

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to develop the PC-CAS and test whether it is psychometrically sound. In this chapter, a conclusion, implications, strengths and limitations, future research and recommendations, and summarization will be presented.

Conclusion

The final draft of the PC-CAS (65-items) was developed and evaluated its psychometric properties. The last version PC-CAS consisted of 55 items with 23 components and 4 domains. The PC-CAS would be useful for evaluating the Thai PC providers' competency. More evidences support this scale development and its reliability, construct and content validity as follows in the summary.

Two phases of the scale development and the psychometric evaluation were conducted. In the first phase, integrated systematic review of Thai and international publications and interviews of health professional experts, directors of CUPs, PC providers, and public health workers were used to develop domain specification. Four specified domains, i.e., interpersonal relationship, care management, integrated healthcare service, and professional accountability were formed within 23 components. Items were generated from existing domains and then were examined by 19 experts through three rounds of Delphi technique. Initial 221 items were generated and then 81 items were retained with the original 23 components and 4 domains. The second phase, reliability, content and construct validity were tested for the psychometric

properties of the PC-CAS. Content validity was determined by the panel of four experts. The Content Validity Index (CVI) was 0.80 and 65 items were retained. Stability and internal consistency were examined by 14 PC providers. The percentage of agreement between the PC-CAS scores of time # 1 and time # 2 was 80.58 while the Cronbach's alpha coefficient of the total items was 0.96 (Table 10). Construct validity was evaluated by item analysis, Confirmatory Factor Analysis (CFA), and hypothesis testing approach. Benner's model hypothesis was tested by 419 PC providers (full-time = 360, part-time = 59). The mean differences were found with a statistical significance at $p < .05$ of care management domain of the PC-CAS between full-time PC providers and part-time group. In addition, the significant relationships between the PC-CAS score of the PC providers and three types of the PC providers' experiences, i.e., primary care experience ($r = 0.11, p < .05$), PCU working experience ($r = 0.17, p < .01$), and education experience ($r = 0.12, P < .05$) were revealed. In the item analysis tested with alpha coefficients, an acceptable correlation of almost all each pair was found. The CFA approved the 4-domain of PC-CAS consisting of 55 items within 23 components and the fit indices of $\chi^2 = 4.76, \chi^2/df = 2.38, GFI = 0.99, AGFI = 0.97, CFI = 1.00, RMSEA = 0.05, Standardized RMR = 0.01$. In addition, the social desirability were tested to confirm social-related measures that interpreting responses concerned because this measure was the self-report. The results of the social desirability test were acceptable (Table 12).

The final PC-CAS (after CFA) consisted of 55 items with 23 components and 4 domains, i.e., interpersonal relationship 14 items, integrated healthcare service 14 items, care management 10 items, and professional accountability 17 items. Ten items were dropped because they were not significant ($t < |2|$) as they could not

estimate the latent variables very well. The PC-CAS model fit very well although ten items of its components were dropped. The stability and internal consistency of the final version were examined by 23 other PC providers. The percentage of agreement between the PC-CAS scores of time # 1 and time # 2 was 78.19 while the Cronbach's alpha coefficient of the total items was 0.96 (Table 11). The results of the social desirability test of the final version of PC-CAS were satisfactory (Table 13). The participants did not have social desirability potential when they answered the final version of the PC-CAS.

The conceptual structure of primary care competencies that was identified in this study reflect PC providers' competency based on providers' views. Thus its needs were further confirmed with the PCUs' clients. In the findings of the PC-CAS development, almost all tests of the psychometric properties indicated acceptable values. The CFA is assumed to guarantee that the PC-CAS represents the Thai PC providers' competency based on the Thai experts and Thai PC providers' views. In addition, the PC-CAS is not desirably interpreting responses of self-report measure. Therefore, the PC-CAS is a sound tool to measure the Thai PC providers' competency.

Implications

The processes of study imply to appropriately design development of the PC-CAS and psychometric properties evaluation. The PC-CAS contributes to the healthcare practice at PCU; it contributes to health professional education by establishing the PC providers. In addition, professional agencies by declaring the competency of the PC providers, healthcare quality controlling by monitoring the standard services, and health researchers by furthering research study are also

contributed with the PC-CAS. All of them whom are attributed with the PC-CAS are presented below.

1. PC-CAS can be used to assess and improve the primary care competency for the PC providers who have worked at the PCUs.

