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FACTORS INFLUENCING SELF-CARE BEHAVIORS AND QUALITY OF LIFE IN COPD PATIENTS

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ABSTRACT

Background: Despite treatment and self-care efforts, many COPD patients continue to experience a decline in quality of life because their lung function continues to deteriorate, making them more susceptible to various complications. **Methods:** Aims to identify factors that influence self-care behavior with stress-coping mechanisms and their impact on the quality of life of COPD patients at Jember Lung Hospital. Study used an explanatory survey design with a cross-sectional approach. A total of 110 COPD patients were selected through simple random sampling from the total number of COPD patient visits in 2023 at Jember Lung Hospital. Independent variables include personal and situational factors, intervening variables are stress coping and self-care behavior, dependent variable is quality of life. Data analysis was carried out using PLS technique. **Results:** Most COPD patients had moderate (54.5%) and high (45.5%) levels of stress coping. Majority of patients showed adequate self-care behavior (96.4%), while only a small proportion showed inadequate self-care behavior (3.6%). **Conclusion:** Analysis revealed that personal and situational factors had a significant impact on quality of life of COPD patients. Stress coping affected self-care behavior and quality of life, self-care behavior, in turn, influenced quality of life of patients, with all effects having p-values <0.05. Telf-care behavior model, based on stress-coping framework, can be used to design effective interventions that improve quality of life for COPD patients.

Keywords: COPD; Quality of life; Self-care; Stress coping

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BACKGROUND

Chronic Obstructive Pulmonary Disease (COPD) is a chronic condition characterized by progressive and incompletely reversible airflow obstruction caused by long-term exposure to harmful particles or gases, such as cigarette smoke and air pollution (Molfino & Zhang, 2006). This disease has become a serious global health problem due to its high prevalence and significant impact on patient's quality of life. COPD is the third leading cause of death in the world, with a death toll of around 3.23 million in 2019 (Global Initiative for Chronic Obstructive Lung Disease, 2023; Sigurgeirsdottir et al., 2019).

In Indonesia, the prevalence of COPD is also relatively high, reaching around 3.7% of the population, which means around 9.2 million people are diagnosed with COPD (Ministry of Health of the Republic of Indonesia, 2021). In East Java, this disease ranks fourth among the most common non-communicable diseases in outpatient units of hospitals, with a prevalence of 127 per 100,000 population (East Java Health Office, 2015).

The patient's psychological condition not only affects lung function but also impacts their ability to carry out daily activities, ultimately reducing their quality of life (Hurst et al., 2020; Wacker et al., 2016). The decreased quality of life of COPD patients is caused by various symptoms, including chronic cough, shortness of breath, and frequent acute exacerbations (Sutrisno & Susanto, 2023). These symptoms cause limitations in the patient's physical and social activities, thus affecting their psychological and emotional aspects (Hastuti & Rohmat, 2018). In addition, factors such as family support, living conditions, and access to health facilities also play a role in influencing the quality of life of COPD patients (Apriawan et al., 2014). Self-care in patients has a crucial factor, namely stress coping, which affects how COPD patients manage their condition. Stress coping refers to an individual's efforts to manage psychological stress that arises due to their health condition. There are two main strategies for coping with stress: Problem-Focused Coping (PFC), which concentrates on problem-solving, and Emotion-Focused Coping (EFC), which focuses on controlling emotional responses (Lazarus & Folkman, 1984). Self-efficacy also plays a significant role in influencing patients' self-care behaviors (Bandura, 2019). Patients with high self-efficacy tend to manage their condition more effectively and have a better quality of life (Yunita et al., 2021).

This study aims to determine the factors that influence self-care behavior based on the Stress Coping Framework, which has an impact on the quality of life of COPD patients at the Jember Lung Hospital. Understanding these factors is expected to provide insight into developing effective intervention programs to improve the quality of life of COPD patients.

