STUDY CORRELATION BETWEEN BURDEN AND QUALITY OF LIFE OF DEPENDENT ELDERLY CAREGIVERS IN KLITREN, YOGYAKARTA

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ABSTRACT

Introduction: Elderly with disabilities need caregiver's assistance in their activities of daily living. The caregiver can experience a burden during caring for dependent elderly. The burden can affect the caregiver's quality of life.
Purpose: To measure and test the correlation between dependent elderly's caregiver burden and quality of life in Klitren Kampong, Gondokusuman District, Yogyakarta Municipality
Method: The subjects were primary informal caregivers aged ≥ 18 years with a good cognitive function and caring for the elders with an ADL score <12. Respondents were selected using the consecutive sampling technique. This is quantitative research with a cross-sectional study design. Zarit Burden Interview and Caregiver Reaction Assessment were used to assessing the caregiver's burden. WHO Quality of Life-BREF was used to assess caregivers' quality of life. Data were analyzed using Spearman's rank correlation.
Result: There was a strong and statistically significant correlation between the impact on finance ($p=0.000$, $\rho=-0.678$) and the health ($p=0.002$, $\rho=-0.602$) domain on CRA with the environmental domain WHOQoL-BREF. There was a strong and statistically significant correlation between the impact of the schedule domain on CRA with the psychological domain of WHOQoL-BREF ($p=0,000$, $\rho=-0.683$).
Conclusion: There are significant correlations between caregivers' burden and quality of life, especially in certain domains. Caregivers with a higher burden have a lower quality of life.

Keyword: Caregiver, Dependent Elderly, Burden, Quality of Life.

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INTRODUCTION

Life expectancy in Yogyakarta City increases each year, causing an increase in the elderly population. The increase in the elderly population also causes an increase in elderly dependence. The dependency rate of the elderly on the productive people in 2018 reached 14.49% (1). The care provided by the caregiver increases when the health condition of the elderly declines (2).

A previous study has revealed the relationship between caregiver burden and quality of life (3). This relationship has a negative or inverse correlation meaning that family caregivers who increase load will generally experience a decrease in quality of life (4).

This present study examines the correlation between caregiver burden and quality of life of dependent elderly caregivers in Kelurahan Klitren, Yogyakarta City.

METHOD

This study used a cross-sectional design, and it was conducted in Klitren, Gondokusuman, Yogyakarta, from December 2019 to January 2020. The respondents consisted of 21 informal caregivers taking care of dependent elderly. They were selected using a consecutive sampling technique. The inclusion criteria are caring for elderly aged ≥ 60 years, caring for elderly with ADL < 12, having an excellent cognitive function (if the caregiver is ≥60 years old), informal primary caregivers, aged ≥ 18 years, and the exclusion criterion is not willing to participate in the study.

This study used primary data with the Caregiver Reaction Assessment questionnaire and the Zarit Burden Interview to assess the caregiver burden and the WHO Quality of Life-BREF to assess the caregiver's quality of life. Before data collection, the elderly who were treated were screened first with the ADL, IADL, AD8, and MMSE questionnaires.

Data analysis used the Spearman correlation analysis method. Then, it also used Bonferroni correction to see the correlation between the caregiver's burden and quality of life. Confounding factor analysis used Spearman's rho analysis method and the Kruskal Wallis Test. However, the confounding factor analysis was not continued to the multivariate analysis.

RESULTS

This study involved 21 caregivers of dependent elderly. The mean age of caregivers was 51.24 ± 10.867 years. The mean age of the elderly was 78.43 ± 9.217. All caregivers were female (100%), of which most of them were daughters, daughters-in-law, and nieces of the elderly who were treated (76.2%). Most caregivers do not work (71.4%) and take care of the elderly for more than 19 hours a day (52.4%).

Based on the ADL score, most dependent elderly experienced severe dependence (57.1%). Based on the IADL score, most of the dependent elderly need help. Further, most dependent elderly experienced severe cognitive impairment (66.7%).

Most of the caregivers who cared for the dependent elderly had a poor quality of life in the domains of physical health (81.0%), psychological (71.4%), social relationships (52.4%), and environmental (57.1%). The description of the caregiver's burden and quality of life for the dependent elderly is presented in Table 1.

Table 1. Description of Burden and Quality of Life of Caregivers

Variable	N	Mean±SD
ZBI		
Burden in the relationship	21	39.29±13.855
Emotional well-being	21	27.04±13.390

Social and family life	21	8.63±10.730
Finances	21	22.62±29.480
Loss of control over one's life	21	19.94±12.596
Total	21	25.54±10.168
CRA		
Self-esteem	21	72.42±10.983
Lack of family support	21	39.29±23.521
Impact on finance	21	34.13±18.616
Impact on schedule	21	45.95±16.630
Impact on health	21	38.10±13.837
WHOQOL-BREF		
Physical health	21	49.76±11.962
Psychological	21	51.10±12.668
Social relationship	21	60.76±11.726
Environment	21	57.24±12.565

