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The Relationship Between Self-Efficacy and Self-Care Activity on the Quality of Life in Chronic Obstructive Pulmonary Disease Patients

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ABSTRACT

Currently, chronic obstructive pulmonary disease (COPD) is one of the main causes of increasing morbidity and mortality cases throughout the world. COPD can have detrimental effects on patients' quality of life. Therefore, efforts are needed to enhance optimal therapy management, one of which is self-management such as improving self-efficacy and self-care activities. This research aimed to determine the relationship between self efficacy and self-care activity on the quality of life in COPD patients. Here, we present a cross-sectional method that involved 150 participants who had been diagnosed with COPD. It used the CSES (COPD Self Efficacy Scale), SGRQ (St.George's Respiratory Questionnaire), and WHOQOL-BREF (World Health Organization Quality Of Life-Bref) questionnaires. The statistics were analyzed by using the Chi-Square test. The results showed that the majority 82% of COPD patients at the Labuang Baji Regional Public Hospital of Makassar had low self-efficacy and also low self-care activity at a rate of 80.7%. Conclusion: The lower the level of self-efficacy in COPD patients, the lower their level of self-care activity, which results in a poor quality of life. Therefore, it can be stated that there is a significant relationship between self-efficacy and self-care activity on the quality of life of COPD patients, with a significance value of $p<0.05$.

Keywords: COPD, Self Efficacy, Self Care Activity, Quality of Life

INTRODUCTION

Chronic diseases are diseases that require special attention from various parties and are prolonged and difficult to cure completely. One of the chronic diseases currently receiving increasing global attention because of its serious impact on reducing the quality of life of sufferers is Chronic Obstructive Pulmonary Disease (COPD)(Bouza et al., 2020). COPD can be characterized by persistent and generally progressive symptoms of respiratory problems and airflow limitations caused by an excessive chronic inflammatory response in the airways and lung parenchyma due to exposure to harmful gases or particles. The limited airflow experienced by COPD patients is caused by obstructive bronchiolitis and emphysema in the lungs (Kemenkes RI, 2019).

The prevalence rate of COPD is rapidly increas worldwide and especially in Indonesia. COPD ranks in third place worldwide (Chen et al., 2023) while it ranks in fourth place in Indonesia as a disease with a high probability of death (Dewi et al., 2023). One of the provinces in Indonesia that has a high prevalence rate of COPD is South Sulawesi at 6.7% and it is in fourth place after East Nusa Tenggara, Central Sulawesi and West Sulawesi (Na'ima & Prasetya, 2020).

One of the areas in South Sulawesi that has been significantly impacted by COPD is Makassar, where it can be proven that COPD is ranked in sixth

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place as the largest outpatient disease in Makassar (R.Ahmad et al., 2020). Labuang Baji Regional Hospital is one of the hospitals in Makassar that has a high rate incidence of COPD. COPD cases at Labuang Baji Regional Hospital significantly increase from year to year due to the increasing number of COPD risk factors caused by smoking. The number of COPD cases globally has reached a significant figure, where there are 391 million cases (Adeloye et al., 2022).

COPD patients can experience a decrease in their quality of life, such as a decrease in physical activity, emotional health, socio-economic status, and cognitive function (Abudiab & Fuller-Thomson, 2022). The decrease in quality of life in COPD patients is caused by an increase in the symptoms they experience. COPD patients will tend to limit their activities as the disease progresses, thereby indirectly causing them to isolate themselves from the social environment and ultimately reducing their health-related quality of life (HRQoL) (Jerpseth et al., 2021).

Along with the increasing prevalence of COPD, HRQoL decreases and its nature as a chronic disease requires more optimal therapeutic management. Thus, it is necessary to update the treatment process, one aspect of which is self-management such as increasing self-efficacy and self-care activity to improve the HRQoL of COPD patients. Based on this background, the researchers were interested in conducting research on the relationship between self-efficacy and self-care activity on the HRQoL in COPD patients.

MATERIALS AND METHODS

Research Design

This research employed a cross-sectional research design. The data collection was carried out from July to October 2023 on patients who had been diagnosed with COPD. The research was approved by the Research Ethics Committee of the Faculty of Public Health, Hasanuddin University, Makassar, with ethical approval number 4246/UN4.14.1/ TP.01.02/2023 dated 27 June 2023.

Participants

Participants in this study were patients from the Lung Polyclinic of Labuang Baji Regional Public Hospital of Makassar who met the inclusion and exclusion criteria.

Inclusion Criteria

The inclusion criteria for this study were individuals that were diagnosed with COPD who were ≥ 18 years, had confirmed spirometry results, and were willing to complete the instrument.