METHODS

The study employed an explanatory survey design with a cross-sectional approach to identify factors influencing self-care behavior based on the Stress Coping Framework. This framework aims to determine the factors that affect self-care behavior through stress-coping mechanisms and impact the quality of life of COPD patients at the Jember Lung Hospital. This design allows simultaneous data collection at specific points in time, facilitating the identification of relationships between various clinical variables. The study was conducted at the Asthma and COPD Clinic, an outpatient unit of the Jember Lung Hospital. This location was chosen due to its status as the primary referral center for COPD patients in the Jember area, thereby ensuring access to a representative sample. The study was conducted from January to June 2024, which included the stages of respondent recruitment, data collection, and analysis.

Respondents were selected from the patient visit population during 2023. The inclusion criteria were patients diagnosed with COPD, aged 18 years or older, who had experienced COPD symptoms for at least one month prior to the study, were fully conscious, able to communicate verbally, literate, and willing to participate. Patients who lost consciousness during the study or experienced severe exacerbations were excluded from the study. From a sample of 541 COPD patients, 110 respondents were selected using a simple random sampling method with the MS Excel application to ensure that each individual in the population has an equal chance of being selected.

Data were collected through a structured questionnaire that assessed independent variables, including personal factors (age, gender, education level, ethnicity, income, occupation, smoking habits, and marital status), and situational factors (living status, family type, proximity to health facilities, and health

insurance ownership). Stress coping strategies were identified as intervening variables, while self-care behavior and quality of life were measured as dependent variables. The reliability of the Ways of Coping (WOC) questionnaire consisted of 50 questions. The measurement of this questionnaire used a Likert scale with the following responses: 1 = never, 2 = sometimes, 3 = often, and 4 = always. The maximum assessment score is 200, with the following interpretations: high score (136-200), medium score (71-135), and low score (50-70), confirmed by Cronbach's Alpha of 0.962 (Putra, 2020). The Self-Care Behavior Scale for COPD patients (COPDSC-C) comprises 32 questions with indicators That Include Breathing exercises, diet, physical activity, environmental control, smoking cessation, and stress management. The measurement of this questionnaire uses a Likert scale with the following options: 1 = never, 2 = very rarely, 3 = sometimes, 4 = often, and 5 = always.: The maximum assessment score is 160 with the interpretation: > 80 = adequate and < 80 = inadequate. tested for reliability with Cronbach's Alpha of 0.90 (Ekaputri, 2018). The WHOQOL-BREF questionnaire showed a Cronbach's Alpha of 0.77 (Salim et al., 2007).

Partial Least Squares (PLS) technique was used for data analysis. PLS was chosen because of its ability to handle complex relationships between multiple independent and dependent variables and its suitability for smaller sample sizes. This method allows for the assessment of the strength and direction of relationships between personal and situational factors, coping mechanisms, and patient outcomes within a coping framework.

The study has met ethical standards and received approval from the Faculty of Nursing, University of Jember, with ethical permit number 229/UN25.1.14/KEP/2024. By giving respondents the freedom to decide whether or not to participate without coercion and allowing them to withdraw at any time without facing sanctions, the researcher ensures that the respondent's identity is not disclosed, using only initials to maintain privacy, uphold self-esteem, and prioritize respect. Respondents receive adequate information regarding the research to be conducted so that they are able to understand the information and have the freedom to choose, give voluntary consent, and participate in this research or refuse to participate in the research.

RESULTS

Based on the research results and data obtained from distributing questionnaires, information was obtained regarding the characteristics of respondents at the Asthma and COPD Clinic of Jember Lung Hospital. Table 1 shows that most respondents (54.5%) had moderate stress coping, while 45.5% had high stress coping. In terms of self-care, 94.5% of respondents reported adequate self-care, while 5.5% reported inadequate self-care. Overall, quality of life was reported to be good (100%). Demographic analysis revealed that female respondents, specifically those with junior high school education, Madurese ethnicity, low income, non-smokers, married, living with a partner, having 1-2 family members, and residing within 5 km of health facilities. Individuals with health insurance tend to exhibit better stress-coping skills, engage in adequate self-care, and enjoy a higher quality of life. In the model analysis, an indicator is considered to meet convergent validity if it has an outer loading > 0.7 (Hair et al., 2021).

