

CHAPTER 5

DISCUSSION

Phase 1

The result from this study demonstrates the point prevalence of depression among Thai people in Nakornluang district, Ayutthaya province. The point prevalence of probable depression (D of 25 or more) is 6.6 % while the point prevalence of depression (D of 30 or more) is 3.21 % (figure 4.1). This result is in line with the result of Lasa's study indicates that the point prevalence of a BDI (Beck Depression Inventory) score of 13 or more (probable case) is 3.52% but only 2.56% of the subjects were diagnosed with a depressive disorder. The difference of point prevalence from each study due to the difference of each study design; sample size, sample characteristics, study period, cut off point of measurement of depression, including the cultural difference in each country.

Of 83 subjects with probable depression, 12.05%, 31.32% and 40.96% are no pain, acute pain and chronic pain subjects respectively. This finding is consistent to that of Magni et al, which found that the Mean CES-D score, percentage CES-D score of 16 or more (23.6%) and of 20 or more (18.3%) in the chronic pain group was significantly higher than that of subjects without chronic pain (G. Magni et al., 1990).

This study shows the chronic musculoskeletal pain is approximately 19% (194 subjects) of the total identified pain with depression score. This percentage is almost the same as the finding of Magni (G. Magni et al., 1990), but is quite a bit less than the finding of other studies (G. Magni et al., 1993; Munir et al., 2007). One reason for the differences can be explained that in this study the subjects who reported chronic musculoskeletal pain had to be screened and the chronic musculoskeletal pain had to be confirmed by doctors that helped to validate the chronic pain data. The ranking of

most frequently reported pain sites in this study are multiple sites, back and sacrum, lower leg, and shoulder respectively. From reviewing other studies, it was found that the pain sites most frequently reported are back and shoulder (G. Brattberg et al., June 1997; Elliott et al., 1999; Picavet & Schouten, 2003 Mar; Von Korff et al., 1990; Von Korff et al., 1988). And the chronic musculoskeletal pain subjects are more likely to be female and older people (table 4.1). This supports the previous study (Elliott et al., 1999; Harkness et al., 2005; G. Magni et al., 1990; G. Magni et al., 1993; Picavet & Schouten, 2003 Mar). However there were some studies that did not agree with this study e.g. Von Korff et al showed that pain status was not associated with age (Von Korff et al., 1990) and Currie et al showed that chronic back pain was more likely to be encountered among younger patients (Currie & Wang, 2004).

For the relation of potential risk factors and depression scores of 194 chronic musculoskeletal pain subjects, univariate analysis shows that significant differences in percentage of depression grouping (risk depression and probable depression) are found in gender, income, family relationship, pain site and pain intensity (table 4.1). The higher percentages found in multiple pain sites explained by the concept of Brookoff (Brookoff, July 2000), while the high score of pain intensity is in line with the study of Von Korff, 1990. It showed that the percentage receiving an algorithm diagnosis of major depression measured by 60-item version of the Hopkins Symptom Checklist-Revised (SCL) increased from 2% among no-pain persons to 5% among grade II pain persons, and to 20% among grade V pain persons (Von Korff et al., 1990). As Tesh et al and Boersma et al reported, there was a statistically significant correlation between the level of depression and the intensity of chronic pain and the levels of depression were progressively higher in accordance with the degree of severity of the chronic pain (Boersma & Linton, 2005 Nov; Tesh et al., 2004). This phenomenon can be explained by HPA axis and chronic pain in figure 2.4 and 2.5 (Blackburn-Munro & Blackburn-Munro, 2001). The chronic stress evoked by chronic pain leads to a loss of negative glucocorticoid feedback on the HPA axis, resulting in a positive drive on the

axis and down regulation of the glucocorticoid receptor within the brain and periphery. This results in the continued and prolonged stress to HPA axis.

