Knowledge and Practice of Physical Exercise among the Inhabitants of Bangkok

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Objective: *To study the knowledge and practice of physical exercise among the inhabitants of Bangkok. The factors correlated with knowledge and the practice of physical exercise, were also explored.*
Material and Method: *A self-administered questionnaire was designed to survey 1,200 inhabitants in Bangkok and the vicinity aged more than 18 years old.*
Results: *One thousand one hundred and seven people aged ranging from 18-81 years old completed the questionnaires (response rate 92.25%). Six hundred and forty people (58.4%) exercised regularly. The exercise was performed 1-2 days per week with varied duration. They performed exercises alone, in their homes, in the evening. They did not report any expenditure on the exercises. Common types of exercise reported were walking, jogging, attending an aerobic exercise class, using an exercise machine, and callisthenic exercise. Two hundred and seven people (18.9%) did not perform exercise at all because of the lack of time. The factors correlated with regular exercise were the increasing age, the high level of education, the amount of free time per day, and the enjoyment of exercise. With relation to knowledge of exercise, most people lacked knowledge of the benefits of exercise rather than how to do exercise and when to stop exercising. People who had a higher educational level than secondary school and a high income, practiced exercise everyday. They acquired their knowledge of exercise from attending an exercise course.*
Conclusion: *People living in Bangkok usually performed regular exercises of 1-2 days per week with varied duration. The majority lacked knowledge of the benefits of exercise. Educational level of the samples was the only factor correlated with both regular exercise and knowledge of exercise.*

Keywords: *Knowledge, Practice, Physical exercise, Bangkok inhabitants*

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The development of medicine and advanced technology has made life span longer. Meanwhile, the healthy life, which depends on exercise and good nutrition, is vitally important to the longevity. Additionally, wellness is considered as a part of having good quality of life. Yet the major factors reflecting it has been referred in six dimensions namely, physical, emotional, intellectual, spiritual, social, and occupational dimensions[1].

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According to the national survey in 2004, 70% of the inhabitants of Bangkok have not practiced any exercise[2]. In the past 5 years, Thai people have been more concerned about their health than in the past. The physical wellness was promoted by eating proper food, exercising regularly, avoiding harmful habits especially quit smoking, and making informed responsible decision about health. Moreover, the national health promotion policy was launched and followed.

To facilitate regular exercise, current practice, knowledge, and perceived benefits of exercise among the inhabitants of Bangkok should be explored. Hence, health professionals can design exercise programs

compatible to their life styles and incorporate the knowledge into their practices.

Objective

The purposes of the present study were to explore the practice pattern of physical exercise and knowledge of exercise among the inhabitants of Bangkok. The factors, correlated with knowledge and the practice of physical exercise, were also explored.

Material and Method

The sample size was determined by the Yamane Formula[3]. At the end of 2004, living in Bangkok, there were 4,072,611 Thais aged between 18 and 81 years old[4]. The sampling error at 3% is accepted.

A self-administered questionnaire was designed to survey 1,200 inhabitants in and around Bangkok, aged above 18 years old. The questionnaire was comprised of four parts, demographic data, practice pattern of physical exercise, knowledge of exercise, and the sources of knowledge. The preference and perceived benefits of exercise were rated on the visual analogue scale (VAS).

The questionnaire had been tested among the experts of exercise and layman. It was able to distinguish the knowledge of exercise between these two groups.

Sixties communities were randomly selected from 160 communities[5] in and around Bangkok (37.5%). The questionnaires were distributed by volunteers in each community.

Statistical analysis

The frequency of demographic data, practice pattern of physical exercise, knowledge of exercise, and acquisition of knowledge were reported as percentage. Chi-square test was used to explore the relationship of frequent exercise and other factors related as well as investigate the relationship between the level of knowledge of exercise and other studied factors such as demographic data, practice pattern, and sources of knowledge. Stepwise regression was used to analyze the ranking of different resources of knowledge that had impacts on the level of knowledge.