Based on Table 2, the composite reliability value exceeds 0.7, indicating that all variables pass the reliability test. The next test is convergent validity, as measured by the average variance Extracted (AVE) value. The recommended AVE value is above 0.5 (Hair et al., 2021). Based on the table, the AVE value of all variables is above 0.5.

Based on Table 3, it is evident that the direct influence, which shows a significant relationship between variables (p-value > 0.05), includes the following variables: stress coping on self-care, self-care on quality of life, personal factors on quality of life, and situational factors on quality of life. Other variables that do not show a significant influence (p-value < 0.05) include personal factors on stress coping, personal factors on self-care, situational factors on stress coping, and situational factors on self-care. Regarding the indirect effect, the stress-coping variable had a significant effect on quality of life (p-value < 0.05). In contrast, other variables did not show a significant effect (p-value < 0.05), including personal factors on quality of life and personal factors on self-care, as well as situational factors on quality of life and situational factors on self-care.

Variables that did not show a significant effect were then removed from the analysis, and the model was retested. This led to the final model of the study, which is illustrated in Figure 1.

Table 1. Characteristics respondents behavior self-care

No	Characteristics	Stress Coping; n(%)				Self Care; n(%)			Quality of Life; n(%)		
		Low	Moderate	High	ρ	Inadequate	Adequate	ρ	Bad	Good	ρ
1	**Age (years)**										
	18-40	0 (0)	7 (6.4)	6 (5.5)	0.704	1 (0.9)	12 (10.9)	0.904	0 (0)	13 (11.8)	1,000
	41-60	0 (0)	31 (28.2)	22 (20)		3 (2.7)	50 (45.5)		0 (0)	53 (48.2)	
	≥61	0 (0)	22 (20)	22 (20)		2 (1.8)	42 (38.2)		0 (0)	44 (40)	
2	**Type Sex**										
	Woman	0 (0)	37 (33.6)	37 (33.6)	0.221	4 (3.6)	70 (63.6)	1,000	0 (0)	74 (67.3)	1,000
	Man	0 (0)	23 (20.9)	13 (11.8)		2 (1.8)	34 (30.9)		0 (0)	36 (32.7)	
3	**Level Education**										
	Noschool	0 (0)	2 (1.8)	1 (0.9)	0.062	0 (0,)	3 (2.7)	0.786	0 (0)	3 (2.7)	1,000
	elementary school	0 (0)	7 (6.4)	5 (4.5)		1(0.9)	11 (10.0)		0 (0)	12 (10.9)	
	junior high school	0 (0)	37 (33.6)	20 (18.2)		3 (2.7)	54 (49.1)		0 (0)	57 (51.8)	
	senior high school	0 (0)	10 (9.1)	21 (19.1)		1 (0.9)	30 (27.3)		0 (0)	31 (28.2)	
	College	0 (0)	4 (3.6)	3 (2.7)		1 (0.9)	6 (5.5)		0 (0)	7 (6.4)	
4	**Ethnic group**										
	Java	0 (0)	19 (17.3)	17 (15.5)	0.711	1 (0.9)	35 (31.8)	0.600	0 (0)	36 (32.7)	1,000
	Madurese	0 (0)	40 (36.4)	31 (28.2)		5 (4.5)	66 (60.0)		0 (0)	71 (64.5)	
	Other	0 (0)	1 (0.9)	2 (1.8)		0 (0.0)	3 (2.7)		0 (0)	3 (2.7)	
5	**Income**										
	Low	0 (0)	54 (49.1)	40 (36.4)	0.177	6 (5.5)	88 (80.0)	0.590	0 (0)	94 (85.5)	1,000
	High	0 (0)	6 (5.5)	10 (9.1)		0 (0.0)	16 (14.5)		0 (0)	16 (14.5)	
6	**Work**										
	No Work	0 (0)	28 (25.5)	27 (24.5)	0.744	2 (1.8)	53 (48.2)	0.676	0 (0)	55 (50.0)	1,000
	Civil servant	0 (0)	5 (4.5)	2 (1.8)		0 (0)	7 (6.4)		0 (0)	7 (6.4)	
	Private employees	0 (0)	14 (12.7)	10 (9.1)		2 (1.8)	22 (20.0)		0 (0)	24 (21.8)	
	Self-employed	0 (0)	13 (11.8)	11 (10.0)		2 (1.8)	22 (20.0)		0 (0)	24 (21.8)	

