

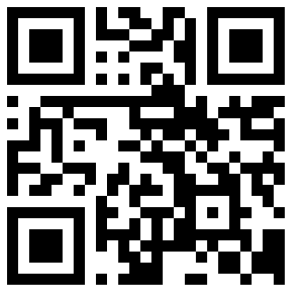
# Measurement of the Quality of Life of Prolanis Hypertension Patients in Sixteen Primary Healthcare Centers in Pandeglang District, Banten Province, Indonesia, Using EQ-5D-5L Instrument

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**Introduction:** The prevalence of hypertension in Indonesia is increasing, not least in some peripheral areas, including in Pandeglang District, Banten Province. The government of Indonesia, through the Social Health Insurance Administration Body (BPJS Kesehatan) has launched a chronic disease management program (Prolanis) to achieve more optimal results in treating patients with chronic diseases, including hypertension.

**Objective:** This study aimed to measure the quality of life of Prolanis hypertension patients at the primary healthcare centers (PHCs) using EuroQol-5 Dimensions-5 Levels (EQ-5D-5L) instrument and taking pharmacists' counseling intervention into account. This study was conducted in 96 Prolanis patients, consisting of 48 patients from 8 PHCs who did not receive pharmacists' counseling intervention (control group) and 48 other patients from 8 different PHCs who received 4 times intervention (intervention group). This study was conducted in a period of 3 months (June–August 2019) in 16 sub-districts of Pandeglang District.

**Methods:** An experimental study design was applied by considering a purposive sampling method. Patients' quality of life were measured by using EQ-5D-5L instrument and its Indonesian value set. For data analysis, we applied the Kruskal–Wallis, Mann–Whitney, Wilcoxon, and Binomial tests to investigate the differences of patients' quality of life in both groups of control and intervention.

**Results and Conclusions:** The results showed that the average utility value of the intervention group experienced an improvement at each meeting (m1 = 51.25%; m2 = 66.25%; m3 = 84.17%; and m4 = 91.67%), while the control group experienced a lower and more fluctuative improvement than the intervention group (m1 = 65.42%; m2 = 70.42%; m3 = 80.42%; and m4 = 76.67%). The same results also occurred in the average value of visual analogue scale (VAS). There was a better improvement in the intervention group than in the control group.

**Clinical Trial Registration Number:** 62/UN6.KEP/EC/2019.

**Keywords:** quality of life, Prolanis, hypertension, primary healthcare center, BPJS Kesehatan, EQ-5D-5L

## Introduction

Indonesia Basic Health Research (Riskesdas) 2018 showed that the prevalence of non-communicable diseases (NCDs) has increased when compared to Riskesdas 2013. In particular, the data showed that the prevalence of hypertension as one of major NCDs in Indonesia has increased from 25.8% in 2013 to 34.1% in 2018. In

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Banten Province, the prevalence of hypertension also significantly increased from 23% in 2013 to 29.47% in 2018.<sup>1,2</sup> This situation occurred in all districts, including in Pandeglang District, which was designated as a disadvantaged area through Presidential Regulation number 131 of 2015 concerning the determination of underdeveloped regions in 2015–2019.<sup>3</sup> A chronic disease management (Prolanis) is one of the government programs in the healthcare service system that is implemented in an integrated collaboration between healthcare facilities and the Social Health Insurance Administration Body (BPJS Kesehatan). This program aims to achieve more effective treatment for patients with chronic diseases according to the most updated clinical guidelines, to prevent disease complications, and to improve patients' quality of life.<sup>4</sup> Measurement of quality of life is an approach that can assist the healthcare workers and the community to know the description of the patient's condition so that they can prevent and control hypertension.