The higher percentages of probable depression are found in female, insufficient income, poor family relationship patients. These findings are in agreement with each study in some issues. The higher percentages of probable depression found in female and an insufficient income patient corresponds with many studies (Bao et al., May 2003; G. Magni et al., 1990; G. Magni et al., 1993), as Magni et al, 1990 reported that female and lower income patients are linked to CES-D scores of 16 or more and of 20 or more (G. Magni et al., 1990). Bao et al also reported that the depressed patients with comorbid pain were significantly more likely to have lower education, and to have a much lower average annual family income (Bao et al., May 2003). The higher percentages of probable depression related to poor family relationships as in the study of Van Korff which reported that the percentage of pain reported by fair or poor family stress patients is higher than the percentage of no-pain persons reporting fair or poor family stress (Von Korff et al., 1988).

The other potential risk factors such as age, marital status, education, officemate relationship, community relationship, pain duration, pain disability and health problems are not significantly different. This is in agreement with the study of Fishbain et al and Magni et al (Fishbain et al., 1997; G. Magni et al., 1990).

From this study, the multivariate analysis model in table 4.3 is chosen to explain the association of variables which are given by $= - 6.32 + 2.37 \text{ gender} + 2.10 \text{ pain intensity}$. It demonstrates that gender and pain intensity are significantly associated with probable depression and are the strongest predictors of depression among all the variables examined in selected participants. This result demonstrates that although the univariate analysis shows the significance of pain site to probable depression, but if the other potential risk factor such as income and family relationships were controlled in multivariate analysis, the effect of pain site is very low until it does not show the relationship to probable depression. It shows that pure effect of pain intensity. This is supported by many studies (Currie & Wang, 2004; G. Magni et al., 1990; G. Magni et

al., 1993; G. Magni et al., 1994), for example, Currie & Wang reported that after controlling the influence of other known risk factors, the presence of chronic back pain was the strongest predictor of major depression among all the variables examined in selected participants. Logistic regression analyses in the study of Magni et al (1990, 1993) showed the variables that emerged with a significant link to a CES-D cut-off of 16 were the presence of chronic pain, female sex, not being married, low income, low education, and a race other than white, while their study in 1994 showed that chronic pain is the variable which best predicted depression, especially neck/back pain and hip pain. On the other hand the study of Magni et al in 1994 also showed that depressive symptoms significantly predicted the development of chronic musculoskeletal pain. This finding was in agreement with the study of Leino & Magni and Carroll et al (Carroll et al., 2004; Leino & Magni, 1993).

This study also shows that females had about 10.72 times the risk of probable depression than males. While the subject with a high score of pain intensity had the risk about 8.15 times higher than the one with lower pain intensity. As the result was presented by Magni et al, it showed that females, subjects with insufficient income, and chronic pain had about 1.71, 2.8, and 2.85 times higher risk of probable depression (G. Magni et al., 1994).

The limitation of phase 1

Although there was the field preparation and survey for the feasibility of study and for getting rid the problem, however there are unexpected problems. The first problem was that some of the selected sampling had not been in the area during the study period. They had to work or study in another province and they would not return home for several months. So these sampling subjects were excluded and new subjects were re-run from the data base population by age and gender. The second problem was that the subjects did not return the questionnaire although the public health volunteers explained and showed the document about the study process. They

claimed that 1) they had no health problem; 2) they feared that if they reported a health problem, they would have been sent to a big hospital in another area. This problem was solved by the public health workers, not public health volunteers, who had to go and explain and convince the subjects themselves. The third was unreliability of data collected by the self administered questionnaire. It resulted from the fact that some distributors had not sent the questionnaires to subjects and they did them by themselves. Besides this some questionnaires were administered by non-subjects. So all returned questionnaires had to be checked for reliability.

