Factors Affecting Physical Activity of Rural Thai Midlife Women

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Objective: *To determine the relationships between the knowledge, social support, self-efficacy, appropriate environment, perceived barriers, and perceived benefits of physical activity and levels of physical activity.*
Material and Method: *A cross-sectional survey with multi-stage sampling was performed in a sample of 642 midlife women aged 40-59 years from Kalasin Province between June and July 2006. Physical activity was measured by interviewing and classified as active and inactive according to the national guidelines. They were also interviewed for general characteristics, factors of interest, and problems and needs for promoting physical activity.*
Results: *Forty seven percent of active physical activity was found in the midlife women. The women with moderate level of physical activity knowledge were more likely to be active than those with a low level of the knowledge (aOR 1.6; 95% CI 1.1, 2.6). The women who perceived high benefits of physical activity were more likely to be active than those with the moderate perceiving (aOR 1.7; 95% CI 1.3, 2.4).*
Conclusion: *These findings provided two determinants of the physical activity in rural midlife Thai women for planning the physical activity program.*

Keywords: *Physical Activity, Rural midlife Thai women*

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Physical activity is important for maintaining health and well being[1]. It is well known that regular physical activity reduces the risk of many diseases and symptoms such as coronary heart disease, strokes, colon cancer, diabetes, anxiety, and high blood pressure[2]. It also helps to control weight and is associated with fewer hospitalizations[2,3].

Despite the reported health benefits of physical activity, at least 60% of the world's population is estimated not to get enough physical activity[4]. The most popular reason are lack of leisure time[5,6], while in developing countries, and modern societies more people tend to slip into sedentary behavior[7]. Advances in technology through motorized transport, automation, and labor-saving equipment are also potential causes of fewer opportunities to exert energy in people[8]. Activity decreases with age and is less common among women than men[9].

Current recommendations for physical activity emphasize "lifestyle physical activities". Self-selected activities should accumulate on a daily basis to at least 30 minutes. This could include all leisure, occupational, or household activities that are at least moderate to vigorous in their intensity, and could be planned or unplanned[10,11]. The Thai Ministry of Public Health suggested that the definition of exercise should include physical activity and physical exercise[12].

Midlife women are considered those being in the age of 40-59 years[13]. In this age group, most people experience significant changes in their life that are related to changes in physical proportion and family environment such as increased marital tension, difficulties with adolescent children, increasing number of

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family members, economic strain, and difficulties regarding sexual desires. All of these changes can cause stress and affect health[13]. A program of regular physical activity can be a beneficial alternative therapy for relieving symptoms such as hot flushes, night sweats, depression, irritable headache, and/or sleep disturbances[13]. Unfortunately, midlife women do not usually make physical activity as a priority. Less than 50% of women aged 50-64 years participates in any regular physical activity[14]. About 61% of African Americans did not meet the recommended guidelines[15]. In Singapore, 50.7% of middle-aged women met the standards recommended[16].

Physical activity is influenced by a variety of psychosocial and environmental variables, some of which are modifiable, including self-efficacy, social support, perceived benefits, perceived barriers, and enjoyment[7,17].Women with children are particularly likely to report a lack of social support as an important barrier to physical activity[18].

In Thailand, 80% of women aged between 45 to 59 years old in Chiang Mai did not exercise and it was of little concern to them[19]. However, few studies in Thailand have measured life style activities and tried to find out whether the participants in the studies followed the recommendation. Up to now, studies have concentrated mainly on physical activity of the elderly.

Kalasin Province is located in the Northeast of Thailand, where 84% of the population earns a living by rice farming[20]. Eighty percent of the population of over 6 years old did exercise but the information of rigorous evaluation was not available. In addition, there was no evidence of physical activity in midlife women[20]. The purpose of the present study was to investigate the factors affecting physical activity, and to identify problems and needs for the promotion of physical activity of midlife women for developing an appropriate intervention related to physical activity programs (PAP).

Material and Method

The present study was carried out in a sample of 642 midlife women aged 40-59 years randomly selected from 15 villages in Nongkungsri District, Kalasin Province from June to July 2006, by using a multistage sampling method. The estimated sample size was for evaluating the relationship between the knowledge of physical activity and physical activity of midlife women based on statistical significance level of 5% and power of 80%. All subjects were apprised of the purpose of the present study and signed an informed consent. The present study was approved by the Ethics Committee of Khon Kaen University.