For the knowledge of exercise, the score of experts and layman were summarized by mean and standard deviation (SD) and analyzed using the independent sample T test to discriminate the level of knowledge of exercise between these two groups. Then the ROC curve analysis was applied to retrieve the cut off score. The score of 16 out of 21 had the 80% sensitivity and 70% specificity to distinguish between these two groups.

Results

One thousand one hundred and seven inhabitants (92.25%) completed the questionnaires. The range of inhabitants aged from 18 to 81 years old. Most of them were married and had bachelor degrees.

They worked for private companies, were self-employed, or were government employees. Their monthly income ranged from 5,000 to 20,000 baht. They reported no co-morbid diseases and 1-2 hours per day of free time (37.5%) (Table1).

Only 22.2% of the inhabitants have practiced regular exercise for more than 1 year whereas 41.6% of them have regularly exercised for less than 3 months. They worked out between 3 and 7 days per week (57.8%) with varied duration. They liked to exercise alone, at home, in the evening and paid no additional expenses. The physical exercise mostly done was walking, jogging, attending aerobic exercise classes, using an exercise machine, and callisthenic exercise. The major reason for people who did not have regular exercises was the lack of time (Table 2).

The physical exercise frequency was related to the increasing age, higher education, more free time per day, and the preference of exercise (Table 3).

The mean VAS score of the preference of exercise and the perceived benefits of exercise were 6.59 and 8.25 respectively.

The mean score of the knowledge of exercise was 10.98 ± 4.95 out of 21. There were three parts of knowledge of exercise being explored. The first part was how to exercise. Less than 50% of the inhabitants could select the optimum frequency and intensity of exercise for aerobic fitness. The second part was the benefits of exercise. There were maximum responses in the item of strengthening the muscles (76.2%) and minimum responses in the item of increasing cardiopulmonary fitness. The third part was when to stop exercise. Severe leg pain (34.2%) was mostly selected whereas the loss of balance was the least selected. The inhabitants acquired the exercise knowledge through mass media rather than other methods (Table 4). However, the stepwise regression analysis among the sources of knowledge showed that attending a course had the highest impact on the level of the exercise knowledge in the present study.

Better knowledge of exercising was related to education higher than the secondary school, with income higher than 20,000 baht per month, exercise at

Table 1. Demographic data of the inhabitants of Bangkok (n = 1107)

Characteristics	Number (percent)
Gender	
Male	337 (30.4)
Female	770 (69.6)
Age groups (years)	
18-29	222 (20.1)
30-39	360 (32.5)
40-49	367 (33.2)
50-59	88 (7.9)
60-81	70 (6.3)
Marital status	
Single	387 (35)
Married	720 (65)
Educational levels	
Primary school	64 (5.8)
Secondary school	112 (10.1)
Tertiary school	356 (32.1)
Bachelor degree	505 (45.7)
Master & PhD	70 (6.3)
Occupations	
Working in private companies	332 (30.0)
Self-employed	254 (22.9)
Government employees	229 (20.7)
Unemployed	101 (9.1)
Freelance	84 (7.6)
General employees	83 (7.5)
Students	24 (2.2)
Monthly income (Baht)	
Less than 5,000	129 (11.7)
5,000-20,000	595 (53.8)
20,001-50,000	295 (26.7)
More than 50,000	88 (7.9)
Co-morbid diseases	
None	436 (39.4)
Allergy	162 (14.6)
Musculoskeletal pain	110 (9.9)
Hypertension	97 (8.8)
Dyslipidemia	95 (8.6)
Diabetes mellitus	47 (4.2)
Cardiopulmonary	42 (3.8)
Others	34 (3.1)
Free time (hours per day)	
None	69 (6.2)
Less than 1 hour	108 (9.8)
1-2	415 (37.5)
3-4	323 (29.2)
5-6	115 (10.4)
More than 6 hours	77 (7.0)

