การศึกษานำร่องการสนับสนุนการจัดการตนเอง ในหญิงวัยกลางคนที่มีภาวะข้อเข่าเสื่อม

A Pilot Study of a Self-Management Support Intervention in Middle-Aged Women with Knee Osteoarthritis

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บทคัดย่อ

การศึกษานำร่องเป็นแบบกลุ่มเดียวก่อนการทดลอง วัดผลก่อน หลัง และระยะติดตามในครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาความเป็นไปได้ของการสนับสนุนการจัดการตนเองของหญิงวัยกลางคนที่มีภาวะข้อเข่าเสื่อม โดยเปรียบเทียบคะแนนการวัดผล 3 ระยะของการทำหน้าที่ของข้อเข่า และคุณภาพชีวิตด้านสุขภาพ กลุ่มตัวอย่างคัดเลือกแบบสะดวก คือหญิงวัยกลางคนจำนวน 5 ราย ที่ได้รับการวินิจฉัยว่ามีภาวะข้อเข่าเสื่อม อยู่ในจังหวัดนครศรีธรรมราช กลุ่มตัวอย่างได้รับการสนับสนุนการจัดการตนเองทั้งหมด 8 กิจกรรมรวมระยะเวลา 4 สัปดาห์ และติดตามผลนาน 4 สัปดาห์ วิเคราะห์ข้อมูลโดยใช้การทดสอบฟรีดแมน และทดสอบความแตกต่างรายคู่ด้วยดันน์-บอนเฟอโรนี

ผลการวิจัยพบว่า คะแนนของตัวแปรตามในสามระยะที่วัดผลมีความแตกต่างกัน คะแนนการทำหน้าที่ของข้อเข่าและคะแนนคุณภาพชีวิตระยะติดตามผล (ครั้งที่ 3) สูงกว่าก่อนเริ่มการทดลอง (ครั้งที่ 1) อย่างมีนัยสำคัญทางสถิติ ($p<.05$) ในขณะที่ไม่พบความแตกต่างของคะแนนตัวแปรตามทั้งสองระหว่างหลังการทดลอง (ครั้งที่ 2) กับก่อนเริ่มการทดลอง (ครั้งที่ 1) และหลังการทดลอง (ครั้งที่ 2) กับติดตามผล (ครั้งที่ 3) ผลการวิจัยแสดงให้เห็นว่าการสนับสนุนการจัดการตนเองนี้ มีความเป็นไปได้สำหรับนำไปจัดกิจกรรมการปฏิบัติการพยาบาลต่อไป

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Abstract

This pilot study of one-group pre-experimental design with pretest-posttest and follow-up measures aimed to test feasibility of a self-management support intervention comparing 3-time measuring scores of knee functional status and health related quality of life (HRQOL) among middle-aged women with knee osteoarthritis. A convenience sampling technique was used to recruit participants including five middle-aged women who have been clinically diagnosed with knee OA in Nakhon Si Thammarat province. Participants received a self-management support intervention of all 8 sessions for 4 weeks, and 4-week follow-up. Data were analyzed by using Friedman with Dunn-Bonferroni post hoc test.

The results revealed that there are significant differences over the three-time measures of the outcomes. Scores of Knee functional status and HRQOL at follow-up period (T3) was significantly greater than that at baseline (T1) ($p<.05$) while no difference was found between posttest (T1) and baseline (T2), and posttest (T2) and follow-up (T3) measurement. These findings indicate this self-management support intervention is feasible in nursing clinical practice for further implementation.

Keywords: self-management support, middle-aged women, knee osteoarthritis, health related quality of life

Introduction

Knee osteoarthritis (OA) is common form of arthritis and a leading cause of disability worldwide. It is a chronic disease characterized by joint narrowing and bone spur formation leading to joint pain, stiffness and swelling[1]. In addition, knee OA often causes interference with loss of work opportunities. Ultimately, disability leads to difficult mobility, social isolation and also induces anxiety and decrease quality of life[2].

