Exercise behavior and quality of life of the elderly in Northeastern, Thailand

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Abstract: Exercise has been demonstrated to be crucial for promoting health and quality of life among the elderly population, encompassing physical, mental, social, and cognitive aspects. However, there remains a paucity of information regarding exercise behavior and associated factors in Buriram Province. This descriptive research aimed to investigate exercise behavior and quality of life among the elderly population in Buriram Province. The study sample comprised 577 elderly individuals, selected through multistage random sampling. Data were collected between August and November 2024 using questionnaires and interviews, with a reliability coefficient of 0.79 and an IOC value of 1.00. Data analysis was conducted using descriptive statistics, the chi-square test, Pearson's correlation, and multiple regression. The majority of elderly individuals exhibited a high level of exercise behavior (59.10%). Key factors influencing exercise behavior included attitudes, monthly income, and chronic illnesses, with attitudes emerging as the most significant predictor. Overall, the quality of life ranged from good to very good across all assessed aspects. Elderly individuals with positive attitudes demonstrated consistent exercise behavior and improved quality of life.

Keywords: Community, Elderly, Exercise behavior, Quality of life.

1. Introduction

The global elderly population is currently experiencing a significant increase, including in Thailand, reflecting advancements in medicine and public health. However, this demographic shift presents new challenges in promoting the quality of life of the elderly, as they are at an elevated risk for chronic illnesses such as diabetes, hypertension, and heart disease, as well as deterioration of the musculoskeletal system, which affects their ability to perform activities of daily living. Exercise serves as a crucial intervention in mitigating these risks by enhancing physical strength, physical and mental fitness, and the overall quality of life [1].

The World Health Organization (WHO) recommends that elderly individuals engage in at least 150 minutes of moderate physical activity per week to promote physical health and reduce the likelihood of chronic diseases. However, adherence to this recommendation remains low in many areas, particularly in rural regions with limited resources, community support, and knowledge of appropriate exercise practices [2].

Buriram Province, located in northeastern Thailand, has an elderly population of 281,320, accounting for 17.64% of the total population (Ministry of Social Development and Human Security, 2023). Most of these individuals are engaged in or have previously worked in agriculture or labor-

intensive occupations, which influences their current physical condition and health awareness. The unique social, cultural, and environmental characteristics of each area may result in varying exercise behaviors among the elderly population [3].

Therefore, a specific study in this region is essential to understand the factors influencing exercise behavior and quality of life among the elderly. This understanding will provide in-depth insights into the factors affecting exercise and quality of life in urban and rural areas, ultimately leading to the development of appropriate health promotion interventions or programs for the elderly in various geographical settings.

2. Methodology

2.1. Study Design

This descriptive study aimed to investigate exercise behavior and quality of life among the elderly population in Buriram Province. The specific objectives were 1) to examine general demographic information, 2) to assess the characteristics of the variables under study, 3) to analyze the relationship between demographic information, attitudes toward exercise, and exercise behavior among the elderly, and 4) to identify variables predicting exercise behavior among the elderly in Buriram Province.

2.2. Participant and Samples

The population comprised elderly individuals aged 60 years and above in Buriram Province, totaling 281,320 [4]. The selection criteria were as follows: 1) capable of effective communication in Thailand, 2) able to perform activities of daily living independently, 3) residing in Buriram Province, and 4) willing to participate in the research.

The sample size was calculated using Taro Yamane's formula [5] with a 95% confidence level and a 5% margin of error. The formula $n = N/(1+N(e^2)$ yielded a sample size of 400 participants. An additional 25% was added to account for potential attrition, resulting in 500 participants. Ultimately, 577 individuals participated in the study.

Multistage sampling was employed. At the district and sub-district levels, simple random sampling was conducted using a lottery method, whereas purposive sampling was applied at the village level.

2.3. Ethical Considerations

This study was approved by the Mahasarakham University Ethics Committee for Research Involving Human Subjects (approval number: 109-108/2024). The researchers elucidated the comprehensive objectives of the study, its aims, anticipated benefits, research methodology, and data collection procedures. The participants were afforded the opportunity to make an informed, voluntary, and willing decision to participate in the study by providing written consent. The researchers emphasized the maintenance of confidentiality, protection of participants' rights, and prevention of potential adverse impacts on the subjects. Upon completion of the study, the data were presented comprehensively and in an aggregate form to ensure individual privacy.