Continue of table 1. characteristics respondents behavior self-care

No	Characteristics	Stress Coping; n(%)				Self Care; n(%)			Quality of Life; n(%)		
		Low	Moderate	High	ρ	Inadequate	Adequate	ρ	Bad	Good	ρ
7	**Smoking History**										
	Yes	0 (0)	8 (7.3)	14 (12.7)	0.092	0 (0.0)	22 (20.0)	0.598	0 (0)	22 (20.0)	1,000
	No	0 (0)	52 (47.5)	36 (32.2)		6 (5.5)	82 (74.5)		0 (0)	88 (80.0)	
8	**Marital History**										
	Not married yet	0 (0)	0 (0,)	1 (0.9)	0.526	0 (0.0)	1 (0.9)	0.958	0 (0)	1 (0.9)	1,000
	Widow/Widower	0 (0)	11 (10.0)	10 (9.1)		1 (0.9)	20 (18.2)		0 (0)	21 (19.1)	
	Marry	0 (0)	49 (44.5)	39 (35.5)		5 (4.5)	83 (75.5)		0 (0)	88 (80.0)	
9	**Residence**										
	Alone	0 (0)	19 (17.3)	28 (27.4)	0.027	2 (1.8)	45 (40.3)	0.193	0 (0)	47 (42.7)	1,000
	Family	0 (0)	9 (8.2)	3 (2.7)		2 (1.8)	10 (9.2)		0 (0)	12 (10.9)	
	Partner	0 (0)	32 (29.1)	19 (17.3)		2 (1.8)	49 (43.1)		0 (0)	51 (46.4)	
10	**Type Family**										
	single parent family	0 (0)	22 (20.0)	25 (25.5)	0.226	2 (1.8)	45 (40.9)	0.460	0 (0)	47(42,)	1,000
	nuclear family	0 (0)	12 (10.9)	5 (2.7)		2 (1.8)	15 (9.1)		0 (0)	17 (15.5)	
	Extended family	0 (0)	26 (23.6)	20 (17.3)		2 (1.8)	44 (44.5)		0 (0)	46 (41.8)	
11	**Distance Health Facilities**										
	<5 KM	0 (0)	53 (48.2)	38 (34.5)	0.128	4 (3.6)	87 (79.1)	0.276	0 (0)	91 (82.7)	1,000
	>5 KM	0 (0)	7 (6.4)	12 (10.9)		2 (1.8)	17 (15.5)		0 (0)	19 (17.3)	
12	**Health Insurance**										
	No	0 (0)	15 (13.6)	6 (5.5)	0.095	0 (0.0)	21 (19.1)	0.593	0 (0)	21 (19.1)	1,000
	Yes	0 (0)	45 (40.9)	44 (40.0)		6 (5.5)	83 (75.5)		0 (0)	89 (80.9)	

Table 2. Evaluation results of the self-care behavior model

No	Variable	Sub Variable	Loading Factor	VIF	AVE	Composite Reability	Cronbach's alpha
1	Personal (x1)	Education Level (x1.3)	1,000	1,000	1,000	1,000	1,000
2	Situational (x2)	Residence status (x2.1)	0.915	1,340	0.745	0.854	0.670
		Amount member family (x2.2)	0.809	1,340			
3	Coping Stress (i)	Confrontation (i1)	0.576	1,479	0.530	0.885	0.848
		Solution planned problems (i2)	0.774	2,194			
		Look for support social (i3)	0.656	1,539			
		Control self (i5)	0.831	2,541			
		Avoid self (i6)	0.844	2,725			
		Emphasize responsibility answer (i7)	0.549	1,301			
		Give evaluation positive (i8)	0.803	2,154			
4	Maintenance self (y)	Compliance Treatment (y1)	0.530	1,162	0.499	0.829	0.741
		Breathing exercises (y2)	0.749	1,498			
		Dieting (y3)	0.637	1,318			
		Activity physical (y4)	0.723	1,555			
		management (y7)	0.850	1,810			
5	Quality of Life (z)	Physical Health (z1)	0.910	2,931	0.774	0.932	0.903
		Psychological health (z2)	0.858	2,570			
		Connection social (z3)	0.845	2,158			
		Environment (z4)	0.904	3,227			