Knee OA is a major public health problem with a prevalence of 10-15 percent in adults. By 2040, an estimated 26 percent of all adults, or over 78 million people, will have arthritis[3]. It has been shown that OA is a growing public health problem in southeast Asia. In Thailand, the prevalence of knee OA is 11.3 percent of all adults, which is the highest rate in Asia[4]. A survey study among elderly community Thais with a history of knee pain using conventional radiography found that the prevalence of knee OA ranged from 34.5 % to 45.6%[5]. The prevalence rate of knee OA rises dramatically post-menopause due to lower estrogen levels. Menopause also frequently influences many changes in body composition such as increased body fat or obesity with impact on bone density, reduced cartilage volume and muscle strength.

Recently, several studies have confirmed an increased risk for knee OA associated with age, female gender, physical activity, occupation and obesity. The interactions of these risk factors are both varied and complex[6]. Living with knee OA can affect knee functional status and result in physical struggling[7]. Patients with knee OA frequently have chronic pain and disability that can lead to a reduction in their health related quality of life (HRQOL)[8]. The individual and family self-management theory (IFSMT)[9] involves knowledge and beliefs, self-regulation skills and abilities, and social facilitation to manage chronic conditions. In view of the high prevalence of knee OA and the absence of unequivocal evidence of program effectiveness, self-management support programs have been tested in quality assurance projects and randomized controlled trials (RCTs), the results of which show improvement in pain, quality of life and function compared to control groups[10].

There are many differences in the self-management models available, interventions (group or one-on-one programs, types of education materials, durations of programs and types of program facilitators) as well as different trial structures and variations in outcome measures. In addition, although self-management support programs have been proven to be effective in various countries such as the United States of America, the United Kingdom and cities such as Hong Kong, such programs need to be specific to a local culture and in tune with ethnic groups. Accordingly, the population of middle-aged women faces ever-increasing costs associated with knee OA. Therefore, it is important to establish whether delivery results in added benefits and improvements in outcomes.

Purpose of the Study

This study aimed to determine the feasibility of a self-management support intervention on knee functional status and health-related quality of life in middle-aged women with knee osteoarthritis.

Conceptual Framework for the study

The Individual and Family Self-Management Theory (IFSMT)[11] used to guide the study. Self-management support involves providing knowledge and beliefs, encouraging self-regulation skills and abilities, and improving social facilitation to manage chronic conditions or engage in healthy behaviors. Whereas self-management interventions facilities development of self-management skills and activities designed to enhance health behavior change and increased quality of life. However, the study presents the framework as applicable to self-management in the context of individual of middle-aged women.

Methods

A pre-experimental design with pretest-posttest and follow-up measures was used to determine the feasibility of a self-management support intervention on knee functional status and health-related quality of life among middle-aged women with knee OA.

Participants: A convenience sampling technique was used to recruit 5 middle-aged women aged 40-59 years old. Inclusion criteria were; the participants have been clinically diagnosed with knee OA more than three months, having knee pain plus morning stiffness or crepitation on motion[13], and be able to understand and well-communicate Thai language. Data collection was carried out from July to August 2019 in Nakon Si Thammarat province.

Research Instruments:

1. A demographic questionnaire was developed by the researcher for collecting data on age, body mass index, marital status, occupation and education level at baseline only.

2. Knee functional status was measured by using the functional dimension of the Modified Thai version of Western Ontario and McMaster University Osteoarthritis Index (WOMAC)[12]. It is a self-report scale containing 22 items. There were 3 subscales of pain (5 items), stiffness (2 items) and function (15 items). The participants were asked to rate each item on 0-10 point-rating scale from “0” is no or least problem to “10” is very much or most problem. A total score ranged from 0-220 with a higher score indicating greater knee functional limitation and a low score interpreting as less knee functional limitation. In this study, its Cronbach alpha was 0.80.

3. Health-related of quality of life (HRQOL) was measured by the Short Form Survey (SF-36) – Thai version[13]. It contains 36 items in the following eight domains: physical functioning (10 items), role

limitations due to physical problems (4 items), physical pain (2 items), general health perceptions (5 items), social functioning (2 items), vitality (4 items), role limitations due to emotional problems (3 items) and general mental health (5 items) and reported health transition (1 item). The score of each item varies from 1-2 points in physical functioning, 1-3 points in general health and 1-6 in the physical pain, social functioning, and mental health domains. The total score of each domain requires a transformation into 100-point scales. The aggregated SF-36 components are scored in which higher scores represent better HRQOL. In this study, its Cronbach alpha was 0.81.