Hypertension is a chronic disease that can reduce patients' quality of life and can cause complications with other diseases if not treated. The prevalence of hypertension from year to year continues to increase in all regions in the world with approximately 1 in 4 adults suffers from this disease. It is estimated that the number of people with hypertension will increase up to 1.6 billion by 2025.<sup>5</sup> About 10–30% of adult population in almost all countries experience hypertension, and around 50–60% of them have potential to reach health status improvement if their blood pressure can be controlled.<sup>1</sup> One of tools to measure quality of life is EuroQol-5 Dimensions-5 Levels (EQ-5D-5L) questionnaire. This questionnaire is a generic instrument and oftenly used to measure health status in general population globally.<sup>6</sup>

Since the prevalence of hypertension in Indonesia is increasing, the government needs a comprehensive intervention through healthcare workers to provide effective healthcare services and to maintain patients' quality of life at the same time. This study aimed to measure quality of life of Prolanis hypertension patients at the primary healthcare centers (PHCs) in Pandeglang District, Banten Province, Indonesia by taking pharmacists' counseling intervention into account.

## Subjects and Method

This study applied a cross-sectional design using a purposive sampling data collection method. The subjects of this study were Prolanis hypertension patients from 16 PHCs

in 16 sub-districts in Pandeglang District. The instruments used were EQ-5D-5L questionnaire and its Indonesian value set.<sup>6,7</sup> The total number of respondents was 96 patients, each with 48 hypertensive patients from 8 PHCs who received 4 times pharmacists' counseling intervention (intervention group), and 48 other patients from 8 PHCs who did not receive pharmacists' counseling intervention (control group).

Data collection was carried out within a period of 3 months, from June to August 2019. The samples used in this study were patients diagnosed with hypertension by doctors that were recorded at patients' medical data, received antihypertension drugs, redeemed prescription drugs at PHCs, and those who met the inclusion and exclusion criteria.

### 1. Inclusion Criteria

- a. Non-complicated hypertension patients who received antihypertension drugs at 16 PHCs in Pandeglang District.
- b. Patients in the age group of  $\geq 18$  years old.
- c. Member of BPJS Kesehatan.
- d. Patients with complete medical record data.
- e. Patients who made at least 4 visits to the PHCs, experienced blood pressure above normal and received pharmacists' counseling services for the intervention group.

### 2. Exclusion Criteria

- a. Patients with hemodialysis treatment.
- b. Obstetric-gynecology patients.
- c. Patients in one consecutive period of 4 months did not visit the PHCs.

Respondents filled in an informed consent as a proof of willingness to be involved in this study, respondent information sheets, and EQ-5D-5L questionnaire according to their current condition and perception. Data analysis was performed using SPSS (version 25.0). The dependent variable was patients' quality of life (expressed in utility values), while the independent variable was patients' characteristic factors associated with patients' quality of life (e.g. sex, age, education level, work status, type of hypertension therapy, duration of suffering, and interval of blood pressure control). Descriptive analysis was used to explore the characteristics of hypertension patients involved in this study. Statistical tests were used to investigate the differences

of health utility in both groups of intervention and control.

## Result

Characteristics of respondents in this study showed that the proportion of Prolanis patients with female sex (80%) is higher than male (20%). This is in line with a previous study by Zhang et al in China, which showed that hypertension was found to be more frequent in women than men.<sup>8</sup> The results of this study showed that the majority of hypertension patients was in the age group of >50 years old. In particular, the education level of Prolanis hypertension patients in this study was considered to be relatively low ( $\leq$ SD). It has been known that education is associated with the ability to access information about ways to prevent chronic diseases. The higher education level can be associated with the healthier living behavior.<sup>6</sup> Additionally, blood pressure control of Prolanis hypertension patients was mostly conducted every 1–2 weeks in a month. In this study, the age of patients, interval of blood pressure control, and type of hypertension therapy (monotherapy or combination) showed significantly different results, which can be interpreted that there were differences in patients' quality of life within these categories of variables. Regarding the age of patients, the utility value in patients with age  $\leq$ 50 years old (0.80) was reported to be higher than in patients with age >50 years old (0.74). These results are similar with a study by Xu et al in 2017, which measured quality of life in hypertension patients and confirmed that the age of patients would impact their quality of life.<sup>9</sup> Regarding the interval of blood pressure control, this study found that patients with routine blood pressure control (2 times/month) would give a higher utility value (0.85), compared to patients who only had blood pressure control of 1 time/month (0.74). Furthermore, hypertension patients with monotherapy showed a lower utility value (0.75), compared to patients who received combination therapy (0.84). This situation is similar with the result of a previous study by Rosenthal et al in 2004,<sup>10</sup> which mentioned that the combination of hypertension therapy is better in controlling blood pressure than monotherapy. An overview of the characteristics of Prolanis hypertension patients can be seen in Table 1 (P.11)