Variable	Median (IQR)	Min-Max
ZBI		
Burden in the relationship	37.50 (22.92)	13-67
Emotional well-being	28.57 (21.42)	4-67
Social and family life	6.25 (18.75)	0-31
Finances	0.00 (50.00)	0-100
Loss of control over one's life	25.00 (15.62)	0-38
Total	27.27 (14.78)	8-48
CRA		
Self-esteem	75.00 (14.59)	50-88
Lack of family suppport	35.00 (35.00)	5-85
Impact on finance	25.00 (12.50)	17-100
Impact on schedule	45.00 (20.00)	25-95
Impact on health	33.33 (25.00)	25-67
WHOQOL-BREF		
Physical health	56.00 (15.00)	31-69
Pyschogical	50.00 (19.00)	19-69
Social relationship	56.00 (22.00)	44-75
Environment	56.00 (16.00)	31-75

The Shapiro-Wilk test was used in the normality test for sample sizes of < 50 (5). Based on the normality test results, the total ZBI and WHOQoL environmental domain have a p-value of > 0.2. Thus, the data were considered normally distributed. However, other data showed non-normal distribution (p-value <0.2). Therefore, the parametric test could not be carried out. The data were analyzed using non-parametric analysis with the Spearman test.

The correlation between caregiver burden and quality of life showed that the higher caregiver burden correlates with, the lower quality of life. However, some extreme values or outliers do not much deviate from the hypothesis. It is indicated by one respondent who has a low burden, and low quality of life on the scatter plot graph.

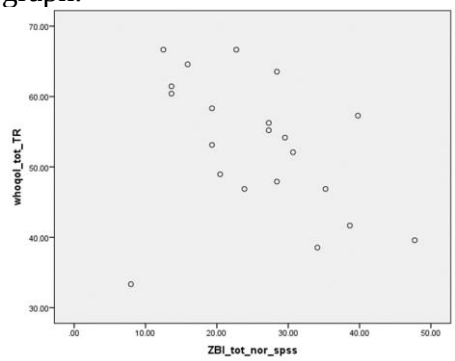

Figure 1: Scatter plot graph between caregiver burden and general quality of life

The burden variable analysis results covering the CRA and ZBI questionnaires and caregiver quality of life surrounding the WHOQoL-BREF questionnaire are presented in Table 2. Bonferroni correction was used to reduce the possibility of type I errors. Type I errors can arise if the null hypothesis is rejected, even though the null hypothesis should be accepted. Bonferroni correction changes the significance limit value of 0.05 by dividing 0.05 by the number of statistical tests performed (6). This study performed 24 statistical tests, and it obtained the significance limit value of 0.002 using the Bonferroni correction.

Table 2. Correlation between CRA and ZBI scores with WHOQoL-BREF scores using Spearman's rho test

WHOQoL-BREF / Burden	Physical health domain		Psychological domain	
	ρ	p	ρ	p
CRA				
Pride domain	0.374	0.048	0.083	0.361
Lack of family support domain	-0.043	0.426	-0.197	0.195
Impact on finance domain	-0.321	0.078	-0.280	0.110
Impact on schedule domain	-0.296	0.096	-0.683	0.000
Impact on health domain	-0.260	0.127	-0.572	0.003
ZBI				
Total	-0.278	0.111	-0.383	0.043

WHOQoL-BREF / Burden	Social relation domain		Environment domain	
	ρ	p	ρ	p
CRA				
Pride domain	0.406	0.034	0.138	0.275
Lack of family support domain	-0.444	0.022	-0.414	0.031
Impact on finance domain	-0.284	0.106	-0.678	0.000
Impact on schedule domain	-0.467	0.016	-0.347	0.061
Impact on health domain	-0.391	0.040	-0.602	0.002
ZBI				
Total	-0.520	0.008	-0.396	0.038

The analysis of confounding factors used the Spearman's rho test and it showed that the caregiver age only had a significant correlation with the social relation domain on quality of life (p = 0.020, ρ = -0.453). The analysis of confounding factors and quality of life using the Kruskal Wallis test is presented in Table 3.

Table 3 Relationship of Confounding Factors and WHOQoL-BREF Score Using the Kruskal Wallis Test

WHOQoL-BREF / Con-founding factors	Physical health domain	Psychological health domain
	Effect size	*Effect size*
Previous caring experience	0.075	0.385
Length of caring in a day	0.179	0.147
Duration of caring in a year	0.096	0.325
Caregiver relationship with the elderly	0.133	0.262
ADL	0.166	0.323

IADL	0.300	-
MMSE	0.101	0.184
AD8	0.199	0.121
WHOQoL-BREF / Con-founding factors	Social relation domain	Environment domain
	Effect size	*Effect size*
Previous caring experience	0.320	0.546
Length of caring in a day	0.212	0.228
Duration of caring in a year	0.349	0.497
Caregiver relationship with the elderly	0.342	0.343
ADL	0.165	0.250
IADL	0.213	-
MMSE	0.228	0.295
AD8	0.068	0.151

DISCUSSION

This study measures and tests the correlation between burden and quality of life of caregivers for dependent elderly. In this study, caregiver burden correlates with caregiver quality of life only in certain domains. The caregiver's quality of life tends to be poor, and so does the burden.