The great challenging of self administered questionnaires is the Thai culture. This resulted from the nature of Thai people that have an easy and non-complicated lifestyle. So they selected to administer the easy questions with the ordinal scale and descriptive response and they didn't transform the description to numeric data. Most of them didn't administer the question with a numeric response. The consequence was that the data of pain disability and pain dysfunction was not completed. In addition to the incompleted pain disability data, there was the unreliability of pain disability and pain dysfunction data. This was also as a result of Thai culture. Although they had pain problems and impaired function, they were not able to stop working because of loss of income. They still had to work hard so in their minds, pain did not impair their functions. This problem consequently affected other phases of this study, phase 2 and phase 3 in term of pain dysfunction evaluation.

Phase 2 (follow-up phase)

Univariate analysis for the association of potential risk factors and pain in table 4.4 shows that there are higher percentage of pain subjects (NP, CMSP) are found in age, marital status, education, and community relationship. The higher percentages are found in adults (30-59 years), couples, low education, and poor community relationship. The higher percentages found in adults are supported by the studies of Magni et al (G. Magni et al., 1990; G. Magni et al., 1993). While the study of

Von Korff et al supports the higher percentages found in lower levels of educational attainment (Von Korff et al., 1990). But for marital status this result differs from the study of Currie & Wang that showed that chronic pain was more likely to be encountered in single persons (Currie & Wang, 2004).

The 6 months follow-up in this study shows that there is a similar pattern of incidence cases of high risk depression in both no pain and chronic musculoskeletal pain groups (table 4.5). This shows that the chance of occurrence of high risk depression in subjects with chronic musculoskeletal pain is quite similar to subjects without pain. And Cochran's Q test (table 4.6) also shows significant difference of the occurrence of high risk depression across the time in both no-pain group and chronic musculoskeletal pain group ($P < 0.05$). Although some no-pain subjects developed pain (should be acute pain) during the follow-up period, they still had low risk depression. This is quite different from the chronic musculoskeletal pain group. The difference shows that subjects with free from pain still had low risk depression while some had high risk depression.

Relative risk in table 4.6 shows that the longer the time is, the higher tendency of increasing relative risk is found. The low power (5.2%) to detect significant incident rate during the short time of follow-up is due to small sample size. At the first time, the sample size estimated for this phase is higher than this. However, these findings point out that chronic musculoskeletal pain is not an independent factor provoking depression because the data from an in-depth interview of pain-free subjects during follow-up shows that they had debt problems, insufficient income, and their offspring's behavior was problematic.

The result in this phase is not distinct because there are many limitations of follow-up study, which are 1) a short period of time for the follow-up study because of the flood disaster; 2) depression is a condition which may be kept a secret and is under-detected; 3) the time for data collection is not the real continuous. It was interval screening.

The limitation of phase 2

Because of the under detection of depression, the HRSR questionnaire is necessary to be used for detecting probable depression. This is the one problem in this phase. The no-pain subjects were bored in the administration of the questionnaire. They thought that if they have mental problems, they are able to inform the public health worker by themselves. While the pain subjects expected to be treated for their pain, but no treatment was given to them during the follow-up study. So there were many subjects who dropped out in this phase. The other limitation of the follow-up study was the unexpected situation during the follow-up period e.g. the natural disaster, especially if that situation has a strong effect on the variables to be followed-up. The study had to be terminated because of the abnormal dynamics of the socio-economic situation and the environment.

Phase 3

Period 1: The effects of self help technique for pain relief: mobility/stretching and strengthening exercises, lifestyle, and working education.

The percentage of back pain is highest, 38.24% and the next is back with lower limb pain, 26.47% (figure 4.5). The detailed specific pain sites are 29.42%, 23.53%, 14.71% for lower back pain, lower back with leg pain and shoulder pain respectively. The higher percentage of CMSP with high risk depression is found in females, adults, couples, low education, and poor family relationship. For pain factors, the higher percentage of CMSP with high risk depression is found in high pain intensity score, multiple pain site and longer pain duration (table 4.7). This result is the same as the character of subjects in phase 1 because they are the subgroup of 194 CMSP subjects.