EQ-5D-5L instrument has been widely used to measure health-related quality of life both in general population and specific patients. The instrument itself is

**Table 1** Sociodemographic and Utility of Hypertension Patients at 16 PHCs in Pandeglang District

Age	Frequency	Percentage	Average Utility Index (Meeting-I)
20–35 years	0	0%	–
36–50 years	37	39%	0.80
>50 years	59	61%	0.74
<b>Gender</b>	<b>96</b>	<b>100%</b>	
Female	77	80%	0.76
Male	19	20%	0.80
<b>Blood Pressure Control</b>	<b>96</b>	<b>100%</b>	
1 time/month	6	6%	0.74
2 times/month	7	7%	0.80
3 times/month	20	21%	0.85
4 times/month	63	66%	0.73
<b>Hypertension Therapy</b>	<b>96</b>	<b>100%</b>	
Monotherapy	82	85%	0.75
Combination therapy	14	15%	0.84
<b>Occupation</b>	<b>96</b>	<b>100%</b>	
Housewife	51	53%	0.74
Civil servant/ Entrepreneur/ Farmer/Labour/ Private employee/ Fisherman	43	45%	0.80
Others	2	2%	0.70
<b>Education Level</b>	<b>96</b>	<b>100%</b>	
Elementary school	57	59%	0.75
Junior high school	15	16%	0.80
Senior high school	17	18%	0.81
College	7	7%	0.72
	<b>96</b>	<b>100%</b>	

**Note:** Data processing researchers from the results of medical records and interviews.

a generic instrument that consists of 5 dimensions and 5 levels, describing the health state of individuals in the domain of walking ability (mobility), self-care, usual activities, pain/discomfort, and anxiety/depression. In this study, we used the Indonesian value set. Purba et al in 2017 has compiled an Indonesian value set, which is

able to describe the condition of Prolanis hypertension patients' quality of life,<sup>6</sup> and to explore the domain that the majority of patients have problems with it. The results showed that there were significant differences between the utility values at the 1st, 2nd, 3rd, and 4th meetings in the intervention group, according to the Kruskal–Wallis test ( $p$ -value= 0.000). The SPSS calculation using the Mann–Whitney test was applied to find out the most significant differences in the meeting details. The results showed that there were significant differences at the 2nd and 3rd meetings. Comparing with the previous meetings, the numbers of patients in the intervention group with higher utility values were estimated to be 62.5% ( $p$ -value= 0.012), 58.3% ( $p$ -value= 0.012), and 8.3% ( $p$ -value= 0.609) for the 2nd, 3rd, and 4th meetings, respectively.

The results after the last meeting in the intervention group showed that none of the patients had problems at level 5 in all dimensions. All patients had the ability to walk well, 98% patients felt no difficulty in self-care (bathing/dressing themselves), 96% patients felt no difficulties in doing daily activities, 69% patients did not feel pain, and 96% patients did not feel anxious/sad. Next to the intervention group, different results were obtained in the control group. Comparing with the previous meetings, the numbers of patients in the control group with higher utility values were estimated to be 48% ( $p$ -value= 0.008), 48% ( $p$ -value= 0.008), and 2% ( $p$ -value= 0.6550).

The results after the last meeting in the control group showed that there were 4.2% patients who had problems at level 5 in all dimensions. Approximately 83% patients had the ability to walk well, 90% patients felt no difficulties in self-care (bathing/dress alone), 79% patients felt no difficulties in doing daily activities, 50% patients did not feel pain, and 81% patients did not feel anxious/sad. The results above showed that Prolanis hypertension patients in the intervention group had higher utility values, confirming that pharmacists' counseling have an impact on patients' physical and mental health state. The results of the utility index and visual analog scale can be seen in [Table 2 \(P.12\)](#).