The low burden can be because most caregivers (76.2%) are daughters, daughters-in-law, and nieces of the elderly cared for, while siblings and spouses have a high risk of experiencing a high burden compared to children and grandchildren (7). Spouses have a higher risk of experiencing a higher burden as they feel more responsible for caring than children (8).

In this study, it appears that the quality of life of caregivers who care for the dependent elderly is lower than the quality of life of families with older people in general (9). In this study, the quality of life of caregivers who care for dependent elderly is similar to the previous studies. Almost all domains of quality of life of caregivers have a mean of lower than 60 indicating poor quality of life (10). This difference can be due to the increasing dependence of the elderly over time associated with the lower quality of life of the caregiver (11). It is maybe because the elderly with a higher level of dependence will require longer treatment and assistance time (12). The longer the time spent caring for the elderly in a day is associated with, the lower caregiver quality of life (13,14).

The confounding factor of caregiver age has a significant negative correlation with social relationships on quality of life. It indicates that the older the caregiver, the lower the quality of life in social relationships. It can be due to the caregiver's time and energy spent caring for the elderly, which can lead to reduced network and social interaction of caregivers (15,16). Therefore, loneliness can have a negative impact on the quality of life of the elderly (17).

Previous nursing experience is a confounding factor with the highest effect on the quality of life, although it is not statistically significant. Previous caring experiences have a moderate effect on the environmental domain of quality of life. It is because caregivers who have no previous caring experience are not ready to care for the elderly as they have not sure of their knowledge and ability to provide care (18).

Meanwhile, confounding factors cannot be involved in the correlation analysis between burden and caregiver quality of life as it uses Spearman's rank correlation analysis.

In this study, the burden in the domain of impact on schedule significantly correlates with the psychological domain of quality of life. Besides, the burden on the implications for finance and the impact on health significantly correlates with the

environmental domain of quality of life. However, previous studies that the burden measured by ZBI had a significant correlation with all domains of quality of life using WHOQoL-BREF on caregivers who cared for patients with dementia (19). Dementia patients experience decreased cognitive function and psychological and behavioral problems that can affect the caregiver's burden and quality of life (7,19,20,21). Meanwhile, in this study, not all elderly experience cognitive impairment.

The impact of the schedule domain on CRA has a significant negative correlation with the psychological domain on quality of life (ρ = -0.683, p = 0.000), indicating that the higher burden in the schedule domain correlates with the increasingly lower quality of life on the psychological domain. It is consistent with previous studies in which the greater impact on daily schedules is associated with worsening caregiver depression (22). It is because the elderly with a higher level of dependence will require longer treatment and assistance time (12), in which caring relates to depression in the caregiver (23).

The impact on the finance domain on CRA has a significant negative correlation with the environmental domain on quality of life (ρ = -0.678, p = 0.000), indicating that the higher the burden on the impact on finance domain correlates with the lower quality of life in the environmental domain. The environmental domain in quality of life involves financial resources (24). It is consistent with previous studies in which economic burdens are associated with lower quality of life of caregivers (25). It is because the caregiver spends time and energy to provide care so that they lose or lack time to work, resulting in a loss of income (15,25). Therefore, financial support can help reduce the caregiver's financial burden (26).

The impact of the health domain on CRA has a significant negative correlation with the environmental domain on quality of life (ρ = -0.602, p = 0.002). It indicates that the higher burden in the impact on the health domain correlates with the lower quality of life in the environmental domain. It is consistent with previous studies where health problems significantly relate to the environmental domain of quality of life (27,28). It can be due to a lack of access to good quality health services (27). Lack of knowledge about accessing and utilizing health services can make caregivers neglect their health needs (29).

Further, there is also a possibility that the caregiver burden is not a major factor affecting the caregiver's quality of life. It is consistent with previous studies in which there is no significant correlation between burden and quality of life of caregivers (30). This lack of correlation can be influenced by adaptation to new routines through fast-forming habits, effective problem-solving skills, and beliefs that are not difficult to change (31).

This study investigates deeper into the dependence aspects of the elderly, while previous studies used the general elderly population. The cross-sectional design provides an overview of current conditions, but the number of samples is difficult to meet. Therefore, this study has a low power of 35% - 44%. It means that the study has a 35% - 44% chance of obtaining a P value of less than 0.05 in a statistical test (32).

In this study, the analytical approach has adjusted to the conditions of multiple comparisons using Bonferroni correction to reduce errors during interpretation. However, the role of confounding factors has not been optimally explored.

CONCLUSIONS

The caregiver burden of the dependent elderly tends to be low. The quality of life of the caregiver tends to be poor. This study reveals a strong and statistically significant correlation between the impact on the finance domain and the impact on the health domain on CRA with the environmental domain on quality of life and between the impact on schedule domain

on CRA and the psychological domain on WHOQoL-BREF. There is a possibility that the burden is not a dominant factor for the caregiver's quality of life.

Researchers can deal with sample sizes by conducting multicenter studies or expanding the geographic scope of the study. Researchers can analyze the effect of confounding factors on the correlation between caregiver burden and quality of life by carrying out linear regression.

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