

Factors Related to Quality of Life among Persons with End Stage Renal Disease Receiving Hemodialysis*

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Abstract

Purpose: To determine the relationships between co-morbidity, social support, symptom status, and quality of life among persons with end stage renal disease receiving hemodialysis.

Design: Descriptive correlational research.

Methods: The sample composed of 115 persons with end stage renal disease receiving hemodialysis in a tertiary care hospital in Hanoi, Vietnam. Data were collected using the patients' hospital record and interview with 3 questionnaires: The Multidimensional Scale Perceived Social Support, the Edmonton Symptom Assessment System Scale, and the Kidney Disease Quality of Life-Short Form 36 Scale. Spearman's Rho was employed to test the relationships among variables.

Main findings: The findings revealed that the average score of quality of life among persons with end stage renal disease receiving hemodialysis was 45.53 (SD = 13.20), 62.61% of those had score of quality of life below average level. Co-morbidity and symptom status were negatively related to QOL ($r_s = -.46, -.67, p < .05$). Social support was positively related to quality of life among persons with end stage renal disease ($r_s = .63, p < .05$).

Conclusion and recommendations: In order to improve quality of life among persons with end stage renal disease receiving hemodialysis, it is recommended that nurses should assess and manage patients' symptoms, control their co-morbidity, and seek appropriate resources to support them.

Keywords: quality of life, hemodialysis, end stage renal disease, social support, symptom status, co-morbidity

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ปัจจัยที่มีความสัมพันธ์กับคุณภาพชีวิตของผู้ป่วยไตวายระยะสุดท้ายที่ได้รับการรักษาด้วยการฟอกเลือด*

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาความสัมพันธ์ระหว่างโรคร่วม การสนับสนุนทางสังคม และอาการที่สัมพันธ์กับโรคไตวายระยะสุดท้าย กับคุณภาพชีวิตของผู้ป่วยไตวายระยะสุดท้ายที่ได้รับการรักษาด้วยการฟอกเลือด

รูปแบบการวิจัย: การวิจัยเชิงสหสัมพันธ์

วิธีดำเนินการวิจัย: กลุ่มตัวอย่างประกอบด้วยผู้ป่วยไตวายระยะสุดท้ายจำนวน 115 คนที่ได้รับการรักษาด้วยการฟอกเลือดด้วยเครื่องไตเทียมที่หน่วยโรคไต โรงพยาบาลระดับตติยภูมิแห่งหนึ่งในกรุงเทพฯ ประเทศไทย เก็บข้อมูลเกี่ยวกับลักษณะส่วนบุคคล การวินิจฉัยโรค โรคร่วมและการรักษาจากแฟ้มประวัติของผู้ป่วย และใช้แบบสอบถาม 3 ชุดในการสัมภาษณ์ผู้ป่วย ประกอบด้วย แบบสอบถามการสนับสนุนทางสังคม แบบสอบถามอาการที่สัมพันธ์กับโรคไตวายระยะสุดท้าย และแบบสอบถามคุณภาพชีวิตของผู้ป่วยโรคไต ใช้สถิติ Spearman's Rho ในการวิเคราะห์ความสัมพันธ์ระหว่างตัวแปรต้นและตัวแปรตาม

ผลการวิจัย: กลุ่มตัวอย่างมีค่าเฉลี่ยระดับคะแนนคุณภาพชีวิตเท่ากับ 45.53 ส่วนเบี่ยงเบนมาตรฐานเท่ากับ 13.20 ร้อยละ 62.61 ของกลุ่มตัวอย่างมีระดับคะแนนคุณภาพชีวิตต่ำกว่าค่าเฉลี่ย การมีโรคร่วม และอาการที่สัมพันธ์กับโรคไตวายระยะสุดท้าย มีความสัมพันธ์ทางลบกับคุณภาพชีวิต ($r_s = - .46$, $r_s = - .67$) การสนับสนุนทางสังคมมีความสัมพันธ์ทางบวกกับคุณภาพชีวิต ($r_s = .63$)

