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DEVELOPMENT AND VALIDATION OF THE MEASUREMENT MODEL OF TOTAL QUALITY MANAGEMENT SUSTAINABILITY AS PERCEIVED BY PROFESSIONAL NURSES IN ACCREDITED HOSPITALS

Mrs. Somsamai Sutherasan

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การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อพัฒนาพัฒนารูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กรในหอผู้ป่วยตามการรับรู้ของพยาบาลวิชาชีพ โรงพยาบาลที่ได้รับการรับรองคุณภาพ และเพื่อตรวจสอบความสอดคล้องของรูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร กับข้อมูลเชิงประจักษ์ การดำเนินการวิจัยมี 2 ขั้นตอนหลักคือ การพัฒารูปแบบการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร จากการทบทวนวรรณกรรมและการสัมภาษณ์ผู้เชี่ยวชาญและผู้มีประสบการณ์เกี่ยวข้องกับการบริหารคุณภาพโรงพยาบาล ทั้งในระดับประเทศ ระดับโรงพยาบาล ระดับวิชาชีพ ระดับปฏิบัติการ ขั้นตอนที่สอง สร้างสเกลและทดสอบแบบวัดองค์ประกอบของการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร กลุ่มตัวอย่างที่ใช้ในการวิจัย คือพยาบาลวิชาชีพที่ปฏิบัติงานในโรงพยาบาลที่ได้รับการรับรองคุณภาพ 13 แห่ง จำนวน 2,565 คน เลือกโดยวิธีสุ่มแบบหลายขั้นตอน เก็บรวบรวมข้อมูลโดยใช้แบบสอบถาม ตัวแปรที่ใช้ในการวิจัย คือการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร เครื่องมือที่ใช้ในการวิจัยคือ แบบวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ที่ผู้วิจัยสร้างขึ้น การวิเคราะห์ข้อมูลโดยใช้โปรแกรมสำเร็จรูป SPSS ในการวิเคราะห์ค่าสถิติเชิงบรรยาย และวิเคราะห์องค์ประกอบเชิงสำรวจ เพื่อจัดกลุ่มