CHAPTER 5

CONCLUSIONS, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter presents the conclusions of the study including the purpose of the study, methodology, data analysis and findings. Implications, limitations and recommendations for further study are also displayed.

Conclusions

The purpose of this cross-sectional descriptive correlational study was to examine the level of fatigue and investigate factors predicting fatigue among Chinese nurses. Based on the Job Demand Control Model (Karasek & Theorell, 1990), a conceptual framework of a cohort study titled “Fatigue at Work” (Kant et al., 2003) and empirical findings. Shift work, exposure to hazards in work environments, job demand, job control, support at work, sleep quality, intershift recovery, job dissatisfaction, anxiety, depression, acute fatigue and chronic fatigue were selected as the study variables.

Multi-stage sampling was used to recruit the samples based on the inclusion criteria for this study. The final sample consisted of 581 Chinese nurses with a mean age of 29.49 years.

Acute fatigue, chronic fatigue and intershift recovery were measured by Acute Fatigue subscale, Chronic Fatigue subscale and Intershift Recovery subscale derived from the Occupational Fatigue Exhaustion Recovery (OFER). Job demand, job control and support at work were measured by Job Demand subscale, Job Control

subscale and Support at Work subscale derived from the Job Content Questionnaire (JCQ). Exposure to hazards in work environments, sleep quality, job dissatisfaction, anxiety, and depression were measured by the Exposure to Hazards in Hospital Work Environments (EHHWE), the Pittsburgh Sleep Quality Index (PSQI), the Job Dissatisfaction Scale, the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI). The reliability coefficients of the scales used in the study were acceptable to good, ranging from .70 to .93.

Descriptive statistics were used to describe characteristics of the samples and study variables, as well as to explain the distribution of the data. Pearson correlation was conducted to examine the relationships among study variables. The hypothesized model was tested using the LISREL 8.7 program. The initial model did not fit the data, and was modified by adding nine paths based on modification indices (MI), adding six significant correlations among exogenous variables and dropping sixteen non-significant paths until the goodness-of-fit indices were adequate.

Study results revealed 70.9% of subjects had moderate-to-high and high levels of acute fatigue, and 39.4% of subjects had chronic fatigue at the same level. Among the predictors in the proposed model, job dissatisfaction, anxiety and depression did not affect acute fatigue. Seven predictors had direct and/or indirect effect on acute fatigue including shift work, job demand, job control, support at work, exposure to hazards in work environments, intershift recovery and sleep quality. All the eleven predictors had direct and /or indirect effect on chronic fatigue including shift work, job demand, job control, support at work, exposure to hazards in hospital work environments, sleep quality, intershift recovery, anxiety, depression, job dissatisfaction and acute fatigue. Moreover, shift work, job demand, exposure to

hazards in work environments and sleep quality had total positive effect on both acute fatigue and chronic fatigue, while job control, support at work and intershift recovery had total negative effect on both acute fatigue and chronic fatigue. Job dissatisfaction, depression, and anxiety had total positive effect on chronic fatigue, but had no effect on acute fatigue.

In the final model, 44.8% of total variance in acute fatigue was accounted for by the shift work, job demand, job control, support at work, exposure to hazards in work environments, sleep quality and intershift recovery. Job demand (γ=.43, p<.001) had highest total effect on acute fatigue, followed by sleep quality (β=.28, p<.001), job control (γ=-.20, p<.001), exposure to hazards in work environments (γ=.19, p<.001), intershift recovery (β=-.20, p<.001), shift work (γ=.07, p<.001) and support at work (β=-.08, p<.001). While, job dissatisfaction, anxiety, and depression had no effect on acute fatigue. Moreover, 61.5% of total variance in chronic fatigue was accounted for by the shift work, job demand, job control, support at work, exposure to hazards in work environments, job dissatisfaction, sleep quality, anxiety, depression, intershift recovery and acute fatigue. Acute fatigue had highest total effect on chronic fatigue (β=.40, p<.001), followed by job demand (γ=.32, p<.001), sleep quality (β=.27, p<.001), job dissatisfaction (β=.20, p<.001), exposure to hazards in work environments (γ=.18, p<.001), anxiety (β=.17, p<.001) and job control (β=-.17, p<.001), depression (β=.10, p<.001), shift work (γ=.06, p<.001), support at work (γ=-.05, p<.001), while intershift recovery (β=-.01, p<.05) had the least total effect on chronic fatigue.

The unique contribution of this study is that it addresses a gap in the literature about fatigue in Chinese nurse. It was the first study in which the predictors

of both acute and chronic fatigue were examined at the same time. The new knowledge generated from this study was the identification of the factors that are associated with fatigue in Chinese nurses. Acute fatigue was mainly influenced by factors directly work-related, including job demand, job control, support at work, exposure to hazards in work environments. Chronic fatigue, in the present study, was especially affected by factors indirectly work-related, such as acute fatigue, job dissatisfaction, anxiety, and depression. The findings of this study indicate that different intervention strategies should be implemented regarding acute and chronic fatigue.

