The Relationshipbetween Self-Efficacy for Exercise and Knee Pain among Older Adults with Knee Pain in Community-Dwelling of Bangkok Metropolis, Thailand

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Abstract

Objectives: Aimedto describe demographic characteristics, history of knee pain, history of exercise and assess the relationship between self-efficacy for exercise and knee pain among older adults with knee pain in community-dwelling of Bangkok, Thailand

Method: A cross-sectional study enrolled 220 participants with knee pain aged 50-65 yearsresponded to a structured questionnaire, numeric pain rating scale (NPRS),and self-efficacy for exercise questionnaires (SEE). Descriptive statistics and Pearson's correlation coefficient were used to analyze data.

Results: Knee pain was found in females more than males (64.1%, 35.9%). Participants had moderate pain with a low level of SEE and over 80% of them exercise less than 3 days per week include never exercise. A significant inverse relationship was found between SEE and NPRS.

Keywords: *Knee pain, Self-efficacy for exercise, Older adults*

Introduction

Knee pain is a common health problem among older adults[(1)]and its leads to physical disability and restriction in activities of daily living (ADL).[(2)] Prevalence of knee pain in older adultsat age over 50 years ranges from 33% (as knee pain on most days for one month or longer)[(3)]to 47% (as knee pain in or around the knee in the last year).[(4)]The most common cause of knee pain related to aging also agedassociated with a decline in physical functions[(5)], therefore leading to major musculoskeletal problemsinthe older adults. Exercise is one of the most effective non-pharmacological treatments to reduce knee pain because it safe and low-costmethod for treating an older adult with knee pain[(6)] that has been shown to relieve knee pain, improve the functional performance of the knee,delay further progression and prevent osteoarthritis in the future.[(7, 8)] The simple types of exercise for treating knee pain consist of knee range of motion exercise, aerobic exercise (such as cycling, jogging, and swimming), strengthen exercise (mainly to strengthen surrounding muscles from the knee joint).[(7)]Despite previous studies has shown

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the benefits of enhanced exercise, many older adults remain physically inactive.[9, 10]From prior studies have found that only 41.4% of Thai older adults have been found to exercise[11]. The Thai health policy recommendations that every Thai older adult should perform exercise 30 minutes a day, 3-5 days per week, and being physically active but 60-70% of Thai older adults did not meet the goal[11]and older adults with knee pain have had restricted activity because of the pain then their activity levels could be much lower than among the general population.Therefore, it is important to understand the situation of knee pain in older adults and their exercise history that would facilitate an intervention program to encourage them to exercise which essential for those who live in suburban communities.

To date, most previous studies focus on the only groupof older with knee osteoarthritis[12] but there is no evidence concerning older adults in community-dwelling at ages starting from 50 years who had onset knee pain but not progression toknee osteoarthritis. Consequently, it is reasonable to concentrate on onset knee pain in this group and investigate their demographic characteristics and knee pain problems that would help to delay or prevention of knee pain progression among this group.

Self-efficacy playsan important role in health behavior, the concept of self-efficacy defined as perceived capability and confidence, specific to a particular domain of a person's behavior,[13]which it has been one of the most constantly described relates to exercise behavior.[14]In older people, self-efficacy is a key factorof their beginning and maintenance to their goal-related exercise behaviors. There is currently limited understanding about self-efficacy among older adults who had onset knee pain, especially in Bangkok Thailand. This information could benefit for public health professionals to evaluate and develop an appropriate health interventions program to reduce knee pain, improve self-efficacy, and prevention of knee osteoarthritis for older adults in the future.

Objectives of the study: 1) To describe knee painand their exercises and 2) to identify the relationship between self-efficacy for exercise and knee pain among older adults with knee pain in community-dwelling of Bangkok metropolis.

Materials and Method

An observational cross-sectional study was conducted incommunity-dwelling older adults who have had diagnosed knee pain by physicians at the selected public health center of Bangkok and participants had been recruited by using a convenient sampling method. The period of study started from August to September 2020.Total 220 participants were selected from inclusion criteria included: (1) both male and female gender (2) age 50-65 years (3) having knee pain either left, right or both knee during movement, knee pain at least on most days in a week or more within the past 12 months(4) able to understand Thai language (5)Willingness to participate in the study. Older adults presented with diagnosed osteoarthritis knee with radiologically confirmed or previous surgery any knee joint,visual and hearing impairment were excluded.

Measurement tool: This tool was developed by the researchers, based on reviewing related literature and experts' opinions, written in Thai language, The tools were organized into 3 parts.

Part 1: Demographic characteristics.This part included gender, age, BMI, education, marital status, occupation, salary,medical history, knee pain, exercise.

