Factors Related to Functional Status in Patients with Rheumatoid Arthritis*

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Abstract

Purpose: To study the relationships between self-efficacy, pain level, depression, social support, and functional status among patients with rheumatoid arthritis.

Design: Descriptive correlational design.

Methods: The sample was 126 patients who were admitted to the Rheumatology Department, Bach Mai Hospital, Hanoi, Vietnam. Data were collected using 6 questionnaires including the demographic data, the Health Assessment Questionnaire 8-Item Disability Scale (HAQ8-ID), the Arthritis Self-Efficacy Scale-8 item (ASES-8), the Visual Numeric Scale (VNS), the Patient Health Questionnaire Scale (PHQ-9), and the Multidimensional Scale of Perceived Social Support (MSPSS). Spearman's rho was employed to examine the relationships among studied variables.

Main findings: The findings supported the proposed hypotheses that self-efficacy and social support were negatively related to functional status (disability score) in patients with rheumatoid arthritis (r_s = - .349, - .215, $p < .05$). Pain level and depression were positively related to functional status (disability score) in patients with rheumatoid arthritis (r_s = .561, .679, $p < .05$).

Conclusion and recommendations: The findings indicated that self-efficacy, pain level, depression, and social support were correlated with functional status with disability score among patients with RA. It is recommended that nurses should assess functional status of RA patients, enhance patients' self-efficacy, promote social support, control pain, and manage depression to promote positive functional status of patients with RA.

Keywords: functional status, self-efficacy, pain, depression, social support, rheumatoid arthritis

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ปัจจัยที่มีความสัมพันธ์กับภาวะการทำหน้าที่ในผู้ป่วยโรคข้ออักเสบรูมาตอยด์*

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาความสัมพันธ์ระหว่างสมรรถนะในตนเอง ระดับความปวด ภาวะซึมเศร้า การสนับสนุนทางสังคม และภาวะการทำหน้าที่ (คะแนนทุพพลภาพ) ของผู้ป่วยโรคข้ออักเสบรูมาตอยด์

รูปแบบการวิจัย: การศึกษาเชิงสหสัมพันธ์

วิธีดำเนินการวิจัย: กลุ่มตัวอย่างเป็นผู้ป่วย จำนวน 126 คน ที่เข้ารับการรักษาในแผนกโรคข้อ โรงพยาบาล Bach Mai, Hanoi, Vietnam เก็บข้อมูลโดยใช้แบบสอบถาม จำนวน 6 ชุด ได้แก่ 1) แบบสอบถามข้อมูลส่วนตัว 2) แบบประเมินภาวะการทำหน้าที่ the Health Assessment Questionnaire 8-Item Disability Scale (HAQ8-ID) 3) แบบประเมินสมรรถนะเกี่ยวกับข้ออักเสบ the Arthritis Self-Efficacy Scale-8 item (ASES-8) 4) แบบประเมินความเจ็บปวดแบบตัวเลข the Visual Numeric Scale (VNS) 5) แบบประเมินภาวะซึมเศร้า the Patient Health Questionnaire Scale (PHQ-9) และ 6) แบบวัดการรับรู้การสนับสนุนทางสังคม the Multidimensional Scale of Perceived Social Support (MSPSS) วิเคราะห์ความสัมพันธ์โดยใช้สถิติ Spearman's rho

ผลการศึกษา: ผลการวิจัยสนับสนุนสมมติฐานว่า การรับรู้สมรรถนะแห่งตนและการสนับสนุนทางสังคมมีความสัมพันธ์ทางลบกับภาวะการทำหน้าที่ในผู้ป่วยโรคข้ออักเสบรูมาตอยด์ (r_s = - .349, - .215, p <.05) ระดับความปวดและภาวะซึมเศร้ามีความสัมพันธ์เชิงบวกกับภาวะการทำหน้าที่ในผู้ป่วยโรคข้ออักเสบรูมาตอยด์ (r_s = .561, .679, p <.05)