2.4. Data Collection

The researchers collected data from elderly individuals in Buriram Province between August and November 2024. The data collection instruments comprised questionnaires addressing general demographic information, attitudes toward exercise, and exercise behavior, as well as interviews focusing on the holistic quality of life of the elderly. The content validity of the instruments was

evaluated by five experts from the fields of physical education, food innovation and design, geriatric nursing, and public health. The *Index of Item Objective Congruence* (IOC) was 1.00. The instruments were subsequently pilot tested on elderly individuals with characteristics similar to those of the sample group in Surin Province, yielding a Cronbach's alpha coefficient of .79.

2.5. Data Analysis

Data were analyzed using the computer program SPSS version 23. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were employed. Correlations were analyzed using the chi-square test and Pearson's correlation coefficient. Multiple regression analysis was used to identify variables predicting exercise behavior.

3. Results

3.1. General Information

The majority of participants were female (68.60%), with males comprising 31.40%. The predominant age group was 60-69 years (53.40%). A significant proportion of participants had an educational level below grade 6 (82.80%) and were married (60.40%). The majority reported a monthly income of less than or equal to 1,000 Baht (52.20%) and had chronic illnesses (51.10%), with hypertension being the most prevalent condition (59.84%). A high percentage of participants regularly engaged in walking or running activities (90.80%). The majority exercised at home (88.60%) during the morning hours (05:30–09:59) (83.70%) and typically exercised independently (85.60%).

3.2. Variables

The studied variables included attitudes toward exercise and exercise behavior among the elderly in Buriram Province.

3.2.1. Attitudes Toward Exercise

The attitude questions were affirmative, allowing for a single response for each item. The researchers categorized the responses based on a 4-Likert scale with four levels across 10 items. The affirmative questions were scored as follows: strongly agree = 4, agree = 3, disagree = 2, and strongly disagree = 1. The criteria for interpreting the mean scores of attitudes toward exercise were divided into three levels. The researchers adhered to Best's (1977), with mean scores interpreted as follows: 3.01–4.00: high level of attitude, 2.01–3.00: moderate level of attitude, 1.00–2.00: low level of attitude. The results of the data analysis are presented in Table 1.

Table 1
Attitude Levels toward Exercise.
(*n* = 577)

Attitude Level	N	Percentage (%)
High	355	61.50
Moderate	221	38.30
Low	1	0.20

Note: Mean = 2.61, SD. = 0.49, Max = 3.00, Min = 1.00

Table 1 indicates that the majority of elderly individuals in Buriram Province exhibited a high level of attitude toward exercise, comprising 61.50% of the sample. This was followed by 38.30%, demonstrating a moderate level of attitude, while only 0.20% displayed a low level.

3.2.2. Exercise Behavior

The assessment of exercise behavior incorporated both affirmative and negative items, permitting a single response per item. The investigators classified the responses using a four-level Likert scale across the 15 items. Affirmative items were quantified as follows: highest frequency of performance = 4 points, moderate frequency of performance = 3 points, lower frequency of performance = 2 points, and lowest frequency of performance = 1 point. Negative items were quantified inversely as follows: highest frequency of performance = 1 point; moderate frequency of performance = 2 points; lower frequency of performance = 3 points; and lowest frequency of performance = 4 points. The interpretation criteria for the mean scores of exercise behavior were stratified into three levels. The investigator employed Best's criteria [6] as follows: 3.01–4.00: high level of behavior, 2.01–3.00: moderate level of behavior, 1.00–2.00: low level of behavior. The outcomes of the data analysis were presented in Table 2.