Exclusion Criteria

The exclusion criteria were patients with chronic obstructive pulmonary disease (COPD) who had other pulmonary comorbidities such as pulmonary tuberculosis, interstitial lung disease (ILD), asthma, and were unwilling to complete the instrument.

Sample Size

The minimum sample size in this research was 40 participants, which was calculated based on the Slovin formula below:

$$n = \frac{\mathrm{N}}{1 + \mathrm{N}\,(\mathrm{e})^2}$$

n = Sample size; N = Population size; e =The margin of error (5%)

The data was obtained based on the maximum number of visits per month at the Lung Polyclinic, Labuang Baji Regional Public Hospital of Makassar.

Research Instrument

COPD Self-Efficacy Scale (CSES)

The CSES instrument consisted of 30 items. The interpretation of this instrument could be determined based on the median value. If the score was ≥ 55, it showed high self-efficacy, and vice versa, if the score was <55, it showed low self-efficacy (Putri et al., 2021). The instrument was divided into 5 domains (Negative influence, emotional condition, physical activity, weather/environment, and behavioral risks (Yi et al., 2021).

This instrument used a 4-point Likert scale with a 4-point assessment score as well. The Likert scale was a scale with responses of not sure with a score of 1, somewhat confident with a score of 2, confident with a score of 3, and very confident with a score of 4 (Suprayitno et al., 2017).The CSES instrument has undergone validity testing with a value of 0.742-0.905 and reliability testing with a Cronbach's alpha value of 0.984, which was conducted in Bahasa Indonesia (Ramadhani, 2018).

Saint George's Respiratory Questionnaire (SGRQ)

The SGRQ instrument consisted of 50 items, which were divided into 3 domains (Symptoms, activities, and impacts)*(*Loubert *et al*., 2020). The SGRQ score ranged from 0 to 100. The higher the score on the SGRQ instrument, the higher the level of severity of symptoms felt by the participant, and

vice versa, the lower the score obtained, the lower the level of symptoms felt (Ellis et al., 2023).

The standard for assessing the SGRQ instrument was that if the total score was >50, it indicated a high level of symptom severity, whereas if the total score was ≤50, it indicated a low level of symptom severity. The SGRQ instrument has undergone validity testing with a value of 0.361 and reliability testing with a Cronbach's alpha value of 0.952, which was conducted in Bahasa Indonesia (Cahyandari et al., 2015). The participants' total scores were calculated using standard Microsoft Excel "Calculator SGRQ" software (Jones, 2014).

World Health Organization's Quality of Life–Bref (WHOQOL-Bref)

The WHOQOL-Bref instrument consisted of 26 items, which were divided into 4 domains (physical health, psychological health, social relationships, and environment). This instrument used a 5-point Likert scale (Vu et al., 2022). The raw score for each domain on the WHOQOL-Bref instrument transformed into a scale of 0-100. A higher score indicated a better HRQoL (Lionthina et al, 2020). The transformed score data that had been collected was then interpreted into two categories, namely poor HRQoL for a score ≤ 50, and good HRQoL for a score >50. The WHOQOL-Bref instrument has undergone validity testing with values ranging from 0.390 to 0.798, as well as reliability testing with a Cronbach's alpha value of 0.941, which was conducted in Bahasa Indonesia (Fridolin et al, 2022).

Research Flow

The data in this research was collected directly from participants after obtaining research permission from the Research Ethics Committee of the Faculty of Public Health, Hasanuddin University, the Department of Investment and One Stop Integrated Services (DPMPTSP) of South Sulawesi Province, and Labuang Baji Regional Public Hospital of Makassar. The recruited participants were given information about the research and those who were willing would sign an informed consent. Then participants were asked to fill in sociodemographic data and the instruments (CSES, SGRQ, and WHOQOL-Bref).

Data analysis

All incoming data was processed through SPSS (Statistical Package for Social Sciences) software by applying the chi-square test. This research used two analytical approaches, namely univariate analysis and bivariate analysis. Univariate analysis was used to determine the description of participants' self-efficacy, self-care activity, and HRQoL. Meanwhile, bivariate analysis was used to determine the correlation/relationship between self-efficacy and self-care activity on the HRQoL in COPD patients. The descriptive statistics with the corresponding tests were performed using IBM SPSS Statistics for Windows, version 25 (SPSS Inc., Cambridge, MA). The ordinal regression model was built using R (R Foundation for Statistical Computing, software version 3.4.0, Vienna, Austria). The p-value <0.05 indicated that the data was significant.