สรุปและข้อเสนอแนะ: จากผลการวิจัยพบว่า การรับรู้สมรรถนะแห่งตน ระดับความปวด ภาวะซึมเศร้า และการรับรู้การสนับสนุนทางสังคมมีความสัมพันธ์กับภาวะการทำหน้าที่ ในผู้ป่วยโรคข้ออักเสบรูมาตอยด์ จึงเสนอแนะให้พยาบาล ประเมินภาวะการทำหน้าที่ของผู้ป่วยโรคข้ออักเสบรูมาตอยด์ เพิ่มสมรรถนะในตนเองของผู้ป่วย ส่งเสริมการสนับสนุนทางสังคม การควบคุมอาการปวด และจัดการภาวะซึมเศร้า เพื่อส่งเสริมการทำหน้าที่ในผู้ป่วยโรคข้ออักเสบรูมาตอยด์

คำสำคัญ: ภาวะการทำหน้าที่ สมรรถนะในตนเอง ความเจ็บปวด ภาวะซึมเศร้า การสนับสนุนทางสังคม โรคข้ออักเสบรูมาตอยด์

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Background and Significance

Rheumatoid arthritis (RA) is a chronic autoimmune systemic disease that affects joints, connective tissues, muscles, tendons, and fibrous tissue. Its symptoms are systematically persistent such as tender swelling, pain, morning stiffness, limited motion of joints, and other symptoms including fatigue, weakness, loss of weight, and fever. It is a chronic disabling condition that is the cause of pain and deformed joints[1]. The cause of RA has not been identified in recent years. It may be infection, autoimmune response, or genetic product caused by the effects of environment or lifestyle factors[2].

Globally, the RA prevalence rates were 1%[3], 0.40% in Southeast Asia, 0.37% in Eastern Mediterranean, 0.62% in Europe, 1.25% in America, and 0.42% in Western Pacific regions[4]. Annually, the mortality rate of rheumatoid arthritis was 2.7% of people in the global[5]. In Vietnam, there was estimated 0.28% of rheumatoid arthritis patients[6].

Leidy defined functional status as an individual's ability to perform normal daily activities required to meet basic needs, fulfil routine roles, and maintain health and well-being[7]. Functional status included functional capacity and performance. Functional capacity included domains such as physical, psychological, social, and spiritual domains in ability to perform daily activities. Functional performance included activities usually performed by people during their daily lives. According to a systematic review, it was reported that 50% of RA patients had different functional status with subsequent disability, which was associated with baseline damage of joints[8].

Bandura identified self-efficacy as one of the effective component of self-confidence in one's ability to succeed in specific situations[9]. According to self-efficacy theory, a person who suffered with RA needed to have positive judgment on his/her own capability to perform desired behaviors to control the advancement of the disease[9]. Since rheumatoid arthritis affected activities of daily living and functional status; therefore, it was reported that self-efficacy was a significant independent predictor of self-reported functional status in RA patients[10].

Pain was defined by the International Association for the Study of Pain (IASP) as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"[11]. Pain influenced quality of life, functional status, and emotional control of individuals; pain also led to functional disability in rheumatoid arthritis patients[12].

Depression was defined as a common mental condition with symptoms such as sadness, displeasure, decreased energy, disordered feelings, low self-worth, sleep disorder or loss of appetite, and loss of focus[13]. Depression reduced people's functioning as the leading cause of lost disability. Depression was ranked as the third leading cause of the global disease burden in 2004. According to Benka, et al. anxiety and depression were observed to be most strongly related to functional status of RA patients[14].

Social support was explained as an interpersonal interaction with others with the potential to produce positive feelings such as love, attachment, security, belonging to a group, and the availability of emotional, physical, and informational support[15]. The study of Peeters, Brown and Burton showed a significant correlation between social support and the physical activity of RA patients with functional status[16].