Overall in this study, we found that patients in both groups of intervention and control did not have major problems in mobility and daily activities. Furthermore, only a few patients reported feeling sick and anxious due to their illness. In the pain domain, the majority of patients in the intervention (31%) and control groups (50%) reported that they had problems with pain due to

hypertension. These results are in line with a previous study by Ghimire et al in 2017, which reported that all hypertension patients in Nepal had many problems in the pain domain.<sup>11</sup>

In this study, we assessed the utility value and visual analogue scale (VAS) in both groups of patients. In the intervention group, the average utility value and VAS in the 1st meeting were reported to be 0.71 and 62.92, respectively. In the 2nd meeting, the average utility value and VAS were reported to be 0.83 and 71.15, respectively. In the 3rd meeting, the average utility value and VAS were reported to be 0.91 and 75.58, respectively. In the 4th meeting, the average utility value and VAS were reported to be 0.92 and 77.56, respectively.

Different results were obtained in the control group. In the 1st meeting, the average utility value and VAS were reported to be 0.82 and 68.77, respectively. In the 2nd meeting, the average utility value and VAS were reported to be 0.86 and 73.58, respectively. Both in the 3rd and 4th meetings, the average utility value and VAS were reported to be 0.90 and 77.44, respectively. The results of this study are similar with the results of a previous study by So et al in 2014,<sup>12</sup> which reported the utility value in adult hypertension patients in Korea of 0.81. Overall, the differences in the utility value and VAS were obviously seen in both groups of intervention and control.

The control group resulted lower patients' quality of life than the intervention group. Comparing with two other studies by Hobbins et al and Al-Jabi et al that estimated the quality of life of hypertension patients using EQ-5D-5L, the average utility value and VAS of this study are higher than the results of those two previous studies.<sup>13,14</sup> However, the results of all studies indicated that patients' quality of life in the intervention group is better than patients in the control group, which can be interpreted that intervention have a good impact on improving patients' health status.

## Discussion

In this study, EQ-5D-5L was used to measure quality of life of Prolanis hypertension patients in Pandeglang District, Banten Province, Indonesia by considering the impact of pharmacists' counseling intervention. EQ-5D-5L, developed by the EuroQol Group, is a generic, widely-known, and commonly used instrument for measuring health status in 5 different dimensions.<sup>15,16</sup> A lot of studies have applied this instrument, confirming that the questionnaire and its country-specific value set is valid and

**Table 2** Utility Index and Visual Analogue Scale (VAS) of Prolanis Hypertension Patients in 16 PHC in Pandeglang District

Parameter	Meeting 1		Meeting 2		Meeting 3		Meeting 4	
	Intervention	Control	Intervention	Control	Intervention	Control	Intervention	Control
<b>Utility Index (Level I)</b>								
Mobility (%)	56.25	62.50	68.75	66.67	89.58	81.25	100	83
Self-Care (%)	79.17	89.58	93.75	91.67	95.83	93.75	98	90
Usual Activities (%)	66.67	75	83.33	79.17	93.75	85.42	96	79
Pain/Discomfort (%)	8.33	22.92	20.83	29.17	56.25	50	69	50
Anxiety / Depression (%)	45.83	77.08	64.58	85.42	85.42	91.67	96	81
Mean utility index (level-I) %	51.25	65.42	66.25	70.42	84.17	80.42	91.67	76.67
Mean utility index (0-1)	0.71	0.82	0.83	0.86	0.91	0.90	0.92	0.90
Asymp.Sig.(0.000) <sup>a</sup>		–		–	–	–		
Asymp.Sig.(2-tailed) <sup>b</sup> (intervention)		62.5% (p=0.012)		58.3% (p=0.012)	8.3% (p=0.609)			
Asymp.Sig.(2-tailed) <sup>b</sup> (control)		48% (p=0.008)		48% (p=0.008)	2% (p=0.655)			
Positive Ranks <sup>c</sup> (intervention)		30		28	4			
Positive Ranks <sup>c</sup> (control)		23		23	1			
<b>Visual Analogue Scale (VAS)</b>								
Mean (VAS)	62.92	68.77	71.15	73.58	75.58	77.44	77.44	77.56
≥80% (person)	1	5	3	6	13	17	20	17