2. PC-CAS can be used as a pool of information available as baseline data on health professional curriculum and as a reference or guidance for developing primary care competency especially in health professional curriculum of health practitioner program.

3. PC-CAS can be guided to use for construction of the PC providers' competency regulations.

4. PC-CAS can be used as a reference for further study to determine proper primary care competency measuring, test the psychometric properties, develop the scale of competency assessment for PC providers or health professionals in other areas, assess factors related to primary care competency, and establish a regulation of core primary care competency and its indicators.

Strengths and limitations

The strength of this study is in its theoretical foundation and methodology. The conceptual model proposed in the present study was derived from literature reviews, e.g., the national and international standards on health professional competency, research evidences, and interviewed data from primary care experts and representative PCU practitioners. Multi-methods were used to test the psychometric properties of this study. In addition, the large sample size is an effort to draw representative samples from five regions of the country. The samples could indicate

that the PC-CAS capable of broader generalization. The statistical analyses used to test the psychometric properties especially the CFA would give a precise estimate of all retained items and their constructions of primary care competency. Furthermore, the PC-CAS interpreting responses based on self-report, was not social desirable

However, the limitations of this study are interpreted with the understanding of the methodology of the instrument development. Although an inductive method was used in exploring the conceptual structure of primary care competency for Thai PC providers, the samples included PCU nurses, public health staffs, public health officers, and physicians who are directors of CUPs, and primary care experts. Many of these physicians believe that nurses and public health workers need to do the same job in primary care settings since there are shortages of health care personnel. This notion may contribute to very broad competencies of primary care. These competencies can be performed by everyone who works in primary care unit. In addition the views of layperson were not included.

Furthermore, some items were not absolutely fit. Only one construct was. The item analysis showed high correlation between the interpersonal relationship and integrated health care service domains. In addition, the item-item correlations in some components were grater than 0.70 but almost all of them were dropped in the CFA method. The deleted items could affect the content validity but could not affect the content construction.

Future research and recommendations

The recommendations and future research of the PC-CAS will be created. Because of the strong psychometric properties of the PC-CAS, the PC providers, the

health professional administrators, health educators who are involved with health practitioner programs and health professional agency/council can use this instrument to identify or measure the primary care competency of the PC providers. Since this instrument requires no special training on the part of the administrators, the researchers or others may administer the instrument with PC providers.

The PC-CAS points are a great benefit not only to PC providers but also to the health professional administrators, the health policy makers, the directors of healthcare purchasers, the health educators, the healthcare standards and quality control, and the health professional agency/council. The present study illustrates how to adapt developed instruments in one culture for use in another culture. Although the PC-CAS is a well-established primary care competency assessment scale for Thai PC providers, its psychometric properties are not all adequate. The researchers or others who are interested in borrowing the PC-CAS to use with a different population or different setting need to consider the impact of cultural difference. They should examine psychometric properties of the PC-CAS in a new population before actually using this instrument in a study. Since the PC-CAS is very broad to cover all health care personnel working at primary care unit, thus specific competencies for nurses, especially nurse practitioner as well as public health worker should be developed. In addition, the PC-CAS should examine the construct validity by using other methods, e.g., contrasted group or known group technique and criterion validity by using the standard instrument or well-known instrument.

The findings of the study can be used to guide for developing the appropriate scales/tool to measure healthcare competency on other settings. Furthermore, the findings illustrate the necessity of incorporating primary care competency sensitivity

to healthcare assessment in order to develop appropriate healthcare interventions for the clients.

Summary

The goal of this study was to develop the PC-CAS with sound psychometrical properties. The basic principles in scale development provided the guideline for construction and evaluation of psychometric properties for the PC-CAS. Using many procedures based on the framework of primary care competency and Benner's model, the PC-CAS was hypothesized to be appropriate for Thai PC providers and hypothesized to possess psychometric properties suitable for further development. Delphi technique was used to validate and confirm the content and construct of the PC-CAS. Psychometric evaluation was used to assess its reliability, content and construct validity.

The results of the PC-CAS development consisted of 55 items within 23 components and 4 domains. The findings of the psychometric properties evaluations provided the evidences of the PC-CAS reliability, content and construct validity. Continuing research with the PC-CAS would help providing additional evidence of its construct validity and reliability. The PC-CAS may be used in studies with Thai PC providers and thereby to healthcare agency and healthcare system.