Table 2. Practice pattern of physical exercise

Factors	Number (percent)
Frequency (per week)	
3-7 days	640 (57.8)
Less than 1-2 days	249 (22.5)
No exercise	218 (19.5)
Duration (n = 889)	
More than 60 minutes	43 (4.8)
30-60 minutes	219 (24.6)
Less than 30 minutes	189 (21.3)
Uncertain	438 (49.2)
Type of exercise (n = 889)	
Walking	361 (32.6)
Jogging	204 (18.4)
Attending aerobic exercise class	203 (18.3)
Using exercise machine	125 (11.3)
Calisthenic exercise	78 (7.0)
Others	136 (12.3)
Continuation of exercise	
More than 1 year	197 (22.2)
6-12 months	152 (17.1)
3-6 months	170 (19.1)
Less than 3 months	370 (41.6)
Time of the day (n = 889)	
Morning	254 (28.6)
Afternoon	30 (3.4)
Evening	303 (34.1)
Before bedtime	54 (6.1)
Uncertain	278 (31.3)
Place (n = 889)	
House	441 (49.6)
Nearby the house	115 (12.9)
Sports club	112 (12.6)
Park	96 (10.8)
Stadium	53 (6.0)
Uncertain	108 (12.1)
Companions (n = 889)	
None	415 (46.7)
1-2	239 (26.9)
3-5	97 (10.9)
More than 5	136 (15.3)
Expenses (n = 889)	
Yes	351 (15)
No	756 (85)
Reasons for no exercise (n = 218)	
Lack of time	617 (55.7)
No place	205 (18.5)
No motivation	140 (12.6)
Feel unhealthy	97 (8.8)
No joy	84 (7.6)
No companions	80 (7.2)

Table 3. Factors related to high frequency of exercise per week

Factors	p-value
Age	0.000*
Gender	0.737
Marital status	0.140
Education	0.002*
Occupation	0.402
Co-morbid diseases	0.537
Monthly income	0.069
Free time	0.000*
Preference of exercise	0.000*
Perceived benefits	0.405

* Significant at p-value < 0.05

Table 4. Knowledge of exercise and the numbers of inhabitants with correct responses (n = 1107)

Items	Number (percent)
How to do exercise	
Need to warm up	962 (86.9)
Proper duration of exercise	782 (70.6)
Need to cool down	727 (65.7)
Proper frequency of exercise	502 (45.3)
Proper intensity of exercise	465 (42.0)
Benefits of exercise	
Strengthen muscles	843 (76.2)
Improve GI function	804 (72.4)
Enhance BP control	718 (64.9)
Increase endorphin release	551 (49.8)
Reduce stress	530 (47.9)
Enhance DM control	477 (43.1)
Increase longevity	453 (40.9)
Prevent osteoporosis	439 (39.7)
Enhance lipid control	330 (29.8)
Increase cardiopulmonary fitness	262 (23.7)
When to stop exercise	
Severe leg pain	676 (61.1)
Dyspnea	630 (56.9)
Chest discomfort	552 (49.9)
Nausea & vomiting	550 (49.7)
Dizziness	523 (47.2)
Loss of balance	379 (34.2)
The acquisition of knowledge	
Mass media	553 (56.2)
Reading	340 (34.6)
Attending the course	214 (21.8)
Never	123 (11.1)

Table 5. The factors related to the level of knowledge of exercise

Factors	p-value
Age	0.725
Gender	0.737
Marital status	0.140
Education	0.000*
Occupation	0.402
Monthly income	0.000*
Co-morbid diseases	0.322
Free time	0.217
Preference of exercise	0.720
Frequency of exercise	0.009*
Perceived benefits of exercise	0.405
Sources of knowledge	0.000*

* Significant at p-value < 0.05

least once a week, and sources of knowledge from attending the exercise course (Tables 5).