The questionnaire of eight parts, some of which were modified from the International Physical Activity Questionnaire (IPAQ)[21] Version 2004 was used to measure physical activity (15 items), physical activity benefits/barriers (43 items), knowledge of physical activity (10 items), social support (15 items), self-efficacy (12 items), and general data (7 items). Cronbach's Alpha Coefficient was used to analyze the internal consistency of each part of the questionnaire. The coefficients were ranging from 0.68 for Physical activity to 0.97 for Social support.

Outcomes and measurements

Physical activity was the main outcome and classified as "Inactive" and "Active". "Active" was categorized by any of the following three criteria: a) Three days or more of vigorous activity of at least 20 minutes per day or b) Five days or more of moderate-intensity activity or walking for at least 30 minutes per day or c) Five days or more of any combination of walking, be it of moderate- or vigorous intensity and achieving at least a minimum of 600 MET-min/weeks[2]. "Inactive" was all others physical activity that did not reach the criteria of a, b or c.

Each item of physical activity benefits/barriers and self-efficacy scale was measured on a 4-point forced-choice scale ranging from 1 (strongly disagree or very unsure) to 4 (strongly agree or very sure). The scale of barrier items was scored in a reversed mode. Each woman was classified to be in each category of high, moderate or low physical activity benefits/barriers and self-efficacy according to her total scores of answer of those parts.

Each item of knowledge of physical activity and appropriate environment was measures on scales of 1 (yes) or 0 (no). The knowledge was classified to be low (0-59%), moderate (60-79%), or high (80-100%)[22] according to the total answer scores of knowledge part.

The perception of social support was measured from the family support for regular physical activity. It consisted of 15 items with the responses of 0 (No), 1 (Low), 2 (Moderate), and 3 (High).

The problems and needs for promoting physical activity consisted of three open-ended questions to check the problems or obstruction to do physical activity and the needs for them to promote physical activity.

Data analysis

Frequency distribution, mean and standard deviation were used to describe demographic variables. Multiple logistic regression was used to assess the relationship between the factors of interest and physical activity. The others added all twelve interest factors to the model because they were theoretically supported to be associated to the activities.The effect of each potential factor on physical activity was presented as crude and adjusted odds ratio (OR) with their 95% confidence interval. Content analyses were used to analyze the data from the open-ended interview questionnaire.

Results

The results were analyzed from 642 midlife women. Most of them were married and reported having school education. Fifty-one percent of the women had monthly family incomes ranging from 200-50,000 baht. Seventy-one percent reported no chronic illness. Diabetes mellitus was the most common health problem. Around 47% of the women had physical activity actively according to the guidelines of the Ministry of Health.

Factor affecting physical activity

From the multivariate logistic regression, the authors identified factors affecting active physical activity, in the crude and adjusted analyses. Table 1 shows the relationship of individual factors toward active physical activity.

Statistically significant relationships were found between physical activity and midlife women who had moderate knowledge in physical activity, (aOR = 1.6, 95% CI 1.1-2.6), and the women who perceived high benefits of physical activity (aOR = 1.7, 95% CI 1.3, 2.4).

Problems and needs for the promotion of physical activity of midlife women

(1) Beliefs in physical activity of the women seemed to be new. They believed that only formal exercise had health benefits, whereas some knew the definition of physical activity but did not know its intensity, duration, and frequency for health benefit.

(2) For time availability, the women reported that family-care obligation was the main barrier to do exercise. They believed they could do the exercise as the standard recommendations.

(3) The women were concerned about a safe place for doing exercise. They mentioned the play-ground at the elementary school was open to the public and far from the village. It might be unsafe if their partners did not go to exercise with them.

(4) The women felt that social support, particularly from physicians or health personnel

Table 1. Crude and adjusted odds ratios of demographic characteristics on active physical activity of midlife women