The assessment of model suitability in Table 4 shows varying results based on several indicators. The SRMR (Standardized Root Mean Square Residual) value of 0.099 indicates good suitability because it is below the threshold < 0.1. The Chi-Square value of 358,020 also indicates good suitability because it is above the critical value of> 125,450. The RMS Theta value of 0.175 indicates good suitability by being below the parameter < 1.02. Overall, the model was deemed to be a good fit.

DISCUSSION

This study aims to identify the factors that influence self-care behavior, as outlined in the Stress Coping Framework, to enhance the quality of life for COPD patients at the Jember Lung Hospital. By understanding how stress-coping strategies impact the self-care behavior and quality of life of patients, this study seeks to provide insight into developing more effective and targeted interventions. This approach enables the identification of key factors involved in stress management and self-care among COPD patients, ultimately improving their overall quality of life. The following discussion outlines the study's findings and compares them with previous studies to provide a comprehensive insight into effective stress-coping strategies for improving the quality of life of COPD patients.

Table 3. Behavioral model hypothesis test results grounded self care stress coping framework as an improvement effort patient QoL COPD at Jember Lung Hospital

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Value
Direct Effects					
Coping Stress to Maintenance self	0.714	0.706	0.063	11,328	0,000
Maintenance self to Quality of Life	0.175	0.165	0.073	2,610	0.009
Personal towards Coping Stress	0.040	0.098	0.134	0.296	0.767
Personal towards Quality of Life	0.591	0.579	0.087	7,513	0,000
Personal towards Maintenance self	0.132	0.138	0.084	1,561	0.119
Situational to Coping Stress	-0.124	-0.128	0.129	0.957	0.339
Situational to Quality of Life	-0.170	-0.119	0.081	3,044	0.002
Situational to Maintenance self	-0.087	-0.095	0.079	1,105	0.270
Indirect Effects					
Coping Stress to Quality of Life	0.125	0.118	0.055	2,266	0.024
Personal towards Quality of Life	0.028	0.032	0.026	1,231	0.219
Personal towards Maintenance self	0.028	0.070	0.095	0.296	0.768
Situational to Quality of Life	-0.031	-0.028	0.023	1,560	0.119
Situational to Maintenance self	-0.088	-0.088	0.088	1,000	0.318

Table 4. Model fit behavior grounded self care stress coping framework as an improvement effort patient QoL COPD at Jember Lung Hospital

Model Indicator	Results	Parameter	Information
SRMR	0 ,099	< 0.1	Fit
d_ULS	1 .8 52	< 0.5	Not Fit
d_G	0.165	< 0.382	Not Fit
Chi Square	358 , 020	>125,450	Fit
NFI	0.708	>0.9	Not Fit
RMS teta	0.175	<1.02	Fit

Personal and situational factors do not significantly affect stress-coping mechanisms. It was found that personal factors such as age, gender, education level, ethnicity, income, occupation, smoking habits, and marital status did not have a significant influence on the coping strategies adopted by respondents. These results suggest that personal characteristics are not the primary determinants of the response to stress in chronic health conditions, such as COPD, although several previous studies have indicated that personal characteristics can influence how a person copes with stress (Purnama et al., 2023). Situational factors, such as residence status or health insurance, are not the primary focus of coping strategies, as there is a greater emphasis on psychological adjustment to health conditions. These results are also in line with research showing that effective coping strategies in chronic patients are more driven by internal factors such as resilience, social support, and perceptions of self-control. The emphasis on internal factors suggests that how patients assess and interpret situations is more important in determining coping responses