This study aimed to examine the relationships between self-efficacy, pain level, depression, social support, and functional status among patients with rheumatoid arthritis. The results from this study would be beneficial to provide appropriate care to promote functional status of rheumatoid arthritis patients in Vietnam.

Objectives

To study the relationships between

self-efficacy, pain level, depression, social support, and functional status among patients with rheumatoid arthritis.

Hypotheses

1. Self-efficacy and social support were negatively related to functional status (disability score) in patients with rheumatoid arthritis.

2. Pain level and depression were positively related to functional status (disability score) in patients with rheumatoid arthritis.

Methodology

This study was a descriptive correlational design.

Population and Sample

The population of this study included in-patients both males and females with rheumatoid arthritis who were admitted to the Rheumatology Department, Bach Mai Hospital, Hanoi, Vietnam from 1st of August to 30th of October 2016.

The sample was selected from the population included those who were be able to communicate in the Vietnamese language. Patients with severe pain were excluded.

The sample size was calculated using G*power program to determine the minimum number of participants needed for correlation design[17]. Four parameters required including 1) the level of significance $\alpha = .05$, 2) the power of the statistical test (Power 1- $\beta = .8$), 3) four independent variables, and 4) the effect size. Because there was limited study about these variables, the researcher selected medium correlation coefficient ($R = .3$)[18], square multiple correlation ($R^2 = .09$) and calculated the effect size for this study ($f^2 = .099$). Based on G*power, sample size was at least 126 RA patients.

Research Instruments

Data were collected with research instruments as follows:

Demographic data and illness information included gender, age, weight, height, BMI, marital status, education, occupation, income, health insurance, number of family member, illness history of family, diagnosis, co-morbidity, illness duration, work capacity, treatment method, and previous trauma and surgery.

2. The Health Assessment Questionnaire 8-Item Disability Scale (HAQ8-ID), which was a short scale of the Health Assessment Questionnaire (HAQ)[19]. The HAQ had four domains: 1) disability, 2) discomfort and pain, 3) drug side effects (toxicity) and 4) dollar costs. The first domain, which comprised the HAQ Disability Index could be used independently for RA. The domain of disability was assessed by the eight categories of dressing, arising, eating, walking, hygiene, reach, grip, and common activities. It was related closely to Activity Daily Living of person but was not an ADL scale, rather an instrument measured disability. The stem of each item assessed patient's functional ability using their usual equipment during the past week. For each item, range score was from 0 to 3 (0 = without any difficulty; 1 = with some difficulty; 2 = with much difficulty; and 3 = unable to do) and higher scores reflected higher functional disability. The separate disability level based on the score mean of the eight items. There were three functional statuses which were mild to moderate difficulty with 0 to 1, moderate to severe disability with 1 to 2; severe to very severe disability with 2 to 3[20].

3. The Arthritis Self-Efficacy Scale-8 item (ASES-8) was used to measure self-efficacy of patients with RA. The ASES-8 included 8 items responded 4 domains of self-efficacy for pain, other symptoms, preventing pain, and fatigue. Each item had score ranging from 1-10 and the total score for separate self-efficacy level through the mean of the eight items. The total score reflecting self-efficacy level was ranged from 1 = very uncertain, 5-6 = moderately uncertain, and 10 = very certain. The higher score meant higher self-efficacy. The reliability of ASES was high with Cronbach's alpha = .96[21].

4. The Visual Numeric Scale (VNS) was used to measure pain level in this study. The VNS was a free domain that was developed from

Visual Analogue Scale (VAS) and based on pain assessment experience by Philip and colleagues at Stanford University School of Medicine, USA[22]. The VNS was valid to measure for self--reporting pain because patients understood and answered easier than VAS. This scale was designed both visual shapes and numeric scale (from 1 to 10 scores). The patient self-reported about pain perception through circle shape or number. The higher score was showed higher pain level; the VNS had high correlation with r = .92, this result demonstrated strongly reliability in test-retest[22].