สรุปและข้อเสนอแนะ: เพื่อส่งเสริมคุณภาพชีวิตของผู้ป่วยโรคไตวายเรื้อรังระยะสุดท้ายที่ได้รับการรักษาด้วยการฟอกเลือดด้วยเครื่องไตเทียม พยาบาลควรประเมินและจัดการกับอาการที่สัมพันธ์กับโรคไตวายระยะสุดท้าย ควบคุมความรุนแรงของโรคร่วม และแสวงหาแหล่งสนับสนุนที่เหมาะสมให้กับผู้ป่วย

คำสำคัญ: คุณภาพชีวิต การฟอกเลือดด้วยเครื่องไตเทียม ภาวะไตวายระยะสุดท้าย การสนับสนุนทางสังคม ภาวะโรคร่วม อาการที่สัมพันธ์กับโรคไตวาย

Background and Significance

In Vietnam, number of persons with end stage renal disease (ESRD) has been increasing in the past 2 decades; approximately there were 6 million of people (6.73% of population) suffering from this disease; and 800,000 of those were in the final stage of disease.¹ Although hemodialysis (HD) was considered to be a treatment of choice among patients with ESRD, this treatment modality caused many complications to patients such as electrolyte imbalance, volume depletion, and discomfort; which would lead them to have poor quality of life.

Quality of life (QOL) referred to individual's perception of their conditions in life. It was related to the context of their culture, value, goals, expectations, living standard, and concerns (WHO, 1997); for example, persons with ESRD had to deal with various signs and symptoms which disturbed their daily living so that the majority of them reported low QOL, in particular, ones who had to undergo HD. Moreover, QOL could be considered as an outcome of care because it reflect the comprehensive picture including physical function, psychological health, social function, economic status, and general satisfaction with life.^{2,3} Patients who perceived themselves as having good QOL were more likely to have low level of anxiety, less depression, more compliance with medical follow up and treatment, more capacity in performing self-care, and decreased mortality.^{4,5}

From literature review, it was found that there were a number of factors related to QOL in patients with ESRD, including severity of disease or symptoms, patient's co-morbid diseases, and patient's resources availability or supports from others.⁶⁻⁸

Patients with ESRD who had several co-morbid diseases would experience low QOL because they had to deal with multi-drugs use, other symptoms from co-morbid diseases, and higher expense of medical care.⁶ These patients had to be hospitalized for longer period or had to be readmission in the hospital leading to more burden on their family caregivers, and their

family financial status.⁹ If these co-morbid diseases were well controlled, the symptoms related to those diseases would be decreased and patients would experience good QOL.⁶ Patients with ESRD always experienced various symptoms⁷; such as low appetite which led to poor nutritional status, insomnia which led to fatigue, weakness, and feeling of invitality. Eventually, mental health and QOL would be affected.⁸

During HD if patients received adequate support from family members in particular their spouses¹⁰, they would experience less depression and demonstrate higher QOL.¹¹ Not only support from the family; but also support from other parties such as health care personnel, friends, and neighbors would be needed for ESRD patients who received HD. The more support the patients received, the higher QOL they had.

Research related to patients with ESRD was in early stage in Vietnam. In particular, the nursing research focusing on patient's symptoms, social support, and their effects on QOL was not available. To be able to provide ESRD patients with high quality care, scientific evidences from research were vital. Therefore, this study aimed to determine factors related to QOL in ESRD patients. Quality of life theory was used as a framework of this study because it supported the ideology underpinning the relationship among independent and dependent variables in this research. According to this theory there were indicators affecting patient's QOL including co-morbidity, social support, and symptom status. It was expected that evidences obtained from this study could be used to guide nursing practice and further researches related to QOL of patients with ESRD in Vietnam.

Objective

To investigate the relationships between co-morbidity, symptom status, social support and QOL among patients with ESRD receiving HD.

Hypotheses

1. Co-morbidity and symptom status were negatively related to QOL among patients with ESRD receiving HD.
2. Social support was positively related to QOL among patients with ESRD receiving HD.