RESULTS AND DISCUSSION

The results of this study indicate that there is a relationship between self-efficacy and self-care activity on participants' HRQoL, which can be proven from the research results which show that the majority of participants have low self-efficacy, totaling 123 (82%) participants, and low self-care activity, totaling 121 (80.7%) participants. Likewise based on data gathered from the WHOQOL-Bref instrument, the majority of participants (140 or 93.3%) had a poor HRQoL in the physical health domain, the psychological health domain (136 or 90.7%), the social relations domain (135 or 90.0%), and the environmental domain (97 or 64.7%).

The research involved 150 participants from the Lung Polyclinic at the Labuang Baji Regional General Hospital of Makassar. The sociodemographic characteristics of the participants showed that the majority of participants were male with a total of 112 (74.7%) participants, 41 (27,3%) participants were in the age range of 61-70 years, 144 (96.0%) participants were married, 62 (41.3%) participants had only elementary school education, 81 (54.0%) participants did not work, 119 (79.3%) participants still smoked, and 90 (60.0%) participants had suffered from COPD for ≥ 2 years (Table I).

This is in accordance with previous research, which states that men have a higher incidence of COPD than women due to the high smoking habits of men (Perez et al., 2020) (Table I). The highest percentage of participants were aged between 61 to 70 years. This is in accordance with previous research, which states that age plays an important role in increasing the prevalence of COPD. As age increases, the prevalence of COPD increases significantly after age 60 years (Kotaki et al., 2019).

Table I. Participants' sociodemographic characteristics

Characteristics of Participants		**N**	**%**
Sex	Male	112	74.7
	Female	38	25.3
Age	18-30	6	4.0
	31-40	22	14.7
	41-50	26	17.3
	51-60	26	17.3
	61-70	41	27.3
	> 70	29	19.3
Marital status	Married	144	96.0
	Not married	6	4.0
Highest Education Level	No school	29	19.3
	Elementary School	62	41.3
	Junior High School	18	12.0
	Senior High School	27	18.0
	Bachelor	14	9.3
Occupation	Not working	81	54.0
	Laborer	6	4.0
	Farmer	21	14.0
	Self-employed	25	16.7
	Civil servant	3	2.0
	Retired	14	9.3
Smoking History	Yes	119	79.3
	No	31	20.7
Length of time suffering from COPD	< 2 years	60	40.0
	≥ 2 years	90	60.0

Note: The majority of the characteristics of participants' were male, 61-70 years old, married, highest education level elementary school, not working, still smoking and had suffered from COPD ≥ 2 years.

Furthermore, most of the participants were married. This is in accordance with previous research, which states that the health condition of partners is influenced by several factors such as always living together and bad habits their partners have, such as smoking. The exposure to inhaled cigarette smoke can increase the risk of developing COPD (Bircan et al., 2021).

Based on education level, the results of this study show that the highest percentage of participants had an elementary school education background. This is in accordance with previous research, which states that at lower levels of education, greater disease severity occurs (Kim *et al*., 2020). In terms of work, the majority of participants did not work , this is due to a decline in health caused by COPD. This is in accordance with previous research, which states that COPD can reduce workers' HRQoL, increase limitations in work, and reduce work productivity, causing them to stop working (Susanto, 2021). In terms of smoking history, the majority of participants were patients who were still smoking. This is in accordance with previous research which states that smoking is one of the main factors that trigger COPD (Abudiab &Fuller-Thomson, 2022). In terms of the length of time they have suffered from COPD, the majority of patients were patients who had suffered from COPD for ≥ 2 years. This is in accordance with previous research, which states that the longer one suffers from COPD, the more the symptoms and the severity of the disease increases (Ritianingsih, 2017).

The Relationship between Self-Efficacy and Self-Care Activity on the Quality of Life in COPD Patients

Self-efficacy and self-care activity have a significant relationship to participants' HRQoL, which is divided into 4 domains, namely physical health, psychological health, social relationships, and the environment. Based on the research

results, in the self-efficacy aspect, the majority of participants had low self-efficacy. This is in accordance with previous research, which states that participants can experience negative social, psychological, and physical changes such as sleep problems, reduced exercise capacity, fatigue, loss of appetite, and fear of death due to COPD (Ahmed et al., 2023).

The self-care activity aspect also shows that the majority of participants had low self-care activity. This is in accordance with previous research, which stated that low self-care activity in participants can occur due to symptoms such as shortness of breath and severe fatigue, which weakened their ability to carry out daily activities. Limited mobility and fatigue often prevent patients from carrying out independent activities such as dressing, cleaning themselves, or shopping, which can affect their HRQoL and require help from other people (Yulanda & Mita, 2019).

