

## Perceived Stress and Quality of Life Among Caregivers of Individuals with Schizophrenia: A Cross-Sectional Correlational Analysis in Indonesia

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### KEYWORDS

Caregivers;  
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### ABSTRACT

**Introduction:** Family caregivers of individuals with schizophrenia frequently endure chronic stress, adversely affecting their quality of life (QoL). This study addresses a significant research gap by exploring the relationship between stress and QoL in a low-resource context in Indonesia.

**Methods:** A cross-sectional correlational study was conducted involving 104 family caregivers in Kebumen, Indonesia. Data were gathered using the Perceived Stress Scale (PSS-10) and WHOQOL-BREF, followed by analysis through chi-square tests and multiple logistic regression to identify QoL predictors.

**Results:** The majority of caregivers reported moderate stress (57.7%) and good QoL (67.3%). A notable inverse correlation was identified between stress levels and QoL ( $p = 0.001$ ). Logistic regression indicated that moderate-to-high stress levels (OR = 0.29; 95% CI: 0.11–0.72;  $p = 0.008$ ), caregiving duration exceeding five years (OR = 2.74; 95% CI: 1.24–6.09;  $p = 0.013$ ), and low income under Rp500,000 (OR = 0.31; 95% CI: 0.12–0.79;  $p = 0.011$ ) significantly predicted QoL.

**Conclusion:** Perceived stress is a crucial factor influencing the well-being of caregivers for individuals with schizophrenia. Enhancing community-based mental health initiatives, including stress assessments and socioeconomic support, could improve caregiver QoL in rural Indonesian settings.

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## **INTRODUCTION**

WHO states the worldwide prevalence of schizophrenia, which is estimated at approximately 24 million, to be one of the most severe psychiatric disorders and a major contributor to disability-adjusted life years (DALYs) that has significant bearing overall on the disease burden (1). Schizophrenia is characterized by pervasive psychotic symptoms, impaired cognition, and progressive functional decline in most people in the general population in which long-term pharmacological treatments and psychosocial support are routinely required (2).

Schizophrenia not only affects the clinical presentation of a patient but also creates significant social ramifications in addition to the psychiatric morbidity amongst patients and their family members. Given that the disease is longstanding and often relapses, those suffering from schizophrenia, when confronted with daily living, often rely on family members to be primary caregivers and to do it, or to observe and look after them. In several LMIC countries, families are the main providers when specialized mental health services are lacking in low- and middle-income countries (3). Consequently, caregiving responsibilities might result in emotional strain, financial strain, and decrease in social participation of family members. The positive correlation between caregiver burden and poor quality and mental health quality of life has been shown multiple times in previous studies (4).

Mental health services remain underdeveloped in Indonesia, and are unevenly distributed across geographic regions. Specialized psychiatric care is often found in urban hospitals while primary care facilities in rural areas lack resources to manage chronic mental illness (5,6). Therefore, family members often bear the burden of medication compliance, relapse monitoring and daily living challenges for schizophrenia patients (7). While this involvement of family is critical to treatment continuity, extended caregiving can also lead to significant psychological stress and impact caregivers' quality of life more generally (8,9)

Socioeconomic conditions complicate caregiving experiences further. Particularly for rural households, financial strain may exacerbate caregiver burden due to treatment costs, transportation costs, and lost opportunities for employment potentially depleting household resources (10). Moreover, stigma associated with mental illness and perceived discrimination in the community may exacerbate emotional distress and prevent families from obtaining professional help (11). Studies across multiple Asian countries demonstrate that the burden borne by caregivers is influenced by a multifaceted interaction of demographic characteristics, illness severity, social support and cultural expectations related to families (12,13).

Nonetheless, despite the growing focus on the impact of caregiver burden over the past decades regarding this topic, little empirical work is available which examines the association between perceived stress and quality of life in rural caregivers in Indonesia. Previous studies have mainly concentrated on detailing the levels of caregiver burden and not examining independent predictors of caregiver well-being via multivariable analysis. This gap indicates the need for additional research which can be evidence-based in the support of family caregivers within the context of community mental health systems. In the present article, we want to examine the association of the perceived stress and quality of life observed by the family caregivers to individuals with schizophrenia residing in a rural area of Indonesia. This research also seeks to evaluate the impact of different demographic characteristics on caregivers' quality of life, with the aim of providing evidence-based recommendations for improving community-based mental health services.

## **METHOD**

### **Research Type**

This research was quantitative in nature, and the descriptive correlational design was adopted to study the relationship between perceived stress and the quality of life of family caregivers of individuals diagnosed with schizophrenia. It aligns with a correlational framework, as it seeks to identify statistical relationships between variables without necessarily altering the study setting or implementing experimental treatments (14,15).