Methodology

Population and Sample

Population were patients who were diagnosed with ESRD and receiving HD in Dialysis Department in Bach Mai Hospital, Hanoi, Vietnam.

Sample was recruited according to inclusion criteria: 1) aged 18 years and older, 2) received HD at least 2 cycles per week, 3) was able to communicate in Vietnamese language.

The sample size was calculated by using G*power program to determine the minimum number of participants needed for correlational design.¹² The level of significance $\alpha = .05$, the power of statistical test = .80. There are three independence variables in this study and medium effect size was used ($r = .3$, $f^2 = .099$).¹³ Based on G*power, sample size was 115 patients.

Research Instruments

1. Demographic data and health information record form: It included gender, age, employment, marital status, residence, duration of HD, and blood test.

2. The record of patients' co morbidity. The scale was developed by the researcher. It composed of common chronic diseases including heart disease, respiratory disease, kidney disease (glomerulonephritis, nephrotic syndrome), diabetes, hyperlipidemia, neurological disease, hypertension, and other diseases that occurred before patients received the first HD. The score of co-morbidity was calculated from numbers of patients' co-morbid disease. One disease accounted for 1 score.

3. The Multidimensional Scale Perceived Social Support (MSPSS): MSPSS contained 12-item. Respondent answered items on a seven-point Likert scale (1-7) ranging from very strongly disagree to very strongly agree, the

total score ranged from 12 to 84. Higher score referred to good social support and lower score referred to poor social support.

4. Edmonton Symptom Assessment System scale (ESAS) was used to assess ten symptoms status commonly found in ESRD patients: pain, tiredness, nausea, depression, anxiety, drowsiness, appetite, wellbeing, shortness of breath, and itchy. The severity at the time of assessment of each symptom was rated from 0 to 10 on a numerical scale. The score 0 referred to absent of symptom and the score 10 referred to the worst possible severity.

5. Kidney Disease Quality of Life-Short Form 36 scale (KDQOL-SF36): This scale comprised 36 items health survey consisting of eight domains to measure physical and mental health status.¹⁴ The raw scores were converted into transformed scores to a range of 0-100, higher transformed score reflecting better quality of life. QOL level was defined as follows: scores 0-25 = poor QOL; scores 26-49 = QOL below average; scores 50-75 = QOL greater than average; scores 76-100 = good QOL.

The MSPSS, ESAS, and KDQOL-SF36 were translated into Vietnamese and reviewed for content validity by six experts in nephrology, its reliability was tested among patients with HD in Hanoi, Vietnam,⁶ Cronbach's alpha coefficient of .87, .80, and .82 were obtained respectively.

The researchers obtained permission to translate those aforementioned instruments into Vietnamese and permission to use in this study.

Protection Right of Human Subjects

This project was approved by the Institutional Review Board (IRB) of Faculty of Nursing, Mahidol University, Thailand (COA No.IRB-NS 2016/347.0205) and IRB of Vietnam National University, Vietnam. The researcher recruited subjects as a standard process specified by the IRB. The issues of making decision to consent independently, anonymity, and confidentiality were warranted.

Data Collection Process

1. After received permission to collect data,

the researcher met the director of Bach Mai Hospital, head of dialysis department and head nurse, physicians and staffs of department to explain the details of research project and data collection process; and request to recruit subjects.

2. Potential subjects were approached during HD at dialysis department. The researcher self-introduced, made a relationship with the subject, informed the objectives of the study, described data collection procedure, protection of human subject, and let them to read the participation information sheet, then invited them to join the study. After the subjects agreed to join the study, they were asked to sign the consent form.

3. The researcher recorded demographic data and health information from the patient's medical record.

4. The researcher interview subjects with 3 questionnaires. The interview process for each patient lasted 30-40 minutes.

Data Analysis

Data were analyzed using the computer statistical package as follows:

1. Demographic data and health information were analyzed with descriptive statistics: frequency, percentage, mean, standard deviation.

2. All studied variables were tested for normal distribution and found that they were not normal distributed. Therefore, the Spearman's Rho was employed to test correlation among studied variables with the level of significance .05.