Table 2.
Exercise Behavior Levels.
($n = 577$)

Behavior Level	N	Percentage (%)
High	341	59.10
Moderate	235	40.70
Low	1	0.20

Mean = 2.59, SD = 0.50, Max = 3.00, Min = 1.00

Table 2 indicates that the majority of elderly individuals in Buriram Province demonstrated a high level of exercise behavior, comprising 59.10% of the population. This was followed by 40.70% exhibiting a moderate level of exercise behavior, while only 0.20% displayed a low level of exercise behavior.

3.3. Correlation Analysis

The researchers analyzed the relationship between general demographic information and exercise behavior among the elderly in Buriram Province using chi-square tests (χ^2). Additionally, the correlation between attitudes toward exercise and exercise behavior among the elderly was analyzed using Pearson's correlation coefficient. Table 3 presents the results of the analysis.

Table 3.
Relationship between General Information, Attitudes toward Exercise, and Exercise Behavior among Elderly Individuals in Buriram Province.
($n = 577$)

Variable	*t*-value	*p*-value
1. General Information		
Gender	2.02[a]	0.36
Age	9.92[a]	0.13
Educational Level	10.53[a]	0.23
Marital Status	16.65[a]	0.01**
Monthly Income	26.91[a]	0.00***
Chronic Illness	16.11[a]	0.00***
Regular Exercise Activities	586.91[a]	0.00***
Regular Exercise Locations	305.90[a]	0.00***
Exercise Time	47.75[a]	0.00***
Exercise Companions	30.93[a]	0.00***
2. Attitudes Toward Exercise	0.45[b]	0.00**

Note: a = Chi-square, b = Pearson's correlation coefficient

*p-value ≤ .05, **p-value ≤ .01, ***p-value ≤ .001.

Analysis of Table 3 revealed that marital status and attitudes toward exercise demonstrated a positive correlation with exercise behavior among elderly individuals in Buriram Province, with statistical significance at the .01 level. Monthly income, chronic illnesses, regular exercise activities, regular exercise locations, exercise times, and exercise companions also exhibited a positive correlation with exercise behavior among the elderly, with statistical significance at the .001 level. However, age, gender, and educational level did not demonstrate a statistically significant relationship with exercise behavior among the elderly population in Buriram Province.

3.4. Analysis of Variables to Predict Exercise Behavior among Elderly in Buriram Province

The researchers used general demographic data, including gender, age, educational level, marital status, monthly income, chronic illnesses, regular exercise activities, regular exercise locations, exercise times, and exercise companions, along with attitudes toward exercise, to predict exercise behavior among elderly individuals in Buriram Province. The data analysis in this study employed multiple regression analysis. Table 4 presents the results of the analysis in Table 4.

The definitions in Table

R	: Means to the multiple correlation coefficient.
R^2	: Means to the predictive efficiency value.
R^2 Change	: Means to the change in predictive efficiency when the equation Changes.
F	: Means to the test statistic value.

Table 4.

Predictor Variables	R	R² (%)	R² Change (%)	F
Attitudes Toward Exercise	0.452	20.40	-	147.763***
Monthly Income	0.491	24.10	3.70	91.289***
Chronic Illnesses	0.501	25.10	1.00	63.889***

Note: Multiple Regression Analysis Showing Variables Predicting Exercise Behavior among Elderly in Buriram Province.
*$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

Table 4 presents the results of the multiple regression analysis conducted to identify variables predicting exercise behavior among elderly individuals in Buriram Province. The analysis revealed three statistically significant predictors at the .001 level:

1) Attitudes Toward Exercise predicted exercise behavior by 20.40%.

2) Monthly Income increased the predictive power by 3.70%.

3) Chronic Illnesses increased the predictive power by 1.00%.

Collectively, these variables accounted for 25.10% of the variance in exercise behavior among the elderly population in Buriram Province. The variable demonstrating the highest predictive power was attitude toward exercise, which explained 20.40% of the variance.

