

A cross-sectional study on the vital role of family support for cognitive function in the elderly in Indonesia



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Abstract The prevalence of cognitive function decline in the elderly is expected to continue to increase in the future. This condition occurs due to the increase of the aging population all the time. This study aims to assess the role of family support associated with cognitive function in the elderly. Cross-sectional design was used as a research approach conducted on 483 elderly aged 60 years or over. The questionnaire was used as an instrument for data collection. The data were analyzed using bivariate analysis through the chi-square test. The study results conclude that emotional, informational, and instrumental support were significantly related to cognitive function in the elderly. The provision of education to families about the vital role of families in the cognitive function of the elderly.

Keywords: aged, cognitive role, family assistance

1. Introduction

Population aging is considered the most critical demographic phenomenon and is a challenge in its own right in the present era (González et al 2011; Ameh et al 2014). It is the positive impact of increasing life expectancy, decreasing birth and mortality rates and high migration of young people to urban areas (SurveyMETER 2003; Wang et al 2007; Komjakraphan et al 2009; ESCAP 2017). However, long-lasting life does not mean that a person is healthier since health problems increase with age (McKenzie et al 2006), including cognitive function. In addition to disability and death, cognitive function problems also affect the decrease in the quality of life of sufferers and result in family, community, and state economic issues (Rashid et al 2016; Ren et al 2018; Soleimani et al 2018).

WHO reports that globally, about 50 million people with dementia and 60% live in low- and middle-income countries (WHO 2019). It is estimated that this figure will continue to increase to 63% in 2030 and will reach 71% by 2050 (Prince et al 2013). There are nearly 10 million new cases of dementia discovered annually (WHO 2019). The prevalence of cognitive impairment in people aged 60 years or older is estimated to be 18.9% -22.4% (Ren et al 2018). In Indonesia, the prevalence of dementia was 6.8% out of 1,228 people aged ≥ 65 years (Pengpid et al 2019).

One of the most critical issues in assessing the welfare level of the elderly is family support (Okumagba 2011), and this is included in relation to the cognitive function of the elderly. Family support and cognitive function have attracted the attention of many researchers. Several studies were conducted to prove the link between family support and cognitive function (Zhu et al 2012). Support provided by the family can occur in the form of emotional support, appreciation support, informational support, and instrumental support (Krause 1987). This study was conducted to examine the relationship between variables of family support (emotional support, appreciation support, informational support, and instrumental support) with the cognitive function of elderly in Aceh-Indonesia.

2. Materials and Methods

The cross-sectional study was selected as the research design by involving people aged ≥ 60 years. The rule of thumb formula was used as the reference for determining the sample size, where the sample size calculation was based on the observed variables (43 parameters) multiplied by 5-10. The minimum sample size calculated was 215-430, and the sample size was set to be 500. There were 17 questionnaires with incomplete data, so the number of samples analyzed was 483.

There were four variables of family support as independent variables, including emotional support, appreciation support, informational support, and instrumental support. The measuring instrument used was a questionnaire using the Likert scale. There are four answer choices, namely "strongly disagree," "disagree," "agree," and "strongly agree." The



questionnaire test was conducted on 30 people; thus, the questions answered were valid if the value of $r_{count} > r_{table}$ (0.361).

There were three questions included about emotional support, namely "My family loves me with all their heart ($r = 0.754$)"; "The family is worried if my health is poor ($r = 0.759$)"; "The family listens to all my complaints ($r = 0.529$)". Appreciation support included two questions, including "The family asks for advice and suggestions from me ($r = 0.456$)"; "The family uses polite language when talking to me ($r = 0.485$)". Informational support included three questions, "Family provides whatever information I need ($r = 0.577$)"; "The family gives me suggestions/solutions if I have a problem ($r = 0.557$)"; "The family gives me information about the health of the elderly ($r = 0.594$)". Finally, the measurement of instrumental support by asking "The family helps solve my financial problems ($r = 0.709$)"; "The family provides transportation if I need it ($r = 0.579$)"; "The family is willing to take me if I want to go somewhere ($r = 0.423$)". In the reliability test, the Cronbach's Alpha value was found (0.874).