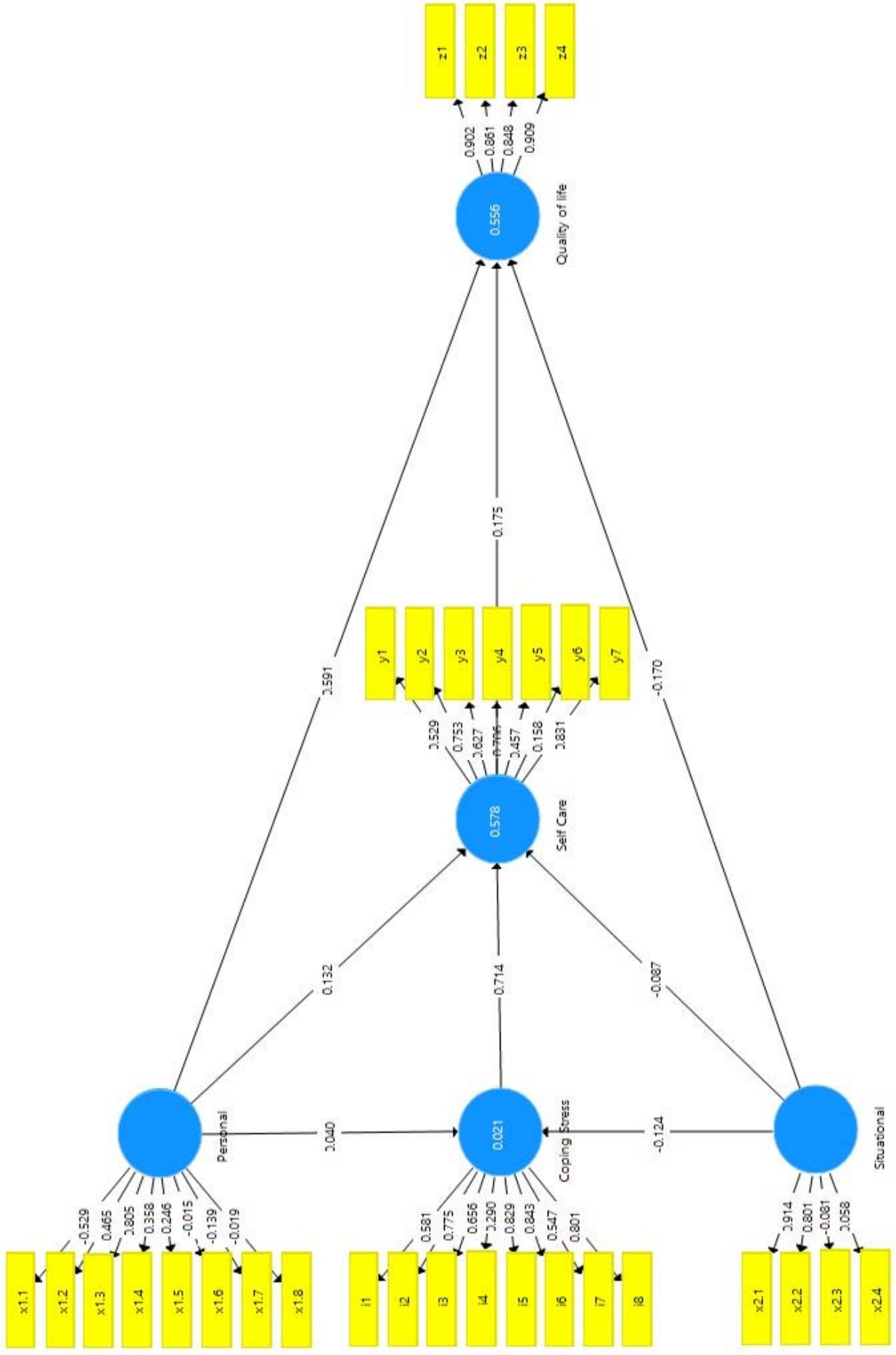

Figure 1. Behavioral model grounded self care stress coping framework as an improvement effort patient QoL COPD at Jember Lung Hospital