Implications

Based on the findings of the study, implications for nursing administration and nursing research are proposed as follows:

Implications for Nursing Administration

As job demand is very influential in acute fatigue perception, nursing administrators should consider strategies to for reducing job demand. These strategies could include arranging the daily nursing work load in ways that-optimize workflow, and incorporate staffing patterns that provide enough nurses to do the work required. Furthermore, the significant relationships between acute and chronic fatigue suggests that any efforts to reduce acute fatigue may also be seen as interventions that prevent the development of chronic fatigue.

Sleep quality positively and directly contributes to acute fatigue. Nursing administrators should initiate a comprehensive assessment as well as an effective

eliminating intervention focusing on sleep quality. Effective management should be applied to prevent sleep problems or relieve sleep disturbance.

As to exposure to hazards in work environments, hospital nursing administrators should provide safe and proper physical, chemical and biological environments to reduce nurses' exposure to occupational hazards, contributing to acute fatigue.

Perceived job control and support at work also directly influenced acute fatigue. In order to increase perceived job control, nurse administrators and educators may wish to provide opportunities for nurses to increase their skills and to link these news skills and knowledge to increased discretion and decision making regarding patient care. Moreover, nursing administrator should create a helpful and harmonious atmosphere to enhance the interpersonal relationship among nurses. In addition, as a nursing administrator, he/she should care for the staff nurses and provide support for them when necessary.

Regarding intershift recovery, it was an important predictor of chronic fatigue. Thus the planning of work schedules must provide adequate time between shifts for nurses to recover. Nursing administrators and staff nurses may wish to consider joint research projects designed to identify the best strategies for facilitating intershift recovery.

The effect of anxiety and depression as predictors of chronic fatigue warrants further attention. Having regular exercise, developing ongoing support strategies, and practicing relaxation techniques were reported to be effective methods to relieve the anxiety and depression level in Chinese nurses. Nursing administrators may wish to develop screening programs for these problems and discretely provide counseling and

other forms of support as needed.

Job dissatisfaction is very influential in chronic fatigue. Organizational commitment, professional commitment, occupational stress, role conflict and role ambiguity were verified as its influencing factors. Strategies that increase organizational and professional commitment, and reduce occupational stress, role conflict, and role ambiguity may be effective in decreasing job dissatisfaction, and therefore reducing chronic fatigue.

Although shift work had no direct effect on acute and chronic fatigue in this study, it influences acute and chronic fatigue through meditating variables, such as sleep quality and intershift recovery. Nursing administrators should concern the assignment of shifts in nurses in order to promote nursing practice in the future.

Implications for Nursing Research

From a nursing research perspective, the model for predicting fatigue makes a contribution to scientific knowledge, and it can form the basis for further research to help nursing researchers to investigate all the strategies that will lead to alleviate fatigue in nurses. This model is in its early testing phase with Chinese nurses, yet significant associations among the major concepts proposed in the model demand further testing.

Limitations

1. The design of this study was a cross-sectional design, in which all of the variables were measured at the same point of time. It limited the ability to make causal inferences. Therefore, the study findings may be considered tentative till

further data from longitudinal or experimental studies are available.

2. The samples in this study consisted of nurses who worked in general hospitals in Chengdu city. The generalization of the findings to the whole Chinese nurses and nurses who worked in other types of hospitals should be cautious.

3. Shift work in this study consisted number of night and evening shifts. Therefore, the conclusion regarding effect of shift work on fatigue in nurses will be referred as the definition of term in this study.

Recommendations

Considering the limitations of this study and the study findings, there are some recommendations for further research.

1. The samples in this study are more likely to reflect Chinese nurses who work in general hospitals in Chengdu city, urban area. Therefore, future studies should include samples from different settings, such as other types of hospitals, other cities in China, or rural areas. Using this method may explain how different or similar factors can contribute to fatigue in various samples, and to generalize the findings among Chinese nurses.

2. Since 44.8% of total variance in acute fatigue was accounted for by causal variables, further work may identify other potential variables affecting acute fatigue, e.g., age, marital status and nutrition status, and add more predictors into the model in order to increase the power of prediction.

3. Not only number of night and evening shifts, but also rotating pattern needs to be included to reexamine and reconsider their interaction effect on fatigue in nurses in the future, therefore to provide evidence for nursing police change in

nursing shift system.

4. The longitudinal design is recommended as it has more power than a cross-sectional design. Longitudinal cohort studies may be needed to reveal the temporal sequence of events and changes of variables such as increase or decrease, therefore providing a better explanation of cause-effect relationship in the future.

5. Triangulation technique that use both qualitative and quantitative to draw conclusion are needed to provide more comprehensive information about job demand, job control, support at work, and psychological symptom, such as anxiety, depression, as well as job dissatisfaction and intershift recovery in relation to acute fatigue or chronic fatigue.

6. Experimental studies aimed to modify exposure to hazards in hospital work environments, decrease job demand, as well as to promote sleep quality, job control and support at work should be developed and tested to reduce acute fatigue. Moreover, experimental studies aimed to decrease job demand, anxiety, depression, job dissatisfaction, acute fatigue, and to promote intershift recovery need to be developed and tested to reduce chronic fatigue.