The function was measured using the Six-item Cognitive Impairment Tests (6-CIT) questionnaire developed by Brooke and Bullock (1999). The questionnaire was translated into Indonesian with a slight modification to the memory phrase, i.e., from the phrase (John/Brown/42/West Street/Bedford) to (rice/fish/fruit/vegetable).

The chi-square test was performed to test the hypothesis about the relationship between several family support variables and cognitive function. Statistical analysis for testing was performed using SPSS version 21. To conduct a chi-square test, the total score of each variable's respondents was transformed into two categories by referring to the mean total score. Total scores \leq mean were categorized as one group, while scores above the mean were categorized as another group. For instance, family's emotional support was categorized as "poor" if the total score of respondents was \leq the mean, and as "good" if the total score was above the mean. Similarly, cognitive function was divided into "low" and "high" categories.

3. Results

Table 1 illustrates that the average age of the respondents is 69.76 years and more of them are 60-69 years old (56.5%). More female respondents (68.9%) and more are unemployed (58.2%). In terms of income, more respondents have no income (41.0%).

Table 1 Demographic characteristics of respondents.

Respondent characteristics (n=483)		n	Mean/%	SD
Age			69.76	8.41
	60-69 Years	273	56.5	
	≥ 70 Years)	210	43.5	
Sex	Male	150	31.1	
	Female	333	68.9	
Occupation	Unemployed	281	58.2	
	Peasant/ Labor/Fisherman	133	27.5	
	Retired	24	5.0	
	Private	45	9.3	
Income			520559.01	856194.59
	No Income	198	41.0	
	IDR < 1,000,000,	184	38.1	
	IDR 1,000,000,- s.d <2,000,000,-	50	12.4	
	IDR $\geq 2,000,000,-$	41	8.5	

Source: Primary data 2018.

The results of the cross-tabulation between the variable of family support and cognitive function, as shown in Table II, showed that the group of elderly who received good emotional support had a greater proportion of having a higher cognitive function (72.2%) than the group that received poor family support (44.3%). The group of elderly who received good appreciation support had a greater proportion of having a higher cognitive function (55.9%) than the elderly with poor appreciation support (43.9%). Furthermore, the proportion of elderly with higher cognitive function was greater in the group of elderly with good informational support (53.4%) than in the group of elderly with poor informational support (40.5%). The last one is the emotional support and cognitive function of the elderly. The group with good instrumental support has a greater proportion of having a higher cognitive function (66.0%) than the group of elderly with poor instrumental support from their families.

Table 3 showed that emotional support ($p = 0.001$; $OR = 3.35$), informational support ($p = 0.012$; $OR = 1.68$) and instrumental support ($p = 0.001$; $OR = 2.32$) were significantly related to cognitive function. These three variables were positively related to cognitive function. Appreciation support was the only variable that did not have a significant relationship with cognitive function ($p = 0.127$; $OR = 1.38$).



Table 2 Cross-tabulation results between family support variables and cognitive function in the elderly.

Family Support	Cognitive Function				Total	
	Low		High		n	%
	N	%	n	%		
Emotional support						
Poor Good	220	55.7	175	44.3	395	100
Good	24	27.3	64	72.7	88	100
Appreciation support						
Poor Good	83	56.1	65	43.9	148	100
Good	161	48.1	174	51.9	335	100
Informational Support						
Poor Good	88	59.5	60	40.5	148	100
Good	156	46.6	179	53.4	335	100
Instrumental Support						
Poor Good	212	54.5	177	45.5	389	100
Good	32	34.0	62	66.0	94	100

Source: Primary data 2018

Table 3 The result of bivariate analysis on the variable of family support and elderly cognitive function.

Independent variable	P value	OR	95% Confidence Interval	
			Lower	Upper
Emotional support	0.000*	3.352	2.014	5.579
Appreciation support	0.127	1.380	0.935	2.036
Informational support	0.012*	1.683	1.137	2.491
Instrumental support	0.001*	2.321	1.449	3.717

Abbreviations: * = significant p value, OR = Odds Ratio.

Source: Primary data 2018

4. Discussion

As the aging population continues to increase, it is estimated that health problems related to cognitive function in the elderly will continue to grow. It is reasonable because the most potent risk factor that contributes to cognitive decline is age (WHO 2019). This study aims to determine the relationship between several family support variables and cognitive function. The assumption is that elderlies who receive better family support have better cognitive function than elderlies with lower family support.