Factors	n	% Active	Crude OR (95%CI)	aOR* (95%CI)
1. Educational level				
1.1 Primary school or lower	622	46.6	1.0	1.0
1.2 Higher than primary school	20	55.0	1.4 (0.6, 3.3)	1.2 (0.5, 3.1)
2. Marital status				
2.1 Single	553	44.9	1.0	1.0
2.2 Non-single	89	47.2	0.9 (0.6, 1.4)	1.4 (0.6, 1.4)
3. Occupation				
3.1 Agriculture	528	45.6	1.0	1.0
3.2 Others	114	52.6	1.3 (0.9, 1.9)	1.1 (0.7, 1.8)
4. History of sickness				
4.1 No	460	44.4	1.0	1.0
4.2 Yes	182	53.3	1.4 (1.2, 2.0)	1.4 (1.0, 2.1)
5. Household income/month				
5.1 $\leq$ 2,800 Baht	329	44.1	1.0	1.0
5.2 > 2,800 Baht	313	49.8	1.3 (0.9, 1.7)	1.2 (0.8, 1.6)
6. Family member				
6.1 $\leq$ 4 Persons	350	48.0	1.0	1.0
6.2 > 4 Persons	292	45.6	0.9 (0.7, 1.2)	0.9 (0.6, 1.2)

Note: aOR* = adjusted odds ratio

Table 2. Crude and adjusted odds ratios of knowledge level and environment facilities on active physical activity of midlife women

Factors	n	% Active	Crude OR (95%CI)	aOR* (95%CI)
1. Knowledge level				
1.1 Low	108	37.9	1.0	1.0
1.2 Moderate	462	48.9	1.6 (1.0, 2.4)	1.6 (1.1, 2.6)
1.3 High	72	47.2	1.5 (0.8, 2.7)	1.5 (0.8, 2.9)
2. Environment facilities				
2.1 Enough	460	44.6	1.0	1.0
2.2 Not enough	182	52.8	1.4 (0.9, 1.9)	1.4 (0.9, 2.1)

Note: aOR* = adjusted odds ratio

Table 3. Crude and adjusted odds ratios of psychological determinants of active physical activity of midlife women

Factors	n	% Active	Crude OR (95%CI)	aOR* (95%CI)
1. Perceived barriers				
1.1 Low	111	51.4	1.0	1.0
1.2 Moderate	364	45.6	0.8 (0.5, 1.2)	0.8 (0.5, 1.3)
1.3 High	167	46.7	0.8 (0.5, 1.3)	1.1 (0.6, 1.8)
2. Perceived benefits				
2.1 Moderate	401	41.6	1.0	1.0
2.2 High	241	55.6	1.7 (1.3, 2.4)	1.7 (1.3, 2.4)
3. Social support				
3.1 Low	617	26.2	1.0	1.0
3.2 Moderate	25	64.0	2.1 (0.9, 4.7)	1.7 (0.7, 4.1)
4. Self-efficacy				
4.1 Low	190	51.1	1.0	1.0
4.2 Moderate	320	43.8	0.1 (1.0, 2.4)	0.7 (0.5, 1.1)
4.3 High	132	48.5	0.9 (0.8, 2.7)	1.1 (0.6, 1.8)

Note: aOR* = adjusted odds ratio

was, important to their decision to engage in physical activity. They believed that doctors were experts on health. They needed assurance from their family members that they could spare some time to exercise without feeling guilty of neglecting family obligations.

(5) They wanted community facility supports such as sport playgrounds, parks for relaxation, and areas for aerobic exercise.

Discussion

The findings showed the prevalence of physical activity of the women was 46.9%. The statistical significance associated factors of physical activity were moderate level of knowledge on the activity and high perceived benefit of the activity. They needed an environment that would allow for physical activity and relaxation.

The recommended guidelines of the Ministry of Public Health, Thailand states that physical activity should benefit the heart, lungs and circulation of healthy persons. People should perform moderate-to-vigorous intense activity of at least 30 minutes per day. The physical activity of the study women did not meet the recommendations. In addition, the prevalence found in the present study was less than the expected figure of 60% of the Thai population aged 6 years and older should meet such recommendation[12]. A similar study in Chiang Mai Province found that only 20% of menopausal women did exercise[19]. The present result was also similar to the study in Singapore, which found that only 50.7% of middle-aged women met the standard guideline[16]. When the women were distributed across the five stages of change, it was found that 35% were classified into the maintenance stage. This might be

because 86.1% of them earned a living in agriculture. However, nowadays, farming or gardening patterns in rural areas have changed from the conventional ones to be high technology and hiring labor. Thus, the low and declining levels of physical activity in the present day modern society are caused primarily by environmental changes. Mechanization and automa tization of transportation and labor, and urbanization with lack of opportunities to exercise in city environments have reduced people's energy expenditure[23].