Findings

Demographic data and health information

About 61.7% of subjects were female with the mean age of 47.47 years ($SD = 14.14$ years), 27% were unemployed after they started to receive HD, 69.6% were married, 56.5% did not earn incomes and had to rely on income of their families, and 54.8% had to travel from the rural area for receiving HD.

More than a half of subjects (59.1%) had duration of HD over five years with mean duration of 6.55 years ($SD = 4.8$ years). The mean of Blood Urea Nitrogen (BUN) was 23.25 mmol/L ($SD = 8.25$), the mean of serum creatinine was 921.60 μ mol/l ($SD = 252.88$), the mean of serum albumin was 40.59 g/l ($SD = 4.28$), 90.4% were diagnosed with anemia.

Co-morbidity, social support, and symptom status

About 95% of subjects had one or more co-morbid diseases. The number of co-morbid diseases ranged from 0 to maximum of 6 diseases; the common co-morbid diseases found were hypertension (46.1%), glomerulonephritis (43.5%), nephrotic syndrome (27.8%), and diabetes (11.3%).

The score of social support ranged from 28-80 with the mean score of 56.21 ($SD = 14.42$).

Symptom status had score ranged from 19-82 with the mean score as measured by the ESAS was 48.92 ($SD = 17.27$). Most of subjects reported that the symptoms that they experienced daily such as fatigue, loss of appetite, feeling of not feeling well which made them feel uncomfortable.

Quality of life (QOL)

The mean score of QOL was 45.53 ($SD = 13.2$). Most of the subjects had QOL below average (62.61%); while 33.04% had QOL greater than average. (Table 1)

Table 1: Mean, standard deviation (SD), and classification of QOL score (n = 115)

Quality of Life	Number	Percentage (%)
Poor (0-25 score)	5	4.35
Below average (26-49 score)	72	62.61
Greater than average (50-75 score)	38	33.04
Good (76-100 score)	0	0.00
Mean = 45.53, SD = 13.20		

Relationships between co-morbidity, social support, symptom status, and QOL

The result revealed that there was negative correlation between co-morbidity and QOL ($r_s = - .46$, $p < .05$) indicating that patients who had more co-morbidity were more likely to have lower QOL score. Furthermore, there was also negative correlation between symptom status and

QOL ($r_s = - .67$, $p < .05$) indicating that patients who had more symptom were more likely to have lower QOL. There was positive correlation between social support and QOL ($r_s = .63$, $p < .05$) indicating that patients who had higher social support were more likely to have higher QOL. (Table 2)

Table 2: Correlation between co-morbidity, social support, symptom status, and quality of life (n = 115)

	1	2	3	4
1. Co-morbidity	1.00			
2. Social Support	- .496*	1.00		
3. Symptom status	.512*	-.515*	1.00	
4. Quality of life	-.460*	.627*	-.669*	1.00

* $p < .05$, Spearman's Rho Correlation

Discussion

Quality of life among persons with ESRD receiving HD

QOL among persons with ESRD receiving HD was in the average scores of 45.53 (SD = 13.20), and 62.61% had QOL below average level. The possible explanation was that 59.1% of persons with ESRD in this study had been receiving HD treatment more than 5 years, they had to deal with high expense on the treatment and 54.8% had to travel from the other provinces out of Hanoi to get treatment. Traveling from their hometown might add more expense and some of them had to rent a small room to stay near the hospital where they could walk for receiving HD. In addition, they were not only get fatigue from traveling, but also from pathology of the disease which made them suffered with "fatigue" symptom in relatively high

score (Mean = 6.17, SD = 2.94). Similar to the study of Lee and Jeon among 143 Korean patients with stage 2 to 4 chronic kidney disease (CKD), the prominent symptom found were energy insufficiency due to the accumulation of waste products in blood stream.¹⁵ The accumulation of BUN was 23.25 mmol/L and the mean serum creatinine was 921.60 μ mol/l which was relatively high and led to fatigue symptom. This study also supported the findings from previous studies which stated that QOL score in patients with ESRD was lower than the general population and QOL in patients with ESRD was correlated with reduced glomerular filtration rate and progressive of disease.^{16,17} Patients in this study reported loss of appetite in moderate scores which led them experienced the feeling "not in wellbeing". Other factors contributed to poor QOL was the income of them, 56.5% reported

that they had no income because they could not work due to poor health condition and they had to spend time on HD. Many of them had to rely on their family members' income which made them perceived that they were a burden to their family.¹¹ Their roles changed which was reflected in the low scores of physical functions.

