

CHAPTER 3

RESEARCH METHODOLOGY

Design of the Study

This study was a quasi-experimental, one-group pre and post-test design, to compare sleep parameters, anxiety and depression of elderly subjects before and during 6 weeks of a TCQ exercise program.

Population and Subjects

The study settings were two residential care facilities in Southern Thailand; Uthong Panangtuk Home for the Elderly in Chumphon Province and Phuket Home for the Elderly in Phuket Province. The number of subjects was derived from the power analysis table (Polit, 1996), given a significance level (α) of .05, power statistic test ($1-\beta$) of 0.80, and effect size of 0.5. Fifty-three subjects were required. To maintain an adequate number of subjects throughout the study, the researcher included 77 subjects who met inclusion criteria in the study. The inclusion criteria were:

1. Aged 60 years old or over
2. Well oriented and able to communicate
3. Able to perform activities of daily living (ADL) independently, and have

no severe muscle and/or joint pains.

4. Having at least one of the following sleep problems during the past 2 weeks.

- 4.1 Took more than 30 minutes to fall asleep.

- 4.2 Woke up more than twice a night.

4.3 Took more than 30 minutes to get back to sleep after waking up during the sleep period.

4.4 Slept less than 5 hours a night.

4.5 Felt sleepy/not refreshed when waking up in the morning.

5. Having stayed in the residential care facilities at least 2 weeks.

6. Willing to participate in this study.

During the study 14 subjects decided to withdraw, 63 of them remained throughout the study.

Instruments

The instruments in this study included data collecting questionnaires and the TCQ program.

1. The questionnaires composed of 3 parts: demographic questionnaires (Appendix B), sleep questionnaires (Appendix C), and the Thai Hospital Anxiety and Depression Scales (Thai HADS) with permission (Appendix D).

1.1 The demographic questions sought information on age, sex, marital status, number of visitors/month, religion, education level, income, physical illness, medication affecting sleep, health related behaviors (coffee/non-herbal tea, smoking, alcohol, exercise, and hobbies), and sleep problems.

1.2 The sleep questionnaires were modified from Laempet (2001). The subjects were asked to recall their sleep in the past 2 weeks including: sleep latency in minutes, number of wakings after sleep onset, periods of waking after sleep onset in minutes, total sleep time in hour. In addition, sleep quality were assessed by a four item questionnaires which exploring sleep adequacy, depth sleep, feeling refreshed at

wake up and sleep satisfaction. Each item provided 5 response which yield a score of a possible total sleep quality score was 4-20.

1.3 The Thai Hospital Anxiety and Depression Scales is composed of 14 items divided into 2 sub-scales, anxiety and depression. Response to each item yield a score of 0-3. Sum scores of each sub-scale ranged between 0 to 21. Anxiety or depression is suspected when the total score of the sub-scale is greater than 11 (Nilchaikovit, et al., 1996).

2. Instruments for the exercise program included a guideline for running the TCQ program and a TCQ handbook (Appendix A), also a TCQ cassette tape and a TCQ videotape with permission.

2.1 The TCQ practice program followed an aerobic exercise principle consisting of warm up, exercise session, and cool down. The program completed at the 6-week period which usually required for any kind of training exercise in order to gain benefit. Each session of the TCQ practice was composed of 7 minutes of 25 postures of joint movement for warm up and 15 minutes for 18 movements of TCQ session I. Each session was scheduled at 3 p.m., 2 hours before dinner. The two residential care facilities had a dinner time at 5 p.m., and light outs at 8 p.m. The afternoon exercise session was to provide the subjects enough time to cool down. Four weeks of practice was expected by Tai Chi's experts that practitioners would learn to perform TCQ correctly and effectively. They began with following the TCQ leader and learning to perform corrected postures and movements which usually take about 2-4 weeks. Later, they would develop the skill in creating harmony between body movement, mind and breathing. It was believed that at the end of the 6-week TCQ program, all subjects reached the stage that they could perform movements, inhalation, and exhalation

harmoniously with concentration. Those reaching this stage should experienced relaxation, peaceful mind and body balance.

2.2 A TCQ handbook composed of 25 postures of joint movement for warm up and 18 movements of TCQ session I.

2.3 A TCQ cassette tape contained classic music with guidance practices of 25 postures of joint movement and 18 movements of TCQ session I.

2.4 A video tape of 25 postures of joint movement and 18 movements of TCQ session I.

Validity and Reliability of Instruments

Two sleep researchers and one psychiatric nurse validated the demographic data and the sleep questionnaires (List of experts illustrated in Appendix H).

The reliability of the questionnaires were tested in 15 elderly. The sleep questionnaires were administered twice, 48 hours apart. Pearson correlation coefficients of two sleep data sets were between 0.75-0.95. Chronbach alpha coefficient were computed for the reliability of anxiety as well as depression scales. They were at the same value of .96.

Data Collection Procedure

Data collection included 3 stages: Preparation, data collection before TCQ exercise, and data collection during TCQ exercise (Figure 3).

