

# Male Family Caregivers of Schizophrenic Patients have a Higher Risk of Hypertension and Lower Quality of Life : A Cross-Sectional Study

Cuidadores familiares masculinos de pacientes esquizofrénicos tiene un mayor riesgo de hipertensión y baja calidad de vida: un estudio transversal

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## SUMMARY

**Background:** A limited study has identified the essential information on the physical health of family caregivers with patients with schizophrenia in Indonesia. This study aimed to assess the correlations between blood pressure and quality of life in family caregivers of patients with schizophrenia.

**Methods:** A retrospective and cross-sectional study design used convenience sampling conducted in several mental hospitals in Indonesia. Measurement of a calibrating sphygmomanometer and WHO Quality of Life-BRIEF were used to collect the data from the family caregiver. Participants received questionnaires and signed informed consent.

**Results:** There was a significantly positive association between the domain of family caregiver's Physical Health, Blood pressure, and Quality of Life (Beta

$=1.27, p < 0.01$ ). The prevalence of high blood pressure was significantly higher among male caregivers than female caregivers (65.3 %). The negative predictor of Quality of Life was the relationship between patients (Beta =  $-3.11, p < 0.01$ ) and diastolic hypertension level (Beta =  $-3.08, p < 0.01$ ). The positive predictor was elevated blood pressure (Beta =  $2.08, p < 0.01$ ).

**Conclusion:** Male Indonesian family caregivers tended to respond to their physical health with more inappropriate strategies. Future research about physical health and education programs is needed to enhance male family caregivers to monitor their blood pressure while they are taking care of schizophrenic patients, which might lead to a better of their quality of life.

**Keywords:** Blood pressure, quality of life, family caregivers, schizophrenia.

## RESUMEN

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**Antecedentes:** Un estudio limitado ha identificado la información esencial sobre la salud física de los cuidadores familiares de pacientes con esquizofrenia

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en Indonesia. Este estudio tuvo como objetivo evaluar las correlaciones entre la presión arterial y la calidad de vida en cuidadores familiares de pacientes con esquizofrenia.

**Métodos:** Un diseño de estudio retrospectivo y transversal que utilizó un muestreo de conveniencia realizado en varios hospitales psiquiátricos en Indonesia. Se utilizó la medición mediante un esfigmomanómetro de calibración y la calidad de vida de la OMS-BRIEF para recopilar los datos del cuidador familiar. Los participantes recibieron cuestionarios y firmaron el consentimiento informado.

**Resultados:** Hubo asociación significativamente positiva entre el dominio Salud Física, Presión Arterial y Calidad de Vida del cuidador familiar ( $Beta = 1,27, p < 0,01$ ). La prevalencia de hipertensión arterial fue significativamente mayor entre los hombres cuidadores que entre las mujeres cuidadoras (65,3%). El predictor negativo de la Calidad de Vida fue la relación entre los pacientes ( $Beta = - 3,11, p < 0,01$ ) y el nivel de hipertensión diastólica ( $Beta = - 3,08, p < 0,01$ ). El predictor positivo fue la presión arterial elevada ( $Beta = 2,08, p < 0,01$ ).

**Conclusión:** Los cuidadores familiares varones indonesios tendían a responder a su salud física con estrategias más inapropiadas. Se deben realizar investigaciones futuras sobre programas de educación y salud física para mejorar a los cuidadores familiares masculinos para controlar su presión arterial mientras cuidan a pacientes esquizofrénicos, lo que podría conducir a una mejor calidad de vida.

**Palabras clave:** Presión arterial, calidad de vida, cuidadores familiares, esquizofrenia.

## INTRODUCTION

In Indonesia, approximately 87 % of family caregivers living with schizophrenia patients are identified. At the same time, the incidence of cases has increased by 1.1 million from 241 million individuals, the majority of whom accompany their family caregivers (1). An estimated 2.6 million people with schizophrenia and 87 % live with their family caregivers (1,2). A study of 368 schizophrenia patients and their caregivers indicates that 81.5 % of caregivers were parents, with an average age of 58.1 years. The study also shows that 85.3 % had some level of objective workload, with the total objective score of the Family Burden Interview Schedule (FBIS) being 22.69 (3). Moreover, while caring for and staying in the home, the patients and family caregiver remarkably show their attitude and interaction

toward each other, but the patients still show their symptoms (4,5). Thus, situations might lead to showing their attitudes and behaviors of several specific emotions expressed (6-8).