Domain 1 (Physical Health)

Based on the research results for the physical health domain, it shows that the majority of participants had low self-efficacy and self-care activity, which can result in worse HRQoL (Table II). This was the case with 119 (79.3%) participants with a significance value of 0.003 or equal to a *p*-value <0.05 for the self-efficacy aspect and 117 (78.0%) participants with a significance value of 0.004 or equal to a *p*-value <0.05 for the self-care activity aspect. Low self-efficacy in participants in the physical health domain can have a negative impact on HRQoL. With a low level of self-efficacy, patients will be less motivated to take the actions needed to manage COPD, such as stopping smoking, undergoing breathing exercises, or carrying out medical treatment plans recommended by a doctor. As a result, they will experience increased COPD symptoms and decreased overall physical health (Wang et al., 2018).

Likewise, in the aspect of self-care activity, the majority of participants had low self-care activity and had a worse HRQoL. Low self-care activity in participants in the physical health domain can significantly disrupt their HRQoL. Patients who do not undergo sufficient self-care activities, such as breathing exercises, maintaining a healthy body weight, and following the prescribed treatment plan will experience an increase in COPD symptoms and a decline in overall physical health (Bugajski et al., 2019).

Domain 2 (Psychological Health)

Based on the research results for the psychological health domain, it shows that the majority of participants had low self-efficacy and self-care activity, which can result in worse HRQoL (Table III). This was the case with 117 (78.0%) participants with a significance value of 0.001 or equal to a *p*-value <0.05 for the self-efficacy aspect and 115 (76.7%) participants with a significance value of 0.001 or equal to a *p*-value <0.05 for the self-care activity aspect.

Low self-efficacy in participants in the psychological health domain can have a negative impact on their HRQoL in terms of psychological health. Patients with low levels of self-efficacy tend to feel less able to cope with stress, anxiety, and feelings of isolation that are often associated with COPD (Matarese et al., 2020), while the presence of low self-care activity in participants in the psychological health domain can have a negative impact on their HRQoL. Patients who do not undertake self-care activities that include stress management, social support, or understanding their mental health will be more susceptible to depression, anxiety, and feelings of isolation (Lutter et al., 2020).

Domain 3 (Social Relationships)

Based on the research results for the social relations domain, it shows that the majority of participants have low self-efficacy and self-care activity, which can result in poor HRQoL (Table IV). This was the case with 117 (78.0%) participants with a significance value of 0.000 or equal to a *p*-value <0.05 for the self-efficacy aspect and 115 (76.7%) participants with a significance value of 0.000 or equal to a *p*-value <0.05 for the self-care activity aspect.

Low self-efficacy in the social relations domain can have a negative impact on participants' HRQoL. Patients with low levels of self-efficacy feel less confident in interacting socially and building relationships with other people and feel hindered by COPD symptoms such as shortness of breath, which can limit participation in social activities. This can lead to social isolation and loneliness (Yi *et al*, 2021). Meanwhile, in the aspect of self-care activity, the majority of participants had low self-care activity and had a poor HRQoL.

Table II. Relationship between self-efficacy and self-care activity on participants' quality of life (Domain 1)

Variable		Quality of Life Domain 1 (Physical Health)				p-value
		Better		Worse		
		F	%	F	%	
Self Efficacy	High	6	4.0	21	14.0	0.003
	Low	4	2.7	119	79.3	
Self Care Activity	High	6	4.0	23	15.3	0.004
	Low	4	2.7	117	78.0	

There is a significant relationship between self-efficacy and self-care activity on the quality of life of participants, especially in domain 1 (Physical Health)

Table III. Relationship between self-efficacy and self-care activity on participants' quality of life (Domain 2)

Variable		Quality of Life Domain 2 (Psychological Health)				p-value
		Better		Worse		
		F	%	F	%	
Self Efficacy	High	8	5.3	19	12.7	0.001
	Low	6	4.0	117	78.0	
Self Care Activity	High	8	5.3	21	14.0	0.001
	Low	6	4.0	115	76.7	

There is a significant relationship between self-efficacy and self-care activity on the quality of life of participants, especially in domain 2 (Psychological health)

Table IV. Relationship between self-efficacy and self-care activity on participants' quality of life (Domain 3)

Variable		Quality of Life Domain 3 (Social Relations)				p-value
		Better		Worse		
		F	%	F	%	
Self Efficacy	High	9	6.0	18	12.0	0.000
	Low	6	4.0	117	78.0	
Self Care Activity	High	9	6.0	20	9.3	0.000
	Low	6	4.0	115	76.7	