Hypotheses testing

Hypothesis 1: Co-morbidity and symptom status were negatively related to QOL among patients with ESRD receiving HD.

Co-morbidity was negatively correlated with QOL ($r_s = -.46$, $p < .05$) which supported hypothesis 1. Patients with ESRD who had multiple co-morbid diseases showed lower score of QOL. The possible explanation is that patients who suffered with various co-morbid diseases had to face many unpleasant circumstances such as; taking various medications that might lead to more adverse effects from multiple drugs used; some co-morbid diseases caused accumulation of urea and creatinine which affected consciousness and cognitive status; hyper uremia caused dryness of skin, skin itching, and discomfort which lead to sleep disturbance, feeling restless, and tired. Eventually, these unpleasant symptoms affected QOL negatively.^{6,11,18,19}

There was negative correlation between the total symptoms score and QOL ($r_s = -.67$, $p < .05$). Patients who had higher symptoms score showed lower score on QOL. This result was similar to previous studies which found that patients who experienced more symptoms demonstrated lower QOL.^{20,21} Usually patients with ESRD have to receive HD which generated many unpleasant symptoms couple with their co-morbidity diseases leading to low QOL.

Hypothesis 2: Social support was positively related to QOL among patients with ESRD receiving HD.

The finding supported hypothesis 2 that social support was significantly positive correlated to QOL among patients with ESRD receiving HD ($r_s = .63$, $p < .05$). Patients who received social support, mainly from their

family, would have higher score of QOL. This finding was consistent with another study in Vietnam and Iran ($r = .30$, $r = .72$, $p < .05$) which found that social support and QOL were significantly correlated.^{6,22} The finding of this strong relationship between social support and QOL could be explained through the cultural perspective among Vietnamese population. Supports from family members as well as support from people who live in the same community were deeply planted. Vietnamese always expected instrumental support as well as psychological support such as respect from others in which made them became more meaningful.²³

Conclusion and Implication for Nursing Practice and Further Study

Findings from this study supported the concept of health-related quality of life theory in that QOL in patients with ESRD receiving HD was a comprehensive view point represented the whole picture of patients' life. In addition, findings were congruent with previous studies in other countries. This group of patients dealt with poor QOL which reflected by inclusive aspects, comprised both physical and mental health status. Factors related to QOL, both positive and negative, were prominently discovered; co-morbidity, social support, and symptoms status; so that nurses can provide various strategies to improve QOL among patients with ESRD receiving HD with proper intervention.

The results of this study reflected the concept as proposed in QOL theory; patients with ESRD receiving HD had relatively poor QOL. Factors correlated with poor QOL among these patients comprised internal or patients-related factors such as patients' co-morbidity and patients' severity of symptoms while external or environmental-related factor was social support.

Implications for Nursing Practice

To enhance QOL in patients with ESRD receiving HD nurses should perform these following activities.

Assess patients' co-morbidity and identify patients who have high numbers of co-morbidities. Patients' symptoms or illnesses related to co-morbidities have to be controlled and properly managed; for example, enhance patients' appetite, giving advises about sleep and adequate rest. Enhance family, peer group support as well as social support. Patients' QOL should be continuously assessed every 3 months in order to monitor their QOL and manage appropriately.

Implication for Further Study

1. Should replicate the study in a wide range of population and a more rigorous design to enable for generalization.

2. KDQOL-SF36 in Vietnamese version should be tested in its psychometric property by using adequate number of subjects; advanced statistic such as factor analysis should be employed to test the psychometric property of KDQOL-SF36 in Vietnamese context.

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