Part2: Numeric pain rating scale (NPRS)is a verbally-administered to measure knee pain in this study (scored from 0- 10) with 0 = no pain

and 10 = the worst pain imaginable[15]. The values of NPRS cut-off pointas scores ≤ 3 = mild pain, scores 4-6 = moderate pain, scores ≥7 = severe pain.[16]

Part 3: Self-efficacy for exercise scale (SEE), the SEE measured perceived exercise capability of participants in many conditions for instance feeling bored, bad weather.[17]The score range from 0-90, and a cut-off point is divided into 3 levels as following;[18]low level = score 0-44.9,score 45.0-71.9 = moderate level and score 72.0-90.0 = high level respectively.

Data collection procedures: Participants completed a face-to-face interview. The data collection was done in 8 weeks at a selected community in Saimai district of Bangkok. All demographic data and structured questionnaireswere collected by researchers.

Data Analysis:the data were analyzed by SPSS version 22, descriptive and correlational analyses (such as means,standard deviations,and Pearson's correlation coefficient) were used to describe and determine the association between knee pain andself-efficacy for exercise, a P-value below 0.05 was considered statistically significant.

Results

Table 1:Demographic characteristics, history of knee pain, history of exercise, Self-efficacy for exercise (SEE), n=220

Variable	Frequency (%)
Demographic characteristics	
Gender	
Male	79(35.9)
Female	141(64.1)
Age (Years)	
50-55	48 (21.8)
56-60	92 (41.8)
61-65	80 (36.4)
Age, mean (SD)	58.60(3.46)
***Body mass index (BMI) , kg/m^2**	
18.5-22.9 Normal	73 (33.2)
23 – 24.9 Overweight	84 (38.2)
≥ 25 Obese	63 (28.6)
BMI mean (SD)	23.74 (1.76)
Education	
Primary school	26 (11.8)
Secondary School	61 (27.7)
High School/Diploma degree	81 (36.8)
Bachelor degree	45 (20.5)
Master degree or higher	7 (3.2)

Cont... **Table 1:Demographic characteristics, history of knee pain, history of exercise, Self-efficacy for exercise (SEE), n=220**

Marital Status	
Single	27(12.3)
Married	154(70.0)
Widowed	23(10.5)
Divorced/Separated	16 (7.3)
Occupation	
Unemployed	11 (5.0)
Retried government officer	25 (11.4)
Government officer/ State enterprise employee	11 (5.0)
Company employee	27 (12.3)
Self-employed	35 (15.9)
Merchant	65 (29.5)
Employee	46 (20.9)
Income (THB per month)	
<5,000 THB (<155.6 USD)	19 (8.6)
5,001-10,000 THB (~ 155.7 - 311.2 USD)	65 (29.5)
10,001-15,000 THB(~ 311.3 – 466.9 USD)	88 (40.0)
15,001-20,000 THB (~467.0 -622.5 USD)	31 (14.1)
>20,000 THB (> 622.6 USD)	17 (7.7)
Have underlying disease	
Yes	174 (79.1)
No	46 (20.9)
Knee pain	
Side of knee pain	
Right knee	112 (50.9)
Left knee	85 (38.6)
Both knee	23 (10.5)
The average duration of knee pain	
Less than 7 Days	5 (2.3)
1-4 weeks	42 (19.1)
More than 1 month but less than 3 month	70 (31.8)
More than 3 months	103 (46.8)
Frequency of knee pain	4 (1.8)
All the time	39 (17.7)
Everyday	57 (25.9)
Every other day	104 (47.3)
Every week	16 (7.3)
Every month	

Cont... **Table 1:Demographic characteristics, history of knee pain, history of exercise, Self-efficacy for exercise (SEE), n=220**

Exercise	
Frequency of usual exercise	
Never	28 (12.7)
1 day per week	107(48.6)
2 days per week	61 (27.7)
3 days per week or more	24 (10.9)
Duration of exercise per time (n = 192)	92 (47.9)
< 20 minutes	59 (30.7)
20-30 minutes	31 (16.1)
31-60 minutes	10 (5.2)
>60 minutes	
Numeric pain rating scale (NPRS)	
Mild pain	39 (17.7)
Moderate pain	169 (76.8)
Severe pain	12 (5.5)
NPRS mean (SD)	4.67 (1.15)
Self-efficacy for exercise (SEE)	125 (56.8)
Low(score 0-44.9)	95 (43.2)
Moderate (45.0-71.9)	0 (0)
High (72.0-90.0)	44.41 (5.13)
SEE mean (SD)	

*WHO, BMI for Asian populations[19]

The characteristic of participants showed in Table1. The majority of older adults with knee pain were female (64.1%). The mean age of participants was 58.6 years (SD = 3.46). Most of them were overweight (38.2%) as BMI range from 23 to 24.9 kg/m^2, were graduated high school or diploma degree (36.8%), and up to 70% were married. In regards to occupation and salary, 29.5% of participants were merchants with monthly income 10,001-15,000 THB(~ 311.3 – 466.9 USD) (40%). In addition,the majority(50.9%) reported knee pain at the right side withpain more than 3 months (46.8%) through every week (47.3%). Furthermore, they have shown thatmore than two-thirds (76.8%) had moderate pain levels with an average of NPRS 4.67 ±1.15.

