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Health Utility Measured with EQ-5D in Thai Patients Undergoing Peritoneal Dialysis

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ABSTRACT

Objectives: To measure health utility by using the EuroQol five-dimensional questionnaire (EQ-5D) in Thai patients undergoing peritoneal dialysis (PD) and to examine the relationship between the EQ-5D and patient characteristics including sociodemographic and clinical data and end-stage renal disease symptoms. **Methods:** This was a cross-sectional study. About 10 to 12 patients undergoing PD were randomly selected from each of the 10 hospitals located in every part of Thailand. Face-to-face interviews were conducted from October 2008 to February 2009. Patients assessed their health status by using five domains and a visual analogue scale. The EQ-5D score was calculated on the basis of responses to five domains by using the Thai value set. Multiple regression analyses using a stepwise method were employed to model the associations between the EQ-5D score, the VAS score, and patient characteristics. **Results:** The patients' mean age was 42.2 ± 13.8 years; 53% were male. The mean PD duration was 7.4 ± 6.0 months. The mean EQ-5D and visual analogue scale scores were 0.65 ± 0.23 and 0.65 ± 0.26, respectively. The EQ-5D score was higher than that obtained from a meta-analysis study (0.58). The multivariate regression model showed that education, work status, diabetes, and end-stage renal disease symptoms were significant predictors of the EQ-5D score. The significant predictors of the VAS score included work status, albumin level, use of erythropoietin, and end-stage renal disease symptoms. **Conclusions:** This Thai PD sample yielded higher EQ-5D scores than did other PD populations. To improve the health utility of Thai patients undergoing PD, the significant factors should be addressed. Because our PD sample had a short PD duration, their long-term health utility should be evaluated in future research.

Keywords: EQ-5D, health utility, peritoneal dialysis, visual analogue scale.

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Introduction

End-stage renal disease (ESRD) is an important public health problem worldwide including Thailand, with the current incidence being 10,000 patients per year [1]. Renal replacement therapy is essential to patients with ESRD. The three major renal replacement therapy modalities are hemodialysis (HD), peritoneal dialysis (PD), and kidney transplantation. Because of the inadequate number of donated kidneys, dialysis, especially HD, is the main therapy for ERSD. The annual cost of HD, however, is about US$12,100 per year or US$18,500 per quality-adjusted life-year (QALY), which is greater than three times the annual income per capita of Thai people [2]. In addition, in 2007, PD was proved to be more cost-effective than HD [3]. Thus, the Thai government has financially supported patients with ESRD undergoing PD under the universal health-care coverage through the National Health Security Office since 2008. It is called the PD-first policy. By the time of this study, there were about 1000 patients with ESRD undergoing PD who had registered with the National Health Security Office [4].

Several studies have demonstrated that patients with ESRD experience reduced health-related quality of life (HRQOL) [5–7]. Thus, it is crucial to measure their HRQOL. Besides deteriorated HRQOL, ESRD has a high cost of treatment, and so developing a cost-effective intervention in preventing and treating ESRD is needed. Health utility (HU) is HRQOL that can be incorporated into cost-effectiveness analysis or cost-utility analysis whose most commonly used outcomes are QALYs gained [8,9]. The QALY is a measure of life expectancy weighted by an HU score, which is usually between 0 (death) and 1 (full health). Therefore, HU has both advantages: measuring HRQOL and use for economic evaluation in health care. Little is known, however, about the HU of Thai patients undergoing PD. The EuroQol five-dimensional questionnaire (EQ-5D) is the most frequently used HU instrument for calculating QALYs based on the actual measurement of patients' HRQOL [10]. Because the EQ-5D has shown good psychometric properties in Thai patients [11,12], it is the recommended HU method in Thailand [13]. Therefore, the present study was aimed at measuring HU by using the EQ-5D in Thai patients undergoing PD and to examine the factors related to it.

Methods

Participants and procedures

This study was a cross-sectional study. Of the 24 hospitals registered with the National Health Security Office, 10 hospitals located

Conflicts of interest: The authors have indicated that they have no conflicts of interest with regard to the content of this article.

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Table 1 – Patient characteristics (N = 102).