Notes: <sup>a</sup>Kruskal–Wallis Test; <sup>b</sup>Mann–Whitney Test; <sup>c</sup>Wilcoxon dan Binomial Test.

reliable to measure quality of life in general population and specific patients, including hypertension patients.<sup>17,18</sup>

In general, the results of this study confirmed that patients' quality of life in the intervention group, which was given counseling by trained pharmacists, is better than in the control group. Some statistical tests showed good results and patterns, even though in a few parts they did not yield a statistically significant value. Regarding the impact of hypertension on reducing patients' quality of life, several studies have confirmed that hypertension would give a negative impact on patients' quality of life and their roles in daily life.<sup>19</sup>

The results of this study, which specifically took pharmacists' counseling intervention into account, provides an illustration about the idea of an alternative intervention to improve the effectiveness of chronic disease treatment in Indonesia and the quality of life of Prolanis patients, specifically in hypertension patients. These results can be used as a reference and an initial step for the stakeholder to improve the cost-effectiveness of Prolanis program at the PHCs by including pharmacists' counseling intervention in other chronic disease programs at all PHCs in Indonesia.

Despite the fact that this study is one of the first studies on measuring the quality of life of Prolanis hypertension patients in Indonesia, it has several limitations. The major limitation is associated with the relatively small number of

pharmacists involved in this study. Due to the limited number of pharmacists in PHCs and their huge responsibilities on doing management activities and clinical pharmacy services (e.g. counseling to the patient), this study was only conducted in 16 of 36 PHCs in Pandeglang District. In addition, several pharmacists in these PHCs have never been in a counseling training previously. Hence, the skill and knowledge of all pharmacist involved in this study might be unstandardized. As its consequence, the variables used might not reflect the overall current condition. Further research should be conducted in a larger number of pharmacists involved with a standardized counseling training before the intervention to explore the potential cost-effectiveness of intervention and effects of each variable involved by using specific instruments for specific diseases, so that the results obtained will be more comprehensive and comparable.

## Conclusion

The quality of life of Prolanis hypertension patients at the PHCs in Pandeglang District can be concluded in a good category. The results showed that the average utility value of the intervention group experienced an improvement at each meeting (m1 = 51.25%; m2 = 66.25%; m3 = 84.17%; and m4 = 91.67%), while the control group experienced a lower and more fluctuative improvement than the intervention group (m1 = 65.42%; m2 = 70.42%; m3 =

80.42%; and  $m_4 = 76.67\%$ ). The same results also occurred in the average value of VAS. There was a better improvement in the intervention group than in the control group. Additionally, the pain domain is a domain that was reported to have many disorders/problems in both groups of patients. The utility value in this domain was also reported to be the lowest at each meeting, compared to other domains. In particular, the age of Prolanis hypertension patients, interval of blood pressure control, and type of hypertension therapy (monotherapy or combination) showed significantly different results, which can be interpreted that there were differences in patients' quality of life within these categories of variables. The utility value in patients with age  $\leq 50$  years old (0.80) was reported to be higher than in patients with age  $> 50$  years old (0.74). Patients with routine blood pressure control (2 times/month) would give a higher utility value (0.85) compared to patients who had blood pressure control of 1 time/month (0.74). Hypertension patients with monotherapy showed a lower utility value (0.75) compared to patients who received combination therapy (0.84).

## Data Sharing Statement

The data used in the analyses are available from the corresponding author on reasonable request.

## Ethics

The ethical permission was obtained from the Ethics Committee of Universitas Padjadjaran, Indonesia (Registration number: 62/UN6.KEP/EC/2019) and this study was conducted in accordance with the Declaration of Helsinki.

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## Disclosure

There are no conflicts of interest.

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