5. The Patient Health Questionnaire (PHQ-9) was used to measure depression in this study. Each item responded from 0 (not at all) to 3 (nearly every day). The total score reflected depression severity as 0-4 = none, 5-9 = mild, 10-14 = moderate, 15-19 = moderately severe, 20-27 = severe. Validity has been assessed against an independent structured mental health professional (MPH) interview. PHQ-9 score ≥ 10 had a sensitivity of 88% and a specificity of 88% for major depression. The reliability of this instrument was excellent with Cronbach's alpha .96[23], and .87 in this study.

6. The Multidimensional Scale of Perceived Social Support (MSPSS) was used to measure social support in this study with permission from the author. The MSPSS had good internal and test reliability as moderate construct validity. There were 12 items covering family, friends, or significant others. Each item ranged from 1-7; 1 = very strongly disagree, 2 = strongly disagree, 3 = mildly disagree, 4 = neutral, 5 = mildly agree, 6 = strongly agree, 7 = very strongly agree. The mean score on the 12 items reflected level of social support as 1-2.9 = low support, 3-5 = moderate support, 5.1-7 = high support[24]. Cronbach's alpha coefficient of the MSPSS in this study was .89.

All instruments were translated to Vietnamese language by a bilingual translator with back translation technique; and validated by 5 experts specialized in rheumatology.

Protection of Human Subjects

The proposal for this study was approved from the IRB of Faculty of Nursing, Mahidol University (COA No.IRB-NS2016/348.0205), and the IRB of School of Medicine and Pharmacy, Vietnam National University, Vietnam. Data were collected with the standard procedure mandated by the IRB. The researcher strictly concerned with the issues of voluntary participation with informed consent, anonymity, and confidentiality.

Data Collection

After obtaining permission to collect data from Bach Mai Hospital, the researcher collected data as follows:

1. The research assistant announced and explained the details of the research project to patients who met the selection criteria and were interested to participate in the study. The research assistant asked patients who voluntary to participate to sign the consent form.

2. The researcher arranged a private room to interview the subjects or have them completed questionnaires by themselves. The total time for completing five questionnaires was approximately 30-40 minutes. Patients' demographic data and illness information were collected from hospital records.

Data Analysis

Data were analyzed using the computer statistical package with the significant level of .05 as follows:

1. Descriptive statistics such as frequency, percentage, range, mean, and standard deviation were used to describe demographic data, illness information, and studied variables.

2. All studied variables were tested for normal distribution to meet assumption of the Pearson's Product Moment Correlation. None of them was normal distributed; therefore, the Spearman's rho was used to determine the relationships between studied variables.

Findings

The findings revealed that most of the subjects were females (88.89%); age ranged from

23 to 76 years with the mean of 55.62 years (SD = 10.29); 89.68% were married; 33.33% finished high school; 37.31% were farmers; 66.67% lived in rural areas; 50.00% earned monthly income less than 100 USD; 74.6% had more than two family members; most of the subjects had government insurance.

Half of the subjects were diagnosed with RA less than two years; 92.06% had length of stay in hospital for 7 days or less; 32.54% had co-morbidities with hypertension (7.14%), diabetes (6.35%), and osteoporosis (79.37%); 100% had pain; 38.89% had morning stiffness; 21.43% had inflamed joints.

Functional status

The mean disability functional scale was 1.3 (SD = .80) with the range of 0 to 3. The findings showed that functional statuses with disability of the subjects; including 64.28% with mild difficulties to moderate disability, 27.78% with moderate to severe disability, and 7.94% with severe to very severe disability.

Self-efficacy, pain level, depression, and social support

The mean score of self-efficacy level was 4.88 (SD = 1.87) with a range from 1 to 10; the total score was categorized as very uncertain in 55.56% of the subjects, moderately uncertain in 17.46%, and very certain in 26.98%.