4. A self-management support intervention

The process of activities for intervention group consisted of eight bi-weekly sessions and approximately 80 minutes per session. Homework guidelines have been formulated for participants for present and discuss next week. It was assigned homework each week for researcher assess participants' understanding and their problem. The participants must complete homework and discuss with the researcher before starting the next session. Lastly, booklet knee OA consisted of information about knowledge of knee OA, pathophysiology, sign and symptom, pain management, knee exercise, and treatment. Summary of each session of the intervention was presented in Table 1.

Table 1 Summary of a self-management support intervention

Week 1	knowledge knee OA and Exchange of experience OA	Session 1: Goal and expectation
		Session 2: Providing knowledge of knee OA
Week 2	Pain management and knee exercise	Session 3: Providing pain management
		Session 4: Knee exercise
Week 3	Nutrition and weight control	Session 5: Self-regulation skill
		Session 6: Nutrition and weight control
Week 4	Evaluation of self-management and home visiting	Session 7: Self-evaluation
		Session 8: Home Visits

Ethical consideration:

This study was approved by the Faculty Ethics Committee of the Faculty of Nursing, Burapha University, Thailand (No.02-05-2562). The researcher explained the goals and procedures of the study, research objectives, data collection procedures, risks and benefits of the study. After agreement to participate had been obtained and informed consent forms had been signed, the participants were asked to complete the demographic data questionnaire, the WOMAC and the SF-36 (Pretest) before commencing with the study, posttest (week 4), and Follow up (week 8).

Data Analysis:

Descriptive statistics were used to describe the characteristics of the sample. The Friedman test for repeated measures compared the differences in effects pre-and post-intervention and follow-up measures. The Dunn-Bonferroni post hoc test examined for differences in treatment between paired time periods.

Results

The participants were 5 middle-aged women. The mean was 54 years (SD + 2.92), and the mean Body Mass Index (BMI) was 28.26 kg/m2 (SD + 3.48). All of them had no underling disease. They had incomes about 4,000 Thai baht per month. A mean of duration of knee OA was 2.4 years (SD + 1.14).

The Friedman tests were performed to compare total and subscale scores of knee functional status and HRQOL among 3-time measures of before beginning the intervention (T1), posttest at week 4 (T2), and follow-up at week 8 (T3). The results found that there were significantly different ($p<.05$). Subsequently, Dunn-Bonferroni post hoc tests were carried out to follow-up the significant differences among 3-time measures for each pair of times of each outcome (Table 2).

Table 2. Comparisons of outcome variables of total and subscale scores at three-time measures by using Friedman test (n = 5).

Variable		Time	M (SD)	χ^2	df	Sig
WOMAC	Total	1	96.60a (12.14)	8.4	2	.015*
		2	51.60 (27.95)			
		3	25.60[b] (33.55)			
	Pain	1	22a (4.95)	9.579	2	.08*
		2	13.49 (5.55)			
		3	7.20[b] (8.98)			
	Stiff	1	8.4[a] (1.34)	8.4	2	.015*
		2	4.8 (2.95)			
		3	1.6[b] (2.19)			
	Knee functional	1	66.2[a] (9.09)	8.4	2	.015*
		2	33.4 (21.33)			
		3	16.8[b] (22.84)			
HRQOL (SF-36)	Total	1	38.80[a] (17.46)	8.40	2	.015*
		2	50.66 (13.52)			
		3	71.81[b] (8.50)			
	General health	1	37[a] (9.08)	8.444	2	.015*
		2	63[b] (20.19)			
		3	50[b] (0)			
	Physical Functioning	1	59 (15.97)	4.5	2	.105
		2	72 (16.43)			
		3	66 (9.62)			
	Role Emotional	1	33.33 (47.14)	8.375	2	.015*
		2	0[a] (0)			
		3	100[b] (0)			

Variable	Time	M (SD)	χ^2	df	Sig
Social Functioning	1	32.50 (16.77)	4.333	2	.115
	2	67.50 (22.71)			
	3	75 (0.00)			
Body pain		33[a] (7.98)	7.111	2	.029*
	2	43 (5.97)			
	3	76.5[b] (18.51)			
Vitality	1	42[a] (16.09)	9.333	2	.009*
	2	59 (15.97)			
	3	76[b] (8.94)			
Role emotion	1	33.33 (47.14)	8.375	2	.015*
	2	0[a] (0)			
	3	100[b] (0)			
Mental Health	1	53.60 (23.77)	4.353	2	.113
	2	60.80 (13.68)			
	3	76 (8.00)			

* p<.05, the pairs with different characteristics ([a, b]) were significantly different.