In this study, the results shows that after treatment for 3 months, the results in figure 4.6 show that the median of the pain score decreases significantly from 60 at the beginning to 40 at the end ($P<0.05$). And the median of the D score decreases significantly from 24 to 20 ($P<0.05$). But it could not be concluded that the depression score or pain score changed before. This is the limitation of this study because there was uncompleted data for the pain and depression score during the first 3 months. However, since depression continues to be under-detected and under-treated in individuals with chronic musculoskeletal pain and non-routine assessment in primary care, so it is good to treat chronic musculoskeletal pain in consequence to decrease depression.

There is the good effect of treatment in this study; it is because the program for subjects is underlying a specific musculoskeletal disorder for each other according to physical therapy assessment. And the treatment focuses on self-management techniques or active modalities: exercises which help patients to regain control over their lives by active participation in their pain (Aronoff, 1999; Bergman, 2007; Buse et al., 2005; Geffen, 2003). This result supports two previous studies. The first study showed that during a 57 week programme period and 1 year follow-up, pain intensity and pain experience significantly ($p<0.01$) decreased from the start of the programme to one year follow-up. And there was significant long term improvement (trend over time) in cognitive, physiological, psychological capacity and a significant reduction in both anxiety and depression score. Furthermore, functional health status significantly increased on the variables' feeling, daily activities, and social activities (Lillefjell et al., 2007). The second one showed that PDP program which focuses on the reduction of psychological barriers to return to work was able to reduce the BDI-II score in the early chronic pain and chronic pain group. Furthermore, for participants in the early chronic group, pain symptoms showed greatest reduction in the last 5 weeks of the program, while depressive symptoms showed the greatest reduction in the first 4 weeks of the program, in other words, depressive symptoms changed before pain symptoms (Sullivan et al., 2007).

Period 2: compare the effect of self help technique for pain relief in period 1 and a combination of self help technique for pain relief and stress relief (progressive muscle relaxation technique)

There is no significant difference in percentage of both groups in all factors. After the treatment for 3 months, it shows that the median of pain score and D score in group A at the beginning of period 2 does not differ significantly from the median at the end of treatment ($P>0.05$) (table 4.9). In group B, the median of pain score decreases significantly from 50 to 30 at the end of treatment. While D score does not change significantly. In the whole picture, it seems that the effect of treatment in this period is not well done. For individual analysis, it shows that there are more than 50% of subjects have the better score of pain and D score. The factors that very important in self help technique for health care management are the compliance and the continuity of exercise. This is the role of public health worker who have to enhance and stimulate the subjects to exercise. Furthermore, the results in table 4.10 and 4.11 also show that in spite of the other factors, if the subjects are always willing to do the exercise, they will get better. Exception, there are severe problem of income or family relation.

In this period, the result is not as the expectation. This can be explained that the researcher cannot totally control and supervise the exercise for the subjects as period 1. In addition, many limitations occurred such as the trouble of journey to some study area and difficulty to make appointment to the subjects because of the flood disaster. In this study, the disability condition following the pain can't be considered because of non validity of data. This may be cultural and socio-economic. The subjects reported that although the pain would interfere with the performance of their functions, activities or jobs, they couldn't stop working or rest because of the lack of income. So the data recorded does not correspond with the actual status of physical activity.

The limitation of study in Phase 3

The intervention used was the self-management techniques or self help technique: active style, where it had to fight against the old fashion health care management. The people are used to the passive management technique. They did not trust the given technique. The one fact that encouraged them to accept the self help technique is that it can release the pain immediately after the exercise. The stimulation to realize the importance of exercise and always do it is necessary in the early stage of treatment. However, the problem of socio-economic factors may be more important than health problems. This is confirmed by period 2 in phase 3 where the unexpected natural disaster was the strong factor influencing the health problem to become a socio-economic problem.