The family caregivers eventually show their attitude in caring for and completing their role as the person in charge of schizophrenic patients in their families (9). This situation influences their health outcomes, especially in their physical health; taking care system might be considerate even though the prognosis of schizophrenia cases might lead toward chronic illness that occurs for a long time, estimated to be more than ten years (10-13). Vice versa, the patient will stimulate the interaction process involving the onset of psychotic symptoms, which are positive and negative (14,15). Thus, it might influence health outcome factors such as elevating the situation (15), including the symptom of high-risk hypertension and uncertainty of the quality of life (10).

A limited study has identified the essential information on the physical health of family caregivers with patients with schizophrenia in Indonesia. This study aimed to evaluate the correlates of family caregivers' physical health and blood pressure and examine the role of the quality of life in family caregivers of patients with schizophrenia.

## METHODS

### Research Design and Study Participants

This study conducted a quantitative study with a cross-sectional design. The family caregivers who participated in the study were chosen using convenience sampling conducted in various mental hospitals in Indonesia. Participants were recruited from Central Java, Yogyakarta, and East Java Province in Indonesia. The inclusion criteria were Family caregivers with patients that were diagnosed with schizophrenia based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) at a local mental health center. Family caregivers have lived with patients for at least three months, being mother or father, wife or husband, and son or daughter, directly interacting with patients and understanding the Indonesian language. The exclusion criteria are family caregiver (FCG) with

patients with a head injury, having certain types of chronic physical illness, uncorrected sight, or hearing impairment, and having a mental illness.

The sample size was estimated by G-Power Software Version 3.1.9.2, used F-test and multiple linear regression,  $\alpha$  error probability = 0.05, effect size = 0.15, power level = 0.80, and ten predictors with a total of 150 Primary family caregivers of schizophrenic patients.

### Instrument and Data Collection

Measurement of a calibrating sphygmomanometer and WHO Quality of Life-BRIEF (WHO QoL-BRIEF) (16) were used to collect the data from the patient and family caregiver, respectively. In the current study, the WHO QoL-BRIEF was translated into Indonesian and tested valid with a Cronbach alpha of 0.86.

The researcher would track the schizophrenic patients accompanied by their families, visit the outpatient department of the mental hospital in their waiting consult with the doctors, and briefly introduce the study to the FCG. If the family is interested in participating in the study, the researcher will explain the purpose, procedure, data confidentiality, security, participant rights, and concerns. After whom is responsible for taking care of the patient's health to fill in the questionnaire, the researcher assesses the blood pressure measurement. All participants signed the informed consent document. All the questionnaires and assessments were administered at a single time point. The Mental Hospital Committee on Human Research Protection and Ethics Committee approved the study.

### Data Analysis

SPSS for Windows version 17.00 was used for data analysis. To summarize the data, descriptive statistics were utilized, and simple linear regression and multiple linear regression models were used for statistical analysis. The statistical significance of the findings was determined using a significance level of 0.05 (p-value 0.05).

### Ethical Consideration

The studies involving human participants were reviewed. And they were approved by the Standardized Ethics Committee Board of Mental Hospital No.070/4026/09/2018. The patients/participants provided written informed consent to participate in this study.

## RESULTS

Demographic data is shown in Table 1. The average age of family caregivers is  $46.5 \pm 13.1$  years, the duration of care is  $6.1 \pm 6.6$  years, and the duration of taking care of patients in their onset is  $36.2 \pm 60.5$  (Hours). Regarding gender, 52.7 % of FCGs were male, while 47.3 % were female. Regarding educational level, 62.0 % had primary education, while 38.0 % had advanced education. Most FCGs (58.7 %) were parents of schizophrenic patients, and 41.3 % were siblings. The marital status indicated that 36.7 % of FCGs were in a romantic relationship, while 63.3 % were single or divorced. Nearly all FCGs (99.3 %) were employed, except for one participant. The table also includes information about the systolic/diastolic blood pressure of the FCGs. Approximately 41.3 % had normal blood pressure, 13.3 % had elevated blood pressure, 30.7 % had hypertension level 1, and 14.7 % had hypertension level 2.