Overall, they were less likely to exercise regularly, only 10.9% of participants met the criteria as Thai health policyrecommendations[20], 48.6% were exercise only 1 day per week and 12.7% were inactive as reported never exercise.Moreover, it appears that people who exercise,theyexercise less than 20 minutes per time up to 47.9%. Regarding SEE, the mean was 44.41 (SD= 5.13) and more than a half (56.8%) also reported having a low level of SEE.

Table 2: Correlation between Self-efficacy for exercise and Numeric pain rating scale

Variable	Correlation coefficient with NPRS Self-efficacy for exercise (SEE) r	*p*-value
SEE	-0.176	0.009**

P< 0.01

The result of analysis in table 2 showed that there was statistically significant inverse relationship between self-efficacy for exercise and NPRS (r = -0.176, P < 0.01).

Discussion

The present study aimed to understand demographic characteristics, history of knee pain and exercise, and determine associations between self-efficacy for exercise and knee pain in Thai community-dwellingolder adults with knee pain. As variations in the definition of knee pain, knee pain in the older adult group is common worldwide. The previous studies in China with knee pain older[21], the knee was usually reported as "site of pain complaints", associated with many recent studies in European countries.[22, 23]Also consistent with previous literature[24], knee pain occurrence generally in community-dwelling older adults and this study revealed that knee pain in women(64.1%) had a higher percentage than in men (35.9%). Knee pain universally increases with age, about 25% of people at age more than 55 years reported knee pain in the past year.[23] Similar toour study,almost two-thirds of participants aged more than 55 years reported knee pain.Another factor observed in this study that influence knee pain was BMI. The mean BMI in this study was 23.74 (SD =1.76) and most of the participants were overweight (38.2%). This concurs with previous studies was found older who are overweight significantly more likely to have daily knee pain.[25] Although our findings illustrate that high BMI in an older adult with knee pain, indicating overweight as a possible cause of knee pain, the cross-sectional-study design of this study limits the ability to rule out other explanations. One such explanation might be a high BMI come after knee pain. That is, knee pain in older adults with normal weight may lead to a modern sedentary lifestyle behavior that contributes to weight gain. Moreover, the possible reason according to Thai culture, most of Thai people like to do floor activities such as kneeling on the flooror squatting and side knee bending through their daily works and activities[26]. These activities'posturesmight accelerate the wear-and-tear on the knee joint and cause of knee pain.

We found that most of the participants in this study had a low level of self-efficacy for exercise is consistent with previous studies.[7, 27]Moreover, the low average score of self-efficacy for exerciseindicates that older adults with knee pain will tend toward inactive and did less exercisesas the consequence of worsening knee pain and disability. In addition, our results revealed that overall they had less exercise, this is in line with the study of Holden[28]which older adults with knee pain were not sufficiently active to achieve the benefits of exercise because of their problem withthe knee joint and their health condition. Furthermore, our result showed that self-efficacy for exercise significant inverse relationship with knee pain. This finding correlates with previous studies that self-efficacy for exercise is important to understanding for those with knee pain, as older with high-level self-efficacy for exercise had a low level of knee pain and being active[29], it is indicating that both self□ efficacy for exercise and knee pain among the older

adults group are key goals to explore that could be targeted to develop primary care interventions which appropriate for community-dwelling older adults.

Limitations

Our study is limited by a cross-sectional study with small sample size, the findings in this study will be difficult as our eligible study population was derived from Bangkok Thailand. Therefore, these results might not translate to older adults with knee pain in others countries. Although this, the study findings bling to light and could still be valuable in helping to design acceptableinterventions for people with knee pain in primary health care across different countries.

Conclusion

Base on this research results, Thai older adults with knee pain had moderate pain with low self-efficacy for exercise and inactive. Moreover, self-efficacy for exercise of those people associated with knee pain. Older adults with knee pain may need further interventions to reinforce the importance of exercise, increase self-efficacy and reduce knee pain.

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Conflict of Interest:Non

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