1. The preparation stage included

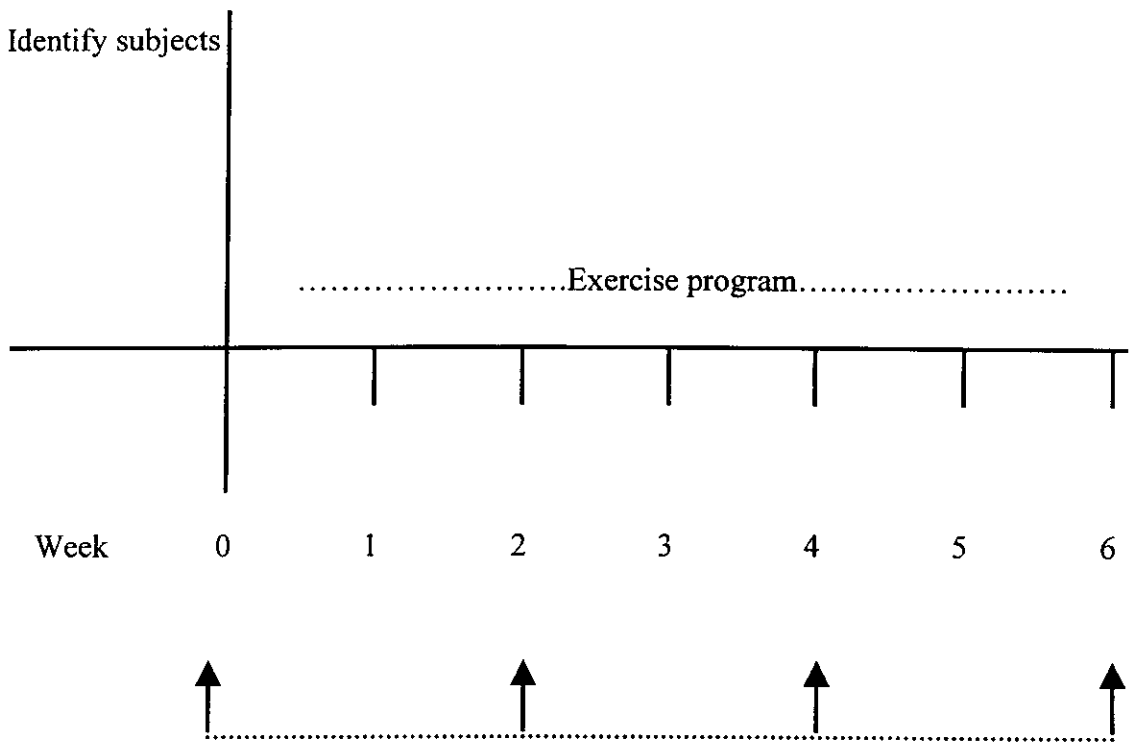
- 1.1 The researcher was engaged in TCQ supervisors.

1.2 Approvals from the director of social welfare to conduct the study at the two residential care facilities.

1.3 Recruited the subjects who met the inclusion criteria.

2. Data collection before TCQ: The researcher interviewed the subjects to get data on demographic characteristic, sleep parameters, anxiety and depression in the past 2 weeks before the interview.

3. At the end of each two weeks during the TCQ exercise period, the researcher assessed the subjects' sleep parameters, anxiety and depression of the subjects by interviewing the subjects following the questionnaires. During the 6-week period those who could not keep up with the program were excluded from the study (The activities during the exercise program illustrated in Appendix G).



↑ = Time for data collection: at each point of data collection, the subjects were asked to report their sleep and anxiety and depression in the past two weeks.

Figure 3. Diagram of data collection process which asked about the previous two weeks.

Data analysis

Data was analyzed by using the Statistical Package for Social Science (SPSS):

1. Frequency, percentile, arithmetic mean (\bar{X} s), standard deviation (SD), range, coefficient of variation, and skewness were used for describing the distribution of demographic data, and sleep parameters, anxiety and depression scores before TCQ exercise.

2. A one way repeated measure analysis of variance (RANOVA) was used to compare sleep parameters, and anxiety and depression scores of the four periods, two weeks before TCQ, the first two weeks, the third through the fourth week, and the fifth through the sixth week of the six week TCQ program.

3. Paired t-test with Bonferroni's correction was used to test the differences of sleep parameters and anxiety and depression scores between two periods. In this study, there were six possible comparisons: two weeks before TCQ exercise with the first two weeks of TCQ exercise, two weeks before TCQ exercise with the third through the fourth week of TCQ exercise, two weeks before TCQ exercise with the fifth through the sixth week of TCQ exercise, the first two weeks of TCQ exercise with the third through the fourth week of TCQ exercise, the first two weeks of TCQ exercise with the fifth through the sixth week of TCQ exercise, and the third through the fourth week of TCQ exercise with the fifth through the sixth week of TCQ exercise.