Participants' Description of high blood pressure prevalence was significantly higher among male caregivers than among female caregivers (male: 65.3 % vs. female 34.7 %) shown in Figure 1.

Table 2 shows the demographic characteristics of family caregivers associated with quality of life (QoL) using simple linear regression. Marital status and educational level were significantly associated with QoL, with higher scores observed in caregivers in a romantic relationship with advanced education. The number of hours spent taking care of patients during their onset of symptoms was negatively associated with QoL, indicating that longer hours of care were associated with lower QoL. The duration of

Table 1. Demographic Information of Family Caregivers

		Family Caregivers (n = 150)	
		Mean ± SD	Range
Age (Years)		46.5 ± 13.1	(18-73)
Duration of care (Years)		6.1 ± 6.6	(1-35)
FCG taking care of patients in their Onset (Hours)		36.2 ± 60.5	(2-336)
		n	%
Gender	Male	79	52.7
	Female	71	47.3
Educational level	Basic	93	62.0
	Advanced	57	38.0
Relationship FCG of Schizophrenic Patients	Parents	88	58.7
	Sibling	62	41.3
Marital status	Romantic Relationship	55	36.7
	Single/divorced	95	63.3
Employment	No	1	0.7
	Yes	149	99.3
Systolic/ Diastole Blood Pressure	Normal	62	41.3
	Elevated	20	13.3
Actual Values of Diastolic and Systolic Blood Pressured Measured in the FCG.	Hypertension Level 1	46	30.7
	Hypertension Level 2	22	14.7
	Normal Systolic (Less than 120 mmHg)	62	41.3
	Normal Diastolic (Less than 80 mmHg)	62	41.3
	Systolic Elevated (120-129 mmHg)	20	13.3
	Diastolic Elevated (less than 80 mmHg)	20	13.3
	Systolic Hypertension Level 1 (130-139 mmHg)	46	30.7
	Diastolic Hypertension Level 1 (80-89 mmHg)	46	30.7
	Systolic Hypertension Level 2 (140 -180 mmHg)	22	14.7
	Diastolic Hypertension level 2 (90-120 mmHg)	22	14.7

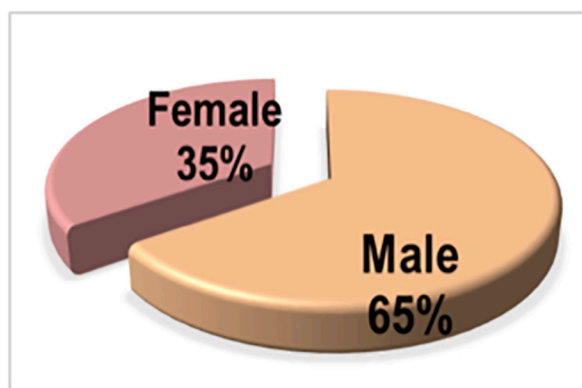


Figure 1. Prevalence of High Blood Pressure among Male and Female Caregivers.

MALE FAMILY CAREGIVERS OF SCHIZOPHRENIC PATIENTS

care and the caregiver’s relationship with the schizophrenic patients also showed significant associations with QoL.

Table 3 presents the relationship between systolic blood pressure (SBP), diastolic blood pressure (DBP), and QoL as measured by the QoL BRIEF scale. Among the different blood pressure

categories, elevated blood pressure (EBP) and hypertension level 1 were significantly associated with lower QoL scores than the normal blood pressure category. Overall, there was a trend towards higher blood pressure being associated with lower QoL, although the results were not statistically significant.