The evidence was cross-sectional, collecting data at one point in time to analyze caregivers' current situations. Data collection occurred from May to June 2024 and was conducted at Puskesmas Sempor 1, located in the service area of Kebumen Regency in Central Java, Indonesia. This region consists of rural and semi-urban communities, making it an important area to assess the caregiving experiences of families supporting individuals with schizophrenia in conventional healthcare settings.

### **Population and Sample/Informants**

The study was conducted at Puskesmas Sempor 1, Kebumen Regency of Central Java, Indonesia, between May 24 and June 14, 2024. Our focus group included all primary family caregivers of individuals clinically diagnosed with schizophrenia, as defined by the DSM-5 or ICD-10 standards and documented in medical records.

A total sampling method was used due to the small pool of eligible caregivers, thereby capturing and minimizing selection bias by maximizing population coverage. Caregivers were eligible for participation if they were aged 18 or older, had been the primary caregiver for at least six months, lived in the household of the care recipient, and provided written informed consent. Exclusion criteria included caregivers with documented cognitive impairment and those with serious communication issues. A pool of 104 caregivers met the inclusion criteria and participated in the study.

Although there was no initial sample size or power calculation before data collection, the performance of the multivariable logistic regression model was evaluated afterward based on the events-per-variable (EPV) principle. Outcome events (good QoL) for the binary outcome variable (good versus poor quality of life) numbered 70. The final regression model included three predictors: perceived stress level, monthly income, and caregiving duration. This resulted in an EPV value of 23.3 (70/3), which is higher than the commonly recommended minimum level of 10 events per factor. This ratio indicates that the model is stable and does not risk overfitting, which often increases the reliability and reproducibility of the estimated odds ratios.

### **Research Location**

The research was conducted at Puskesmas Sempor 1, Central Java, Indonesia.

### **Instrumentation or Tools**

Three validated instruments were employed for data collection:

Three validated instruments were used for data collection. The PSS-10 was used to determine perceived stress, and the instrument has also been used to measure perceived stress in recent validation studies (16). Total scores range from 0 to 40, with higher scores indicating higher levels of perceived stress. While previous studies have reported good reliability of the Indonesian version of the study, it was recalculated with the proposed internal consistency in this study. The present dataset yielded a high internal consistency of the PSS-10 (Cronbach's alpha = 0.87).

The WHOQOL-BREF, created by the World Health Organization, was used to assess quality of life in four dimensions: physical health, psychological stability, social relations, and environment (17). The instrument consists of 26 items measured using a five-point Likert scale, with higher scores representing improved quality of life. Previous research confirms that the Indonesian version has good validity and reliability. The internal consistency analysis in the current study showed that Cronbach's alpha was 0.85 (physical), 0.88 (psychological), 0.82 (social), and 0.90 (environment), displaying satisfactory reliability.

Demographic Questionnaire: A structured questionnaire developed by the research team collected information on caregivers' age, sex, education, job, monthly income, relationship to the patient, caregiving duration, and co-residence status.

### **Data Collection Procedures**

Data were collected through face-to-face, structured interviews with trained staff enumerators to include those with limited literacy (18,19). Each interview lasted between 30–45 minutes and was conducted in a private space at the participant's home or in the community health center.

### **Data Examination**

Data analysis was performed using SPSS Statistics. Demographic characteristics and instrument scores were summarized using descriptive statistics (frequencies, means, and standard deviation). Chi-square tests were also used to examine associations between perceived stress scores and the severity of quality of life (QoL) categories.

Multivariable logistic regression analyses were conducted to discover independent predictors of quality of life (QoL), reported as odds ratios (ORs) and 95% confidence intervals (CIs) for each variable. Appropriate model

diagnostics for logistic regression were employed. Variance inflation factor (VIF) analysis of predictors showed no multicollinearity among them. Model calibration was measured by the Hosmer-Lemeshow goodness-of-fit test, and model discrimination was assessed by the area under the receiver operating characteristic curve (AUC).

Categorical variables were dummy coded, and reference categories were defined a priori for each predictor in the regression model. The binary measure variable of the outcome was 1 = good quality of life and 0 = poor quality of life. Statistical significance was defined as a p-value  $\leq 0.05$ .

### Ethical Approval

Ethics approval was obtained from the Ethics Committee of Mahardika (132/KEP\_ITEKSMA/III/2024). Informed consent was obtained from all participants, and confidentiality was maintained throughout the study.