Discussion

The present study showed that the number of inhabitants of Bangkok who exercised was more than that of the national survey in 2004. Currently, there were only 19.7% practicing no exercise. According to the guideline of the American College of Sports Medicine (ACSM)[6], the aerobic exercise was an exercise performed at least 30 minutes per day and 3-5 days per week. In the present study, the number of inhabitants of Bangkok who exercised at least 30 minutes was reported at 28.9% and who performed at least 3 days per week was reported at 57.8%. The rest of the inhabitants did not exercise long and frequently enough to reach the aerobic fitness. They might have gained other benefits such as strength, endurance, flexibility, and coordination from the different types of exercise. The continuation of exercise reflected the compliance of exercise. Typically, fitness and cardiac exercise programs reported dropout rates ranging from 9 to 87%. Dropout rates were generally highest in the first 3 months, increasing to approximately 50% within 1 year[7,8]. The discontinuation at less than 3 months could have not produced any adaptation neither to physical nor cardiopulmonary status. There were 41.6% of the inhabitants who continued their exercises for less than 3 months. Therefore, these inhabitants should have been encouraged to continue with their exercise programs to gain benefits to both physical and cardiopulmonary fitness. Meanwhile, many strategies should

have been emerged to promote the adherence of exercise among those who continued their exercises for more than 3 months. These are recruiting a physician to support the exercise programs[7], minimizing injury from the exercises[8], providing positive reinforcement through the periodic tests, gaining support of the program among families and friends[9], using a progress chart, and a reward system to motivate the inhabitants for achievement of exercise programs. In addition, variety and enjoyment in the programs could facilitate the adherence of exercise. For example, Tai Chi is presently classified as a moderate intensity exercise and safe for all age groups. Moreover, Thai Traditional Folk Dance should also be encouraged since most Thai people are familiar with it and it is easily doable.

As a health professional in rehabilitation medicine, the clients' compliance with physicians exercise prescriptions is very important. However, the physician must incorporate and consider their physical exercise practice patterns along with the programs. The inhabitants of Bangkok performed walking as a major exercise. Actually, it was their daily routine physical activity. If the exercise had been done to the level recommended by the ACSM, it would have been able to improve their cardiovascular health and body composition as well as helping sedentary people maintain these improvements over time[10]. The pattern of exercise was performing exercise alone in their houses in the evening with no additional expenses. These patterns of exercise were probably the life style of the inhabitants of Bangkok. Hence, the exercise prescription should have been relevant to these practice patterns. Lack of time was the reason for no exercise reported in the present study. Other reasons were similar to those addressed in other studies[11-13].

In the present study, factors related to high frequency of weekly exercise were increasing age, high level of education, amount of free time per day, and the preference of exercise. Other studies reported that the elderly had a tendency to exercise less because of poor self-efficacy and multiple associated diseases[14]. The elderly in the present study, though small in number, might have been healthier. In Thailand, the elderly in the community got together to form a geriatric society to meet, share, and exchange their knowledge and experiences. Some societies set regular schedules to perform different kinds of exercise. Thus, this could enhance the frequency of exercise participation.

The inhabitants with high level of education possibly had more perceived benefits from exercise. Therefore, they performed exercise more often than those who had a lower level of education. It is not unexpected that the inhabitants who had more than 1-2 hours per day of free time tended to have more frequency of exercise per week. Although the perceived benefits of exercise was rated as 6.59 among the inhabitants, it was not correlated to the high frequency of exercise per week. This finding was different from the study of Kaewthummanukul who reported the perceived benefits of physical activity had influence on the participation in physical activity[15].

Part of knowledge exercise was aimed at exploring the understanding of the inhabitants regarding how to perform adequate aerobic exercise, the benefits of aerobic exercise, including warning signs, and symptoms to stop exercise. The number of inhabitants who responded correctly is shown in Table 4. Most of them knew they needed to warm up and cool down, which were very important for any kinds of exercise, to avoid injury to the cardiovascular and musculoskeletal systems. However, the frequency and intensity of aerobic exercise should have been more emphasized so they could have performed exercise adequately to reach a fitness level. For the benefits of the aerobic exercise, most of them did not know that an aerobic exercise had a positive effect on chronic diseases such as to enhance blood sugar and lipid control, to prevent osteoporosis, to increase cardiopulmonary fitness, and to increase longevity. If these effects were brought up and recognized, the exercise behavior might have been changed. The warning signs and symptoms to stop exercise were not well acknowledged among the inhabitants. The health professionals needed to work more on this issue so the exercisers could be aware and able to take care of themselves.