Table. 2 FGC Demographic characteristics associated with QoL (n= 150)

Characteristic	<i>B</i>	<i>t</i>	<i>p</i>
Family Caregiver's factor			
Marital status (single or divorced/romantic relationship)	6.56	2.07	0.04
Educational level (advanced/basic)	0.48	2.07	0.04
FCG taking care of patients in their onset (hours)	-0.06	-2.41	0.02
Duration of Care (years)	0.46	2.00	0.05
Relationship FCG with Schizophrenic Patients (Parents/Siblings)	-4.69	-3.51	0.01

FCG: Family Caregivers; EBP: Elevated Blood Pressure; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; QoL BRIEF: Quality of Life

Table. 3 The Relationship between the SBP, DPB, and QoL BRIEF (n= 150)

Characteristic	Systole Blood Pressure			Diastolic Blood Pressure		
	<i>B</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>t</i>	<i>p</i>
1. Normal	0.76	1.52	0.12	0.70	1.39	0.10
2. EBP	1.47	1.78	<0.01	1.46	1.74	<0.01
3. Hypertension Level 1	-1.27	-2.67	<0.01	-1.22	-2.56	<0.01
4. Hypertension Level 2	-0.07	-0.13	0.89	-0.05	-0.10	0.89
Total	0.30	1.69	0.09	0.28	1.65	0.09

FCG: Family Caregivers; EBP: Elevated Blood Pressure; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; QoL BRIEF: Quality of Life

Table 4 presents multiple linear regression analysis results to predict the QoL of family caregivers caring for schizophrenic patients. The finding suggests that the negative predictor of quality of life was the relationship with patients (Beta = - 3.11, p <0.01) and Diastolic Hypertension Level (Beta = - 3.08, p <0.01),

the positive predictor was the Elevated Blood Pressure (Beta = 2.08, p <0.01). Our study, it might fit one of the demographic characteristics of the FCG. Increasing the diastolic hypertension level might reduce the signs of the FCG Quality of Life; instead, systolic hypertension and other categories were not significantly predicted.

Table. 4 Multiple Linear Regression analysis for variable predicting QoL of Family Caregivers taking care of patients with schizophrenia (n =150)

	Model 1			Model 2			Model 3		
	<i>B</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>t</i>	<i>p</i>
(constant)	47.12	7.91	0.00	57.05	7.87	0.00	44.17	4.69	0.0001
Educational level (advanced/basic FCG taking care of patients in their onset (hours)	0.42	1.80	0.07	0.34	0.90	0.37	0.41	1.09	0.280
Marital status (single or divorced/romantic relationship)	-0.04	-1.66	0.10	-0.03	-1.33	0.18	-0.03	-1.03	0.310
Fcg's duration of care Relationship FCG with Schizophrenic Patients	6.01	1.90	0.06	5.62	1.79	0.08	7.05	2.82	0.200
EBP				0.16	0.43	0.67	0.03	0.09	0.930
SHL1				-4.11	-2.35	.035	-3.11	-2.32	0.023*
DHL1							2.08	2.11	0.029*
SHL2							-0.79	-0.92	0.360
DHL2							-3.08	3.11	0.043*
R <sup>2</sup>	0.08			0.11			0.64	-0.89	0.380
Adjusted R <sup>2</sup>	0.06			0.08			0.40	0.80	0.430

FCG: Family Caregivers; EBP: Elevated Blood Pressure; SHL: Systolic Hypertension Level; DHL: Diastolic Hypertension Level

## DISCUSSION

The average age of family caregivers was 46.5 years, and those involved in this study were male. This could be explained by the fact that the father or brother, as the male family caregivers, will provide a good family environment in Indonesian culture. FCG provides financial support and safety guard for patients and other family members. In addition, female family caregivers did all personal care toward patients (17-20). For the FCG marital status, we found that 63.3 % were single/divorced. The standardized average married in the healthy Indonesian population was 25 years old (21). Those reflected the reality of 2/3 schizophrenic patients in the current study who did not get married, whether they persistent being single or divorced is higher.

In Indonesian culture, people believe marriage is the principal for completing their life (22). The high single or divorced rates in patients with

schizophrenia revealed that they need to face social pressure from gossip and verbal bullied by the family or social ties (5,23-26), or the pattern reflected that patients still face uttered humiliation in society in Indonesian culture (27). People believed this phenomenon revealed it might cause the patient to feel less optimistic about recovery and relatively felt pessimistic (11,25,28-30), or the pattern reflected that the patient got less to respond and faced underprivileged outcomes.