Dunn-Bonferroni post hoc tests were carried out to follow-up the significant differences among 3-time measures for each outcome. For the mean score of knee functional status on follow up (T_3) was significantly lower (better) than that on pretest (T_1) (t = 1.8, p<.05) while between T_3 vs. T_2 and T_2 vs. T_1 were not different. These could be interpreted that implementation of a self-management support intervention for the patients with knee osteoarthritis is useful in reducing their pain intensity and can be used effectively for further study.

Dunn-Bonferroni post hoc tests were also carried out to follow-up the mean score of Health-related quality life (HRQOL) on follow-up (T_3) was significantly higher than that pretest (T_1) (t = -1.80, p<.05) while between T_3 vs. T_2 and T_2 vs. T_1 were not different. The mean score of SF-36 on follow up (T_3) was also significantly higher than that pretest (T_1) (t = -1.8, p<.05), while between T_3 vs. T_2 and T_2 vs. T_1 were not different. The body pain, general health, vitality, and emotional aspects domains displayed a significant difference when the before and after time periods were compared.

Discussion

Study results found the Self-management support intervention is a key to successful treatment that improves the knee functional and health related quality of life. Middle-aged women after received intervention also can understand themselves disease and monitor her condition and risk factors and adjusts all symptom changes. Patient education, information and self-management support are critical for patient cooperation during treatment. In the previous patients with knee OA many believe that exercise will result in bone and cartilage loss and due to fear of pain[14].

Besides Osteoarthritis Research Society International (OARSI) recommendations several evidence-based studies on self-management programs have shown that it is helpful to engage patients to better manage their chronic diseases[15].

The WOMAC scores might have resulted from the effectiveness of the self-management support intervention in improving knowledge and reduced knee pain. The findings were congruent when knee OA education related to understanding of disease and self-management behavior were provided. The results suggest that a substantial benefit may be derived from increased awareness of the disease and increased knowledge about the potential for improved management. In community-based young to middle-aged women, a simple low-intensity lifestyle program reduced the risk of knee pain worsening in those with any knee pain at baseline, particularly in those overweight or obese16. Pragmatic self-management programs may represent a feasible lifestyle intervention to reduce the burden of knee pain[17].

The health-related quality of life (HRQOL) was found to be significantly different between the times. This finding is congruent with a study which reported that self-management support intervention improved HRQOL[18]. Importantly, education and management programs designed to support Knee OA patients report improved QOL[19].

A study primary care patients with knee OA concludes that the use of information may increase a people engagement in self-management and be feasible for people living with knee OA, and evidence from related health care settings indicates that the early and treatment may be feasible and effective[20]. However, middle-aged women still have maintained well-being. Therefore, giving guideline to activities want to improve knee functional and HRQOL. Furthermore, the self-management strategy can be the guideline for health care providers for taking care of their patients in order to improve quality of life[21].

Recommendation

Recommendation for nursing practice

1. Implementation of a self-management support intervention for the middle-aged women with knee OA is useful and feasible in reducing their pain intensity.

2. Health professional include family members can start implementing and follow up the self-management support for improve knee functional status and HRQOL.

3. Self-management is considered as an effective strategy in the treatment of middle-aged women with knee OA.

Recommendation for the future research

1. Nurses researchers should apply this intervention to implement with extension of a larger size of sample and using a random sampling technique to recruit the participants. In addition, effectiveness of this intervention could be confirmed.

2. A longitudinal study, at least 3 month-follow up should be designed to determine sustainability or long-term effects of the intervention. Moreover, other outcomes such as BMI, waist circumference and fat composition are also suggested for future studies.

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