Characteristics	Value
Age (y)	
Mean ± SD	42.2 ± 13.8
Median (range)	44.5 (10–70)
Gender (male), n (%)	54 (53)
Number of years of education	
Mean ± SD	6.6 ± 3.6
Median (range)	6 (0–16)
Employment status (employed), n (%)	43 (42)
Hypertension (yes), n (%)	86 (84)
Diabetes (yes), n (%)	31 (30)
Number of comorbidities	
Mean ± SD	1.5 ± 0.8
Median (range)	1 (0–4)
PD duration (mo)	
Mean ± SD	7.4 ± 6.0
Median (range)	7.2 (0.4–48.7)
Serum creatinine level (mg/dl)	
Mean ± SD	10.8 ± 3.9
Median (range)	10.5 (3.6–21.3)
Hemoglobin level (g/dl)	
Mean ± SD	8.7 ± 2.1
Median (range)	8.4 (4.4–13.7)
Albumin level (g/L)	
Mean ± SD	3.2 ± 0.5
Median (range)	3.2 (2.0–4.5)
Erythropoietin units per week	
Mean ± SD	1,914 ± 2,061
Median (range)	0 (0–8,000)
ESRD symptoms	
Mean ± SD	73.43 ± 20.70
Median (range)	79.17 (4.17–100)

PD, peritoneal dialysis; SD, standard deviation.

in every part of Thailand were conveniently chosen to participate in the study. A simple random sampling was used to select 12 patients undergoing PD from each of the 10 hospitals. Patients eligible for the study had to be willing to participate in the study and be able to understand the Thai language. Of the 120 approached, there were 102 eligible patients. Face-to-face interviews were conducted by a trained interviewer at the 10 hospitals from October 2008 to February 2009. Medical records were reviewed for clinical data. This study was approved by the Ethical Committee of Ramathibodi Hospital. The face-to-face interview included the following measures.

EQ-5D

The EQ-5D has five domains: mobility, self-care, usual activity, pain/discomfort, and anxiety/depression. Each domain has three levels: no problems, some problems, and major problems. Patients were asked to select the level that best described their current health today for each of the five domains. Responses to the five domains were expressed as an EQ-5D score originally using the value set from the United Kingdom [14]. Because there is a Thai value set available [15], it was employed to calculate the EQ-5D score in this study. The resulting EQ-5D score was between −0.45 and 1.00, where 1.00 and 0 represent perfect health and death, respectively, with negative values indicating states worse than death. In this study, the Cronbach's alpha value (an indicator of internal consistency reliability) of the EQ-5D was 0.77, above the acceptable value of 0.70 [16].

The second part of the EQ-5D is a visual analogue scale (VAS). For the VAS, the patients were presented with a vertical line with end points of "worst imaginable health" at 0 and "best imaginable health" at 100. The respondents were asked to mark the point on the scale that corresponded to their rating of their current health state. The VAS score was obtained by dividing the number marked on the scale by 100, which is between 0.00 and 1.00.

ESRD symptoms

A list of 12 symptoms was derived from the Kidney Disease Quality of Life questionnaire, one of the most commonly used disease-specific HRQOL measures in ESRD [17]. The 12 symptoms are soreness in your muscles, chest pain, cramps, itchy skin, dry skin, shortness of breath, faintness or dizziness, lack of appetite, feeling washed out, numbness in hands and feet, nausea or upset stomach, and problems with your catheter site. The patients were asked to indicate how much these symptoms/problems had bothered them in the past 4 weeks. All items were scored on a five-point scale, where 100 = not at all bothered, 75 = somewhat bothered, 50 = moderately bothered, 25 = very much bothered, and 0 = extremely bothered. The average score ranged from 0 to 100 where a higher summary score indicated better HRQOL. The Cronbach's alpha value of the scale was 0.89, greater than the acceptable value of 0.70 [16].

Statistical analysis

To summarize patient characteristics and descriptive statistics, percentages and frequencies were used for categorical variables, and means, standard deviations, medians, and range (minimum–maximum) were calculated for continuous variables. Chi-square tests were performed to assess the relationship between the fre-

Table 2 – Descriptive statistics of EQ-5D domains, the EQ-5D score, and the VAS score.

Domain	Frequency (%)
Mobility	
No problem walking	83 (81)
Some problem walking	19 (19)
Confined to bed	0
Self-care	
No problem	82 (80)
Some problems washing or dressing self	20 (20)
Unable to wash or dress self	0
Usual activities (e.g., work, study, housework, family or leisure activities)	
No problem	38 (37)
Some problem	59 (58)
Unable to perform	5 (5)
Pain/discomfort	
No pain or discomfort	34 (33)
Moderate	61 (60)
Extreme	7 (7)
Anxiety/depression	
Not anxious or depressed	47 (46)
Moderate	50 (49)
Extreme	5 (5)
EQ-5D scores	
Mean ± SD	0.65 ± 0.23
Median (range)	0.63 (−0.022 to 1.00)
VAS scores	
Mean ± SD	0.65 ± 0.26
Median (range)	0.70 (0.0–1.00)

EQ-5D, EuroQol five-dimensional questionnaire; SD, standard deviation; VAS, visual analogue scale.

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