There are a number of methods to deliver the knowledge of exercise. The size of the target population needs to be considered. Large promoting campaign can improve knowledge of exercise and decrease sedentary life style[16,17]. The mass media has been widely used in large campaigns. However, reading and attending courses are conventional and economic. However, the impact might not be as effective as a campaign. Comparing among the three methods, the authors found that attending a course was the most effective way to gain knowledge. The disadvantage is that it might not be available to every inhabitant. Therefore, the mass media could be the proper way to deliver the knowledge to the majority of inhabitants. In comparison, delivering a course on exercise could be provided to smaller groups. However, it takes more resources and is more costly than using mass media. The inhabitants

with low education, the inhabitants with a monthly income of less than 20,000 baht, and the inhabitants who exercised infrequently should be the target groups since they had a low level of knowledge of exercise. Additionally, the knowledge of exercise should have been taught in schools when people were young. Thus, the educational level would not matter in the knowledge of exercise.

Conclusion

The people living in Bangkok regularly exercise about 1-2 days per week with varied durations. They lacked the knowledge of exercise regarding the benefits of exercise in the majority. Educational level was the only factor correlated with both regular exercise and exercise knowledge.

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ความรู้และพฤติกรรมการออกกำลังกายของคนกรุงเทพมหานคร

ปิยะภัทร เดชพระธรรม, นวพร ชัชวาลพาณิชย์

วัตถุประสงค์: *เพื่อศึกษาระดับความรู้ พฤติกรรม และปัจจัยที่มีผลต่อพฤติกรรมการออกกำลังกายของคนกรุงเทพมหานคร*
วัสดุและวิธีการ: *ทำการศึกษาโดยใช้แบบสอบถามสำรวจผู้ที่อาศัยในกรุงเทพมหานคร จำนวน 1,200 คน*
ผลการศึกษา: *มีผู้ตอบแบบสอบถามครบทุกข้อ จำนวน 1,107 ราย (อัตราการตอบกลับ 92.25%) อายุระหว่าง 18-81 ปี มีผู้ออกกำลังกายสม่ำเสมอ 640 ราย (58.4%) ออกกำลัง 1-2 วันต่อสัปดาห์ โดยระยะเวลาที่ออกกำลังแต่ละครั้งไม่แน่นอน ส่วนใหญ่ออกกำลังคนเดียวในบ้าน ในช่วงเย็น รูปแบบของการออกกำลังเรียงจากมากไปน้อย คือ การเดิน การวิ่ง การเต้นแอโรบิก การใช้เครื่องออกกำลังกายและการยืดเส้นยืดสาย ตามลำดับ มีผู้ไม่ออกกำลังกายเลย 207 ราย (18.9%) เหตุผลส่วนใหญ่คือไม่มีเวลา ปัจจัยที่มีผลต่อการออกกำลังกายอย่างสม่ำเสมอ คือ อายุที่มากขึ้น ระดับการศึกษาสูง มีเวลาว่างต่อวันมาก และชอบออกกำลังกาย เมื่อดูระดับความรู้ในการออกกำลังกายพบว่าผู้ตอบแบบสอบถามส่วนใหญ่ขาดความรู้ในเรื่องประโยชน์ของการออกกำลังกาย การออกกำลังกายอย่างถูกวิธี และอาการผิดปกติที่ควรจะหยุดออกกำลังกายตามลำดับ ผู้ที่มีระดับความรู้เกี่ยวกับการออกกำลังกายดีคือ ผู้ที่ มีระดับการศึกษาสูงกว่ามัธยมปลาย มีรายได้สูง ออกกำลังกายทุกวัน และเคยรับการอบรมเกี่ยวกับการออกกำลังกาย*
สรุป: *ผู้ที่อาศัยในกรุงเทพมหานครส่วนใหญ่ออกกำลังกาย 1-2 วันต่อสัปดาห์ ส่วนใหญ่ขาดความรู้เกี่ยวกับการออกกำลังกายอย่างถูกวิธี ระดับการศึกษาเป็นปัจจัยเดียวที่เกี่ยวข้องกับการออกกำลังกายอย่างสม่ำเสมอและระดับความรู้เกี่ยวกับการออกกำลังกาย*