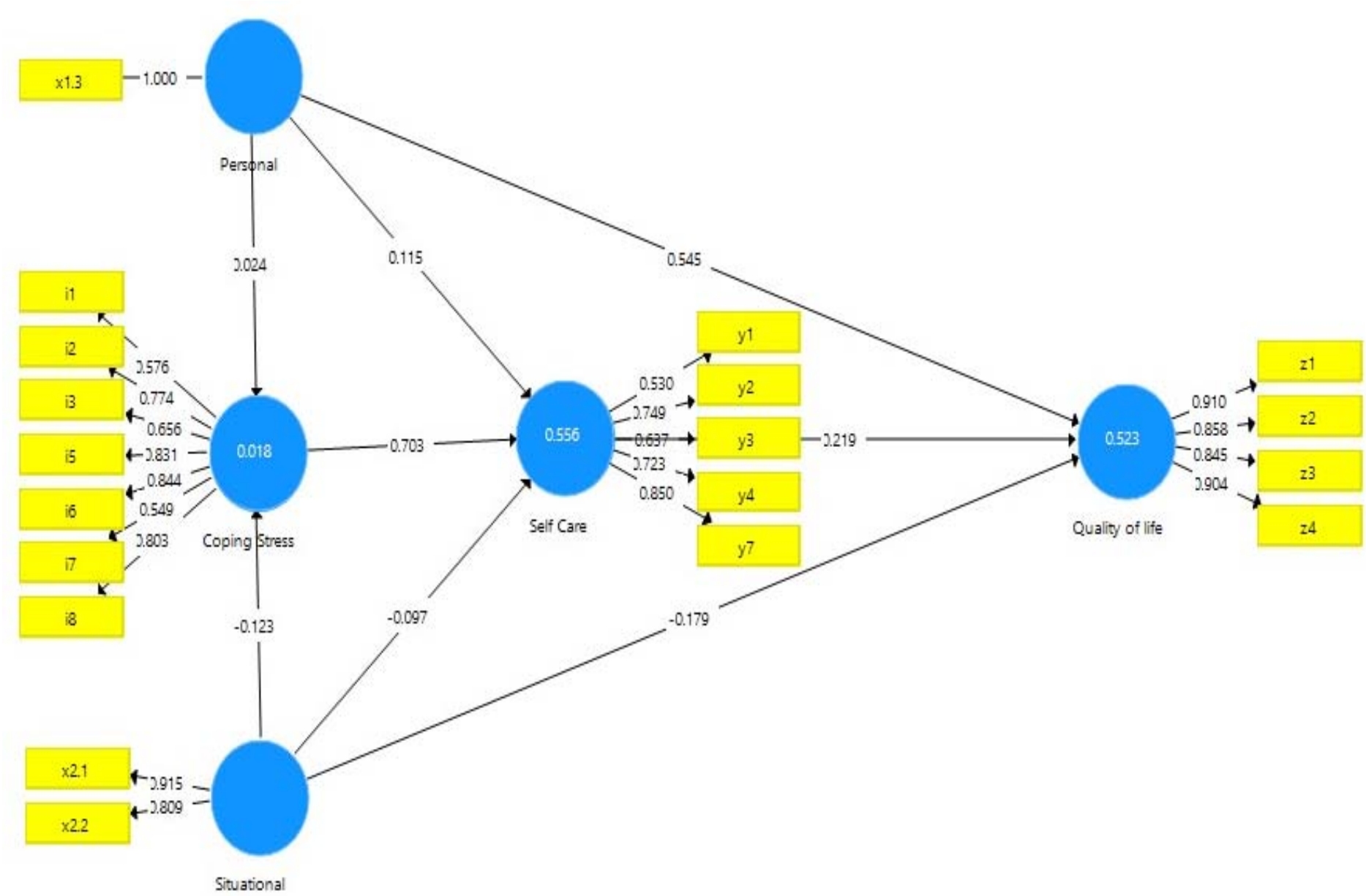

Figure 2. Final model of behavior self-care based on the stress coping framework as an effort to improve patient QoL COPD at Jember Lung Hospital