## RESULTS

**Table 1.** Demographic and Social Characteristics of Caregivers (N = 104)

Variable	Category	n	%
Age (years)	17–25	7	6.7
	26–35	18	17.3
	36–45	21	20.2
	46–55	31	29.8
	>55	27	26.0
Gender	Male	39	37.5
	Female	65	62.5
Relationship to Patient	Parent	49	47.1
	Sibling	21	20.2
	Spouse	7	6.7
	Child	19	18.3
	Other	8	7.7
Education Level	Primary education or below	56	53.8
	Middle school	26	25.0
	High school	16	15.4
	Tertiary education	6	5.8
Employment	Employed	52	50.0
	Unemployed	52	50.0
Monthly Income (IDR)	<500,000	76	73.1
	$\geq 500,000$	28	26.9
Caregiving Duration	<1 year	7	6.7
	1–5 years	37	35.6
	>5 years	60	57.7
Living with Patient	Yes	84	80.8
	No	20	19.2

A total 104 of caregivers took part in this study. The sociodemographic characteristics of these individuals are summarized in Table 1. Most participants were between 46–55 years old (29.8%), and nearly half (47.1%) were the parents of the patients. More than half of the caregivers (57.7%) had been providing care for over five years. Educational attainment was relatively low, with 53.8% having completed only elementary school or less. In regard to employment status, 50% of the participants were without jobs, and a large proportion (73.1%) reported a monthly income below Rp500,000.

**Table 2.** Descriptive Statistics of Perceived Stress and Quality of Life

Variable	Mean	SD	Min	Max
Perceived Stress (PSS-10)	20.3	5.6	8	35
Quality of Life (WHOQOL-BREF)	62.7	9.4	40	91

Table 2 presents the descriptive statistics for perceived the average score on the Perceived Stress Scale (PSS-10) for caregivers was 20.3, with a standard deviation of 5.6. with values ranging from 8 to 35, indicating a moderate degree of perceived stress among the participants. In the meantime, the average WHOQOL-BREF score was 62.7 (SD = 9.4), with scores ranging from 40 to 91, suggesting a moderate overall quality of life among participants. Continuous scale scores were used in the analysis to maintain measurement accuracy and to avoid the loss of information that may occur when variables are categorized arbitrarily.

**Table 3.** Association Between Stress Level and Quality of Life (Chi-Square Test)

Variable	Quality of Life		$\chi^2$	df	p-value
	Poor	Good			
Stress Level					
Low	2	11	13.74	2	0.001
Moderate	18	42			
High	14	17			

The chi-square test (Table 3) demonstrated a statistically significant association between stress level and quality of life ( $p = 0.001$ ). Caregivers experiencing higher perceived stress levels were often associated with a decreased quality of life. compared with those with lower stress levels.

**Table 4.** Logistic Regression Predicting Good Quality of Life

Predictor	B	SE	OR	95% CI (Lower–Upper)	p-value
Stress (Moderate/High)	-1.24	0.46	0.29	0.11–0.72	0.008
Income < Rp500,000	-1.17	0.46	0.31	0.12–0.79	0.011
Caregiving Duration >5 years	1.01	0.41	2.74	1.24–6.09	0.013
Constant	2.91	0.72	—	—	<0.001

OR represents the odds ratio; CI denotes the confidence interval. Summary: Nagelkerke  $R^2 = 0.413$ .

Further analysis using multiple logistic regression (Table 4) identified several predictors of good quality of life. Caregivers indicating moderate to high levels of stress were considerably less inclined to experience good quality of life (OR = 0.29; 95% CI: 0.11–0.72;  $p = 0.008$ ). Similarly, caregivers with monthly income below Rp500,000 had lower odds of reporting good quality of life (OR = 0.31; 95% CI: 0.12–0.79;  $p = 0.011$ ). In contrast, caregivers who had provided care for more than five years were more likely to report good quality of life (OR = 2.74; 95% CI: 1.24–6.09;  $p = 0.013$ ). The regression framework explained 41.3% of the variance in quality of life, as indicated by the Nagelkerke  $R^2$  value of 0.413.

## DISCUSSION

### Interpretation of Key Findings

The results of this study indicate a notable inverse correlation exists between the level of perceived stress and the quality of life experienced by family caregivers of individuals diagnosed with schizophrenia in rural Indonesia. Caregivers reporting moderate to severe levels of stress were less likely to report good quality of life. This information highlights that psychological stress and the well-being of caregivers play a significant role (20). This finding concurs entirely with The Transactional Model of Stress and Coping, elaborated by Lazarus and Folkman, which treats stress as a living condition where outside pressures interact with one’s own coping mechanisms.

The strain of care responsibilities that can be felt as greater than that which is possible in terms of the caregivers’ available coping resources is likely not to alleviate. And it may even reduce people’s functional abilities in turn. An additional interesting finding the length of caregiving and overall quality of life for caregivers who had

Given care for more than five years. was associated with higher odds of good quality of life in comparison to that for shorter caregiving experiences. This observation should be interpreted with caution and not construed as a direct protective effect. Given the cross-sectional study design, as well as some potential explanatory mechanisms, survivorship bias or the presence of unmeasured resilience factors can be examined. Moreover, socio-demographic or psychosocial characteristics like social support networks or coping styles could partially capture this association (21,22).