There is a significant relationship between self-efficacy and self-care activity on the quality of life of participants, especially in domain 3 (Social Relations)

Table V. Relationship between self-efficacy and self-care activity on participants' quality of life (Domain 4)

Variable		Quality of Life Domain 4 (Environment)				p-value
		Better		Worse		
		F	%	F	%	
Self Efficacy	High	15	10.0	12	8.0	0.015
	Low	38	25.3	85	56.7	
Self Care Activity	High	15	10.0	14	9.3	0.040
	Low	38	25.3	83	55.3	

There is a significant relationship between self-efficacy and self-care activity on the quality of life of participants, especially in domain 4 (Environment)

Participants who do not undergo appropriate self-care activities, such as undergoing breathing exercises or following a medical treatment plan, will face physical limitations that affect their participation in social activities. As a result, they will feel socially isolated (Guo et al., 2020).

Domain 4 (Environment)

Based on the research results for the environmental domain, it shows that the majority of participants have low self-efficacy and self-care activity, which can impact negatively on HRQoL (Table V). This was the case with 85 (56.7%) participants with a significance value of 0.015 or equal to a *p* value <0.05 for the self-efficacy aspect and 83 (55.3%) participants with a significance value of 0.040 or equal to a *p* value < 0.05 for the self-care activity aspect.

In the aspect of self-efficacy, the majority of participants had a low level of self-efficacy and poor HRQoL. Low self-efficacy in participants in the environmental domain can have a negative impact on their HRQoL. Patients with low levels of self-efficacy will feel less able to manage environmental factors that can influence their condition, such as exposure to cigarette smoke at home or a contaminated environment (Miravitlles & Ribera, 2017).

In the aspect of self-care activity, the majority of participants had low self-care activity, which can make their HRQoL worse. This is in accordance with previous research, which states that low self-care activity in COPD patients can affect their HRQoL in terms of environmental health. Participants who do not undertake self-care activities that include managing environmental factors such as indoor air pollution or avoiding cigarette smoke may be more likely to be exposed to risk factors that can worsen environmental COPD symptoms (Duan et al., 2020).

Table V. Relationship between self-efficacy and self-care activity on participants' quality of life (Domain 4).

The future direction of research examining the relationship between self-efficacy and self-care activity on the quality of life of COPD patients in the field of health, particularly in the pharmaceutical field, can be focused on evaluating the effectiveness of pharmacy interventions in enhancing self-efficacy and patient motivation to engage in self-care activity, as well as their impact on improving the quality of life of COPD patients. Innovative pharmaceutical methods, such as clinical services, drug counseling, drug management, and community pharmacy approaches can be combined with self-efficacy assessment and self-care activity monitoring to provide a holistic understanding of the role of pharmacy in improving clinical outcomes and quality of life for COPD patients.

The implementation of the findings of this research, particularly in the field of pharmacy, can be carried out through many strategies. The findings of the research can be utilised for the development of a pharmaceutical intervention programme involving the enhancement of self-efficacy in COPD patients by individual or group-based approaches such as education, skill training, and psychological support. In addition, the findings of the research can have a positive impact on the implementation of a self-monitoring programme that can assist patients in managing their self-care activities, such as correctly using inhalers, regularly engaging in respiratory exercises, and monitoring disease symptoms, thereby indirectly improving their quality of life.

The novelty of this research lies in its unique methodological and contextual approach. This study is the first to simultaneously utilize three different questionnaires in a quantitative design, aiming to achieve more comprehensive and optimal results. Additionally, the research was conducted at the Lung Polyclinic of Labuang Baji Regional Public Hospital in Makassar, a location where no prior studies have explored the relationship between self-management and COPD treatment, further emphasizing the originality and significance of this study.

CONCLUSION

The existence of the relationship between self-efficacy and self-care activity on the quality of life of COPD patients is proved by low levels of self-efficacy and self-care activity which lead toward poor quality of life. This problem can have a serious impact on the management of the health condition of COPD patients. The patient who has low self-efficacy will experience difficulty in overcoming the symptoms and challenges that relate to COPD, while the lack of involvement in self-care activities can increase the risk of severe attacks more frequently and cause poorer quality of life for COPD patients.

LIMITATIONS

The limitations of this study include constraints in the generalizability of its findings, as the results may not be directly applicable to individuals with COPD who have different

characteristics, such as varying levels of disease severity or the presence of comorbidities. Additionally, the potential for bias exists due to the use of self-reporting instruments to assess self-efficacy and self-care activities, as participants may provide responses they perceive as more socially desirable or may avoid answers that reflect negatively on themselves.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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