About the factors affecting physical activity, midlife women who had moderate levels of physical activity knowledge were 1.6 times (95% CI 1.1, 2.6) more likely to be active than those who had a low level of knowledge about physical activity. When separated the knowledge in terms of each question, found that the women did not understand the definition of physical activity, moderate physical activity, or standard guidelines for physical activity, and this may be the cause of not reaching guideline. The present finding was similar to other studies[23-25]. MacDougall, et al[24] reported that low physical activity status was strongly associated with low education. Yang[25] found that the level of education was significantly and negatively related to occupational activity and positively related to sports/exercise. Jenifers[26] found that the low number of active exercises might have been due to a lack of knowledge regarding health risks and the benefit of physical activity.

A limitation of the study may be over estimation in physical activity by using a questionnaire. In general, quantifying physical activity in daily life through a questionnaire and diaries has the advantage of being inexpensive and easy to apply. However, the technique may induce inaccuracy or bias in the assessment. The potential explanations are accurate perception and recall of information by the subject. For instance, difficulties may be found when recalling light activities[27](slow walking at home, self-care, gardening, home management, dressing, etc.), particularly over a long period of time. Due to limitations in memory, the reliability of information generally decreases with the length of the period surveyed[28]. Normally midlife women did not wear a watch, so when they were asked about time for doing something they answered "not sure". The researcher solved this problem by suggesting that they compare their exercise time with the time of a TV program, particularly a soap opera, which break every 30 minute.

Further observational research is needed to evaluate agreement of the International Physical Activity Questionnaire with a direct measurement of daily physical activity energy expenditure such as the doubly labeled water technique.

In conclusion, most of midlife women in Kalasin Province are still not physically active. The associated factors of moderate knowledge with active physical activity and perceived benefits of the activity may be beneficial information for promoting physical activity in rural areas of Thailand.

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ปัจจัยที่มีผลต่อการเคลื่อนไหวออกแรงของหญิงวัยกลางคนในชนบทไทย

กิตติ เหลาสุภาพ, จุฬาภรณ์ โสตะ, มาลินี เหล่าไพบูลย์

***วัตถุประสงค์**: เพื่อศึกษาความสัมพันธ์ระหว่าง ความรู้ การสนับสนุนทางสังคม สมรรถนะแห่งตน สิ่งแวดล้อมที่เหมาะสม การรับรู้ปัญหาอุปสรรคและประโยชน์ของการเคลื่อนไหวออกแรงกับระดับการเคลื่อนไหวออกแรงในหญิงวัยกลางคน*

***วัสดุและวิธีการ**: การศึกษาเชิงพรรณนาแบบภาคตัดขวางด้วยวิธีการสุ่มตัวอย่างแบบหลายขั้นตอนในหญิงวัยกลางคน อายุ 40-59 ปีจำนวน 642 คนในจังหวัดกาฬสินธุ์ ระหว่างเดือนมิถุนายนถึงกรกฎาคม พ.ศ. 2549 โดยใช้แบบสัมภาษณ์และแบ่งเป็นกลุ่มเคลื่อนไหวเพียงพอกับไม่เพียงพอ นอกจากนั้นยังสอบถามข้อมูลทั่วไป ปัจจัยที่สนใจและปัญหาและความต้องการในการส่งเสริมการเคลื่อนไหวออกแรง*

***ผลการศึกษา**: ร้อยละ 47 ของหญิงวัยกลางคนมีการเคลื่อนไหวออกแรงผ่านเกณฑ์มาตรฐานโดยผู้มีความรู้ด้านการเคลื่อนไหวออกแรงระดับปานกลางมีแนวโน้มที่จะเคลื่อนไหวออกแรงมากกว่าผู้ที่มีระดับความรู้ต่ำ 1.6 เท่า (aOR 1.6; 95% CI 1.1,2.6) และผู้ที่รับรู้ประโยชน์ของการเคลื่อนไหวออกแรงระดับสูง มีแนวโน้มที่จะเคลื่อนไหวออกแรงมากกว่าผู้ที่รับรู้ประโยชน์ระดับปานกลาง (aOR 1.7; 95% CI 1.3, 2.4)*

***สรุป**: ข้อมูลที่ได้จากการศึกษามีประโยชน์ในการนำไปใช้กำหนดรูปแบบการส่งเสริมการเคลื่อนไหวออกแรงในหญิงวัยกลางคน*