Economic conditions emerged as another significant factor affecting caregivers' quality of life. Throughout much of the rural spectrum, there are financial burdens suffered by caregivers owing to treatment costs and limited opportunities for employment. Studies conducted in Indonesia and other Asian contexts found an alarming association of economic hardship with higher mental distress for families caring for those living coping with profound mental illness (13,23). Taken together, these findings suggest that perceived stress, caregiving duration, and financial strain interact in shaping caregivers' quality of life rather than acting as isolated determinants.

### **Comparison with Previous Studies**

Both indicators of stress, according to our findings, tend to be interdependent for caregivers' quality of life, in order to act as more complex but not singular contributors to individual quality of life. Comparison to previous studies Findings also reinforce prior studies carried out in Asian communities showing that significant psychological stress is experienced by caregivers of persons with serious mental disorders (22,24). Furthermore, the negative association we observed between perceived stress with quality of life in this study is consistent with findings across the globe indicating that assessment of stress is central to identifying the well-being of caregivers (25,26).

The positive relationship between long periods of caregiving and quality of life stands in contrast to studies that associate long stays of care that are emotionally draining with burnout (27). This may be attributed to cultural and social contexts specific to Indonesian communities with strong kinship bonds, collectivist cultural values, and religious coping practices and likely these culturally embedded coping mechanisms could help caregivers adjust to long term caregiving responsibilities (28). These culturally embedded coping mechanisms may enable caregivers to gradually adapt to long-term caregiving responsibilities.

In addition, the interaction of economic distress, social stigma, and poor access to mental health services mirrors structural barriers (6,29,30). that had previously been found in the Indonesian mental health systems. The conditions emphasize the need for culturally relevant and community-led approaches to mental health for caregivers living in rural areas.

### **Limitations and Cautions**

However, many limitations were identified as despite the important findings of this work. First, the cross-sectional design of the research prevents one from inferring causally the association between perceived stress and QoL. Second, reliance on self-reported measures may induce reporting biases. Also, focusing on caregivers among rural settings could limit the impact of findings to urban communities. The present study did not assess several key psychosocial and clinical variables, including symptom severity, relapse frequency, caregiver depressive symptoms, and perceived social support. In the absence of these variables such associations could have been affected and the possibility of the omitted variable bias could be introduced.

### **Recommendations for Future**

Future research should therefore include these variables and focus on a longitudinal design to develop a better understanding of how dynamic processes are impacting caregiver well-being throughout the life course. Suggestions for the Future Prospective research could use longitudinal data to better understand how caregiver stress and quality of life evolves across stages of caregiving. Other studies evaluating intervention strategies, including psychoeducation, peer-support groups, and stress-management programs may also generate valuable evidence on enhancing caregiver well-being. Also, culturally adapted psychosocial interventions might be more pertinent for rural Indonesian communities. To understand these mechanisms, we would recommend further investigating potential moderating factors including coping strategies, family functioning, and illness severity in caregivers' stress.

Moving research along to urban areas, and doing cross-cultural comparisons would also present an expanded understanding of what structural and cultural factors shape caregiver well-being in general. Additionally, future research should examine whether caregiver-oriented services can be integrated into the Indonesian primary health care system or if they could be fragmented for many families with similar problems. Given the limited availability of specialized mental health services at the primary care level, structured stress screening and linking caregivers to financial or social support programs may reinforce caregiver resilience as a means of enhancing long-term adherence to treatments.

## **CONCLUSION**

The impact of perceived stress upon family caregivers of schizophrenia-affected families experiencing symptoms is found to be a substantial impact on quality of life among rural Indonesian family caregivers. Caregivers with high stress were worse off and prolonged caregiving duration was reported as not so much protective as incremental adaptation. Caregiver vulnerability is exacerbated by poverty, stigma and lack of access to mental health services. Strengthening community mental health services and integrating a caregiver-focused approach within mainstream health care are therefore important to improve caregiver well-being in resource-limited settings.

## **AUTHOR CONTRIBUTION STATEMENT**

Tri Sumarsih led the study design, data collection, analysis, and manuscript drafting. Norkiah binti Arsat, and Baidi bin Baddiri contributed to methodological refinement, validation, statistical review, and critical revisions of the manuscript. Meidiana Dwidiyanti supervised the overall research process and provided substantial guidance in revising and finalizing the manuscript. All authors approved the final version.

## **CONFLICT OF INTEREST**

The authors declare no conflicts of interest, financial or otherwise, related to the conduct, authorship, or publication of this study.

## **DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS**

The authors declare that generative AI tools were used only to assist with language editing, clarity improvement, and structural refinement of the manuscript. All scientific content, analysis, interpretations, and conclusions are the authors' own work. The authors take full responsibility for the accuracy and integrity of the manuscript.

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