3.5. Interview on Holistic Quality of Life of the Elderly the Variance

The researchers conducted interviews to assess the holistic quality of life of elderly individuals, focusing on five aspects: physical, mental, emotional, social, and intellectual. Data were collected from 37 key informants through focus groups involving 194 participants. The participants comprised elderly representatives from four districts: Mueang, Huai Rat, Nang Rong, and Ban Dan in Buriram Province. The principal findings were summarized as follows:

3.5.1. Physical Aspect

The majority of elderly individuals demonstrated physical health and autonomy in self-care activities. Prevalent complaints encompassed knee and leg pain as well as chronic conditions. Some subjects exhibited reduced mobility or fatigue but maintained the capacity to engage in light physical activities. Most participants reported satisfaction with participants physical health, rating it as "good" to "very good," attributing health concerns to the aging process, inadequate rest, and insufficient physical activity. Preventive measures included regular exercise, such as ambulatory activities and horticulture, and adherence to a balanced diet comprising all five food groups.

3.5.2. Mental and Emotional Aspect

The majority of elderly individuals reported experiencing positive affect and low stress levels, deriving satisfaction from familial cohabitation and community engagement. Their mental and emotional well-being was assessed as "very good" due to their capacity for emotional regulation and maintenance of positive interpersonal relationships. Potential stressors included financial constraints, income-related challenges, and familial discord. Preventive strategies encompassed communication, participation in familial or neighborly activities, meditation practice, and emotion management through relaxation techniques. Community stakeholders contributing to mental and emotional well-being included community leaders, family members, village health volunteers, and public health agencies.

3.5.3. Social Aspect

Older adults exhibit strong social connections with family members, neighbors, and the community. Their social satisfaction was evaluated as "very good" due to support from both familial and community sources. Challenges to social relationships encompassed financial constraints, physical limitations, and familial conflicts. Interventions to enhance relationships involved the organization of community activities, including vocational training, group exercise programs, and traditional cultural events.

3.5.4. Intellectual Aspect

Most elderly individuals retained good cognitive abilities and were capable of learning new things. Their satisfaction with cognitive health was rated as "good" to "very good." Causes of cognitive decline included lack of practice, insufficient brain-stimulating activities, and chronic illnesses. Suggested measures to promote cognitive health included brain development activities such as playing games, reading, meditation, and learning new skills. Key figures in the community that contribute to intellectual health included community leaders, family members, village health volunteers, and hospitals.

4. Discussion

The findings of this study indicate that the majority of elderly individuals in Buriram Province demonstrate a high level of exercise behavior. This observation aligns with previous research suggesting that appropriate physical activity significantly enhances quality of life across physical, mental, and social dimensions. Notably, elderly individuals with a stable income, good health, and support from the family and community are more likely to engage in regular exercise [7-12].

Attitudes toward exercise were found to be a significant factor influencing this behavior. Positive attitudes facilitate motivation and recognition of the benefits of exercise. This finding aligns with studies that emphasize the importance of self-efficacy and health awareness in encouraging elderly individuals to participate in health-promoting activities [12-18].

Research has also indicated that chronic illnesses, pain, physical deterioration, and health limitations may present obstacles to exercise, leading some elderly individuals to refrain from engaging in physical activity. Correspondingly, other studies suggest the necessity of developing tailored exercise programs, such as low-impact activities, including yoga or brisk walking, to accommodate health limitations and enhance participation among the elderly population [19-23].

Therefore, promoting physical activity among older adults should prioritize cultivating positive attitudes and establishing a supportive environment, particularly through the engagement of family members, community organizations, and local public health agencies. Furthermore, tailoring interventions, such as community-based outdoor activities, to suit the target demographic can facilitate increased physical activity participation, mitigate feelings of social isolation, and enhance the quality of life of older adults in a sustainable manner [12, 20, 24-27].

5. Conclusion

The majority of participants were female. A significant proportion of elderly individuals demonstrated a high level of positive attitude toward exercise and a high level of exercise behavior. Marital status, monthly income, chronic illnesses, regular physical activities, exercise locations, exercise times, exercise companions, and attitudes toward exercise exhibited a positive correlation with exercise behavior. The most significant predictor of exercise behavior was attitude toward exercise. The overall

quality of life among the elderly population was assessed to be at a "good" to "very good" level. Communities should implement ongoing activities for the elderly, including exercise sessions, meditation practice, cognitive stimulation exercises, organization of local traditional events, and promotion of positive family relationships.

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Transparency:
The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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