3 months after intervention measurement toward 6 months after intervention on both groups, with p value > 0.025.

IV. Discussion

4.1. Model of independent family group is effectively reducing caregiver burden on provide care for elder person.

Statistical test shows this model is effectively reduce caregiver burden on 3 months and 6 months after undergoing model intervention. This result confirmed study of support for family member who involved in provide care for elder person in family/community that found caregiver burden (objective and subjective) significantly decrease on intervention group after 6 months undergoing intervention of Family Carers' Training Program (FCTP) compared to control group.[9] Even though using different instrument, in which researcher used Zarit Burden Interview (ZBI) while Sahar use Screening for Caregiver Burden (CSB),these instruments emphasized on subjective and objective experience of family member during provide care for elder person and both studies measured family burden range on 6 months. In addition, both studies give particular training to caregiver through training for provide care elder person at home. Although these studies has different way, its show same result that caregiver burden getting decrease after undergoing intervention.

This research finding also supported from previous study which mentioned that counseling and getting involved at supporting group may reduce caregivers' burden and depressive syndrom[10]. Supporting group is significantly deliver positive effect to caregiver's psychological health, depression, burden and social relationship[11].In line with other research which explained that caregiver burden getting decline on intervention group, seen as previous mean was 42 become 35.44, after undergoing education program on 1 month, while on control group was increased, and found significant difference between intervention and control group[12].

This study also shows significant decrease of burden between before intervention measurement and 3 months after undergoing intervention measurement compared to between 3 months after intervention and 6 months after intervention measurement. It likely related to regular intervention on early three months, in form of fortnight meeting which relatively short, to provide particular time for members to share problems in order to find best solution.In this moment, caregivers were free to express feeling and share experiences during provide care forelder person, listen other people who face similar problems, learn how to solve problem in order to reduce psychological burden on delivery of care. In line with previous study which mentioned that self-help group is effectively reduce family burden on provide care to elder person. Caregiver gain benefits from sharing session, open discussion, obtain needed information and suggestion[13]. Burden is related to caregiver social network. High social support as participation on self-help group and psycho-education program associates to effective coping strategy and decreasing of family distress[14].

Contrast to result on control group which shows mean of caregiver burden tend to increase, previous research found 24.5% caregivers were deal with caregiving burden, and ZBI instruments show 52.7% caregivers told that they had given more than what elder person need, 26.7% elder person were dependent on daily activity and 28.3% hope to be taken care by their family[15]. Phenomenology study mentioned that caregiver face psychology, physic and financial burden on providing care of their parents[16].

4.2 Model of Independent Family Group improves caregiver knowledge, attitude and skill on provide care for elder person

Statistical test shows that model of independent family group is effectively improve knowledge, attitude and skill on delivery care after 3 months and 6 months undergoing model intervention. This finding confirms previous study which mentioned that mean of knowledge, attitude and skill of family is significantly increased after 6 months intervention of FCTP[17].

Compared to measurement before intervention measurement toward 3 months measurement after undergoing model intervention, it found significant improvement of knowledge on both intervention and control group. It related to two days training contain of communication to elder person, solving problem related to aging process, and deal with common health problem on elder person. In addition, through intervention of fortnight

routine group meeting, caregiver get chance to share and learn from other experience of provide care for elder person in similar problems. It confirmed previous study which mentioned that through group activities, caregiver would get support from group, gain self-confidence, communication skill, knowledge and skill to solve problem[18]. Knowledge improvement also occurs on control group which likely relate to experience of provide care forelder person for long period. Caregiver has provided care for elder person about ten years, although they didn't get particular training of how to provide care for elder person, they gain understanding of elder person needs and character by experience.

This study also found significant difference of attitude of care after 3 months and 6 months undergoing intervention of independent family group model. It is similar with previous research which found significant improving attitude of care on intervention group after 3 months and 6 months undergoing intervention of FCTP compared to counterpart group[17]. Regard to researcher, improvement of attitude of care on both studies related to caregiver's knowledge. Better knowledge to provide care for elder person will result in better attitude of it. It is also supported from previous research which described that caregiver who receive sufficient knowledge will effectively communicate to elder person, so they able to have open communication and understand each other[19].

Family takes an important role on giving support and help to elder person. This support affect to elder person positive mental health. Care which carried out by family, especially own children will be more convenience and safe since they more tolerate compared to other family member or even other people[20]. It shows cultural value which put high respect on parents still recognized in Indonesia.

Caregiver ability is particular attitude which based on knowledge, experience and personality[21]. Caregiver skills will reduce burden and stressor[22]. This study found significant difference of care skill after 3 months and 6 months undergoing intervention of independent family group model. It is supported from previous research which found significant improvement of care skill on intervention group after 3 months and 6 months undergoing intervention of FCTP compared to control group. [17] Another study mentioned similar thing as skill of care is ability to provide effective care based on cognitive, psychomotor and psychosocial aspects. Caregiver is getting more skillful after getting companionship from health practitioner in home visit[23]

Activities on independent family group allow its member to share experience and feeling during provide care for elder person. Every member gets opportunity to tell their experience then discuss it to other members to find alternative solution. Through sharing of knowledge and coping skill, group member allow picking most appropriate strategy for their own problem[24]. Participation on self-help group offer member empowerment, support and information to get involve on solving their own problem[25]. Skill gain through training and group activities were used by caregiver to provide care for elder person at home, especially for elder person with functional limitation. It is worth highlighting that family care to elder person was carried out continuously and high dependency on daily activities[26]

V. Conclusion

Extended family culture is still recognized in Indonesia, which allow elder person live with family at home. However, provide care forelder person gain some stress and burden for caregiver, mainly if elder person suffer from chronic disease and functional limitation. To deal with some common problems of elder person due to aging process and any related risk factor, particular knowledge and skill are needed for family as main caregiver to provide optimum care. Model of independent family group in this study has proven effectively reduce caregiver burden and improve caregiver ability including knowledge, attitude and skill to provide care for elder person in community. This model is expected to be one model of family empowerment which can be developed and replicated in other provinces in Indonesia, either rural or urban are, considering local culture.

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