In the past, the family was always considered to have an essential contribution to the status and safety of the elderly. This condition may still prevail in some regions and communities with certain cultures, such as the people of Aceh. The vital role of the family in the form of support not only determines the social status and safety of the elderly but also significantly determines the health status of the elderly such as cognitive function. The results of our study indicate that there are three variables of family support that are significantly associated with cognitive function in the elderly, including emotional support, instrumental support, and informational support. This result means that elderlies who receive better emotional, informational, and instrumental support from their families have a better cognitive function. In contrast, the elderly with lower emotional, instrumental and informational support have a lower cognitive function.

In Indonesia, particularly in Aceh, more elderly live with their close relatives, especially their children. In general, this condition can be seen in most of the elderly who live in Asia (Rashid et al 2016). On the other hand, Eastern culture teaches people, particularly families, and children to respect their parents and protect them, especially when they enter old age. The elderly's urgent need is to live the rest of their life at home with their family and never expect a relocation (Gitlin et al 2003). Especially when formal support systems such as public health services are inadequate in an area. Thus, in such a situation, the elderly need their children and their partners to provide emotional, instrumental (Zhu et al 2012), and informational support. However, in a broader context, the elderly consider family as their source of support and a part of their culture and identity (Lewis 2014).

The relationship between family support and cognitive function as the results of this study are confirmed by several previous studies. Such as, the results of the study by Zhu and his colleagues proved that family support has a significant positive effect on cognitive function. They also found that family support is the strongest predictor of cognitive function than other forms of support (Zhu et al 2012). Strizich et al confirmed that the statistically significant association with family support is consistent across measures of cognitive function (Strizich et al 2016). Yin et al also found a decline in cognitive dysfunction in elderlies who received emotional support from children (Yin et al 2020). Another study found that cognitive function decreased more sharply in people living alone than those living with two or more household members (Inoue et al 2019). It could very well be related to the absence of family support. They do not receive emotional support, informational support, and instrumental support from family members.



In contrast, elderly who live with family members can feel the presence of family emotional support, such as receiving affection, getting attention, and some are ready to listen to every complaint. Furthermore, they also receive support in the form of information from their families, such as information about health or other things that they need, and someone can provide advice when they have a problem. Providing information to the elderly may continue to train the learning and memory processes of the elderly. They can become accustomed to receiving and remembering various information provided by the family, especially some information that they find interesting. Information can add to their insights and views that can be used as a consideration to act or behave. In addition, positive family contribution to the elderly in the form of instrumental support is also acceptable. This support can occur in helping the finances, providing transportation, and taking them when they want to go somewhere if necessary.

This finding could be a strategic option for healthcare providers and policymakers in the effort to improve the overall well-being of the elderly and maintain their cognitive function. Family members can be an extension of healthcare professionals in caring for the cognitive function of the elderly within the family. Intervention programs to enhance the role of the family through support for the elderly need to be developed by healthcare policymakers. Technical training on family support needs to be considered so that families with elderly members have the ability and empowerment to provide care. This approach may be a suitable alternative to implement, especially in countries where formal support systems for the elderly population are still limited and inadequate.

To further explore and understand the underlying mechanisms of the relationship between family support and cognitive function of the elderly, further research is important, including the contribution of social engagement and cognitive stimulation. Lastly, it is important to understand that there are cultural and social norm differences within communities and regions, especially those related to families and the elderly. Therefore, attention to these differences through other studies, including cross-cultural studies related to the relationship between family support and cognitive function of the elderly, is highly recommended.

5. Conclusion

This study concludes that emotional, informational, and instrumental support from family members has a positive role or contribution to the cognitive function of the elderly in Aceh. Educational efforts to increase family knowledge and awareness about the importance of family support for the elderly are needed to prevent cognitive dysfunction in the elderly.

Acknowledgment

We are very grateful to the respondents who have agreed to participate in this study.

Ethical considerations

In this research, the researchers obtained ethical approval from the Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga, with the number: 1229-KEPK. Prior to the interview, all participants had signed a consent form that was explained in detail.

Conflict of Interest

The authors declare that they have no conflict of interest.

Funding

This research was supported by the Indonesia Endowment Fund for Education (LPDP).

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