The mean score of pain level was 4.88 (SD = 1.87) with a range from 1 to 10; the total score was categorized as very severe pain in 21.43% of the subjects, severe pain in 39.68%, moderate pain in 29.37%, and mild pain in 9.52%.

The mean score of depression as measure by the PHQ-9 was 8.65 (SD = 6.58); the total score was categorized as none in 33.33% of the subjects, mild depression in 30.95%, moderate depression in 12.70%, moderately severe in 14.29%, and severe depression in 8.73%.

The mean score of social support was 4.10 (SD = 0.93); the total score was categorized as low support in 11.11% of the subjects, moderate support in 75.40%, and high support in 13.49%.

Correlations between self-efficacy, pain level, depression, social support, and functional status

It should be noted that functional status in this study reflected by disability score, higher score of disability was referred to lower functional status and, in opposition, lower score of disability was referred to higher functional status.

The findings supported the proposed hypotheses that self-efficacy and social support were negatively related to functional status (disability score) in patients with rheumatoid arthritis (r_s = - .349, - .215, p < .05). Pain level and depression were positively related to functional status (disability score) in patients with rheumatoid arthritis (r_s = .561, .679, p < .05). (Table 1)

Table 1: Correlations between self-efficacy, pain level, depression, social support, and functional status with disability among patients with RA

Variables	1	2	3	4	5
1. Functional status	1.00				
2. Self-efficacy	- .349*	1.00			
3. Pain level	.561*	- .283*	1.00		
4. Depression	.679*	- .424*	.577*	1.00	
5. Social support	- .215*	.361*	- .154	-.227*	1.00

* p < .05

Discussion

According to the findings of present study, self-efficacy was negatively related to functional status with disability, which was consistent with the previous study by Primdahl, Wagner and Hørslev-Petersen[25] that self-efficacy was associated with physical disability. RA patients who had lower self-efficacy would have

higher functional status with disability. Most of patients in this study had low level of self-efficacy as very uncertain and moderately uncertain which reflected their low ability to manage symptoms from RA resulted in higher disability.

Social support was negatively related to functional status with disability, which was consistent with the study of Peeters, Brown and Burton[16] that showed a significant correlation between social support and physical activity of RA patients. Social support was a type of benefit and specific support provided for RA patients. Patients who had low social support also had high depressive feelings resulted in more difficult to perform daily living activities. However, the results showed that subjects in this study had moderate to high level of social support which resulted in low functional status with disability in RA patients.

Pain level was positively related to functional status with disability, which meant that subjects who had higher level of pain would have higher functional status with disability. The findings were similar to a report by WHO[12] that pain influenced functional status, quality of life, and emotion of individuals. Thus, patients who had higher pain would have difficulties in performing activities including dressing, arising, eating, walking, hygiene tasks, reaching, gripping, and other common activities.

Depression was strong positively related to functional status with disability as reflected in the PHQ-9 scale. This result disclosed the similar findings as the study of Benka, et al.[14] in which depression was observed to be most strongly related to functional status in RA patients. RA patients had depression with symptoms such as fatigue, restlessness, sleep disturbance, and difficulty in performing everyday activities, which may affect functional status with disability. According to the findings, 66.67% of subjects had depression from mild to severe over the last two weeks. Moreover, the subjects suffered from pain, morning stiffness, joint inflammation, and joint deformity which might lead to have higher degree of depression and finally reduced functional status.

Conclusion and Implications for Practice and Further Study

In conclusion, the findings indicated that nearly all RA patients experience disability or poor functional status. Self-efficacy and social support were negatively related to functional status with disability. In addition, pain level and depression were positively related to functional status with disability.

These findings suggested that nurses should assess functional status, enhance patients' self-efficacy, promote social support, develop and use pain control protocol, identify and manage depression in order to improve functional status in RA patients. Clinical practice guidelines to improve functional status among patients with RA should be developed and tested for effectiveness by research in the future.

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