In line with prior research findings, primary family caregivers who were parents (31), had a low education level (31-33) and had a decreased monthly household income, or there is no employment (31,34) experienced lower QoL. It might influence by the effect of the parent's tendency to be taking care of all the schizophrenic needs and demands in our study is performed by parents. Indonesian parents tend to show more control, and at the same time, they face stigmatization.



Our study found that family caregiver characteristics involved marital status, educational background, hours of caretaking, and their relationship with people with schizophrenia were strongly correlated with the FCG QoL. This phenomenon means their characteristics tend more toward what they feel might stimulate their well-being. FCG with schizophrenic patients is more prominent while caretaking (35-37). Thus, it might be influenced by the social and cultural background of all family members showing acceptance and feeling for what their relatives suffered.

Our study finding suggests a relationship between SBP, DPB, and QoL BRIEF. Thus, the study result shows that the classification of hypertension, especially the elevated blood pressure and hypertension level 1 on their SBP and DPB categories, are correlated to the Quality of Life. A previous study on caretaking depression and mental illnesses in the elderly shows it is more likely to be associated with anxiety (38,39). Hypertension and elevated blood pressure were also associated with anxiety through disruption of the autonomic nervous system, leading to higher variations in blood pressure and cardiovascular events (38,40,41). The most interesting phenomenon occurs in males; instead, other studies suggest the contrary findings on women that might correlate to the women's anxious and depressed feelings (42). In our opinion, the characteristic of Javanese family caregivers who are taking care of a person with schizophrenia shows controlling all aspects of caring trajectories. Thus, the feeling of fear, anxiety, uncertainty, and the unknown might stimulate the increase in blood pressure. The phenomenon reflects that the current negativity of emotional statuses might affect Javanese FCG blood levels while taking care of their family member with schizophrenia (7,43,44).

Our final finding suggests that the negative predictor of Quality of Life was the relationship between patients and Diastolic Hypertension levels. The positive predictor was Elevated Blood Pressure. In our study, it might fit one of the demographic characteristics of the FCG, and Increasing the Diastolic Hypertension level might reduce the significance of the FCG Quality of Life (45). Instead, systolic hypertension and other categories were not

significant predictors. Previous studies explained that the etiology of the EBP and DHL is a heterogeneous condition involving biological factors, genetics, depressive episodes, anxiety level, psychosocial aspect, cerebrovascular pathology, disorders of the endocrine system, presence of inflammatory processes, and nutritional status (46,47). Aligned with some previous studies (7,8,23,25,26,39,43,48), it is suggested the existence of a close relationship between hypertension disorders and mental health. The study shows that patients with cerebrovascular disease, especially in the anterior hemisphere, show mood lability. It seriously impacts the prognosis of hypertension in FCG and the overall effectiveness of the health system. Thus, the elevated blood pressure of FCG is related to their concern for their relatives and life, considering the stimulation stressor they face might influence their lower coping, self-efficacy, and self-concept. Other studies conducted by Maeng et al. (5) and Webb et al. (49) found it might relate to the longer-term motivation of caretaking all trajectories. However, this condition might stimulate the prediction of decreasing the FCG QoL.

## CONCLUSION

This finding is the first Indonesian study assessing the family caregiver's physical health of schizophrenic patients. Results suggest that male caregivers are at a higher risk of chronic illness conditions than female caregivers of patients with schizophrenia. Male Indonesian family caregivers tended to respond to their physical health with more inappropriate strategies. Future research about physical health and education programs is needed to enhance male family caregivers to monitor their blood pressure while they're taking care of schizophrenic patients, which might lead to improving their quality of life.

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### Authors' contributions

Chlara Yunita Prabawati, Diah Priyantini, Reliani, and Erfan Rofiqi analyzed and interpreted the data and drafted the manuscript. Chlara Yunita Prabawati contacted participants and collected data. Septian Galuh and Diah Priyantini designed the study and revised the manuscript. All authors have read, reviewed, and approved the final manuscript.

### Availability of data and materials

The authors will make the raw data supporting this article's conclusions available.

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### Conflict of Interest

The authors declare that the research was conducted without relation that could be made as a potential conflict of interest.

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