Information of figur 2:

x1.3: Education level	y1: Compliance Treatment	z1: Physical Health
x2.1: Residence status	y2: Breathing exercises	z2: Psychological health
x2.2: Amount member	y3: diet	z3: Connection social
i1 : Confrontation	y4: Activity physical	z4: Environment
i2 : Solution planned problems	y7: managemen	
i3 : Look for support social		
i5 : Control self		
i6 : Avoid self		
i7 : Emphasize responsibility answer		
i8 : Give evaluation positive		

(Shinan-Altman & Afuta-Goldstein, 2020). Therefore, more effective interventions should focus on strengthening personal coping strategies, providing tailored education, and increasing social support as part of comprehensive care for patients with COPD. These strategies not only help patients manage stress but can also improve overall quality of life.

Personal and situational factors do not significantly affect self-care behavior in COPD patients. It was found that personal factors, such as age, gender, education level, ethnicity, income, occupation, smoking habits, and marital status, do not significantly impact self-care behavior in patients with COPD. Self-care behavior is influenced by individual perceptions of disease severity and perceptions of the advantages and disadvantages of performing self-care behaviors. It triggers that influence the decision to engage in self-care (Upa & Winarti, 2024). Situational factors have a significant impact on a person's ability to manage their health condition; an individual's social and physical environment can influence their health behavior (Gamayanti, 2016). In COPD patients, they tend to choose self-care behaviors that are believed to provide direct benefits to their health, regardless of personal factors, strengthening family and partner support is done by maintaining a healthy lifestyle such as breathing exercises/deep breathing, walking sports activities, adequate rest, eating regularly to ensure the sustainability of optimal self-care in patients.

Personal education factors have a significant influence on the quality of life of COPD patients. This is influenced by respondents with secondary education (28.2%) having a good quality of life. Better education provides a more profound knowledge and understanding of the importance of healthcare and disease management, enabling patients to manage their COPD conditions more effectively (Ferliani et al., 2017). Respondents with a high level of education were more likely to follow medical recommendations, maintain a healthy lifestyle, and access the necessary health resources to improve their quality of life (Whittemore & Dixon, 2008). Based on the description above, the level of education affects self-care behavior, which can directly improve their quality of life. COPD patients with elementary and junior high school education require reinforcement of information on self-care behaviors related to symptom management, prevention, control, and management of the physical effects of the disease, including respiratory problems, to improve their quality of life.

Situational factors related to the residential status of COPD patients have an impact on their quality of life. This is supported by the majority of respondents who live with partners (46.4%), who report having a good quality of life because they receive support and attention from their partners. Support and attention from a partner can provide a sense of security and emotional comfort, helping COPD patients face daily health challenges (Kinaura, 2024). Partners who are often involved in routine supervision, medication management, and promoting healthy lifestyles improve the patient's quality of life (Aprilia, 2023). Based on the description above, partners play a crucial role in supporting and strengthening self-care skills for COPD patients through smoking cessation education programs and by avoiding exposure to pollutants such as smoke and dust. For COPD patients who live without a partner (alone or with family), they need to get more support from nurses or people closest to them so that their quality of life is better.

CONCLUSION

Personal factors of education and situational factors of residence status have a significant effect on quality of life. COPD patients with low education need information reinforcement in terms of self-care

behavior about symptom management, preventing, controlling, and managing the physical effects of the disease, including respiratory problems so that their quality of life improves. To improve self-care for COPD patients, family support is needed through educational programs to stop smoking and avoid exposure to pollutants such as smoke and dust that can improve their skills in providing care and support. COPD patients can improve their quality of life by maintaining a healthy lifestyle, including not smoking, practicing breathing exercises or deep breathing 3-4 times a day, walking for 15-20 minutes 3-4 times a week, and managing stress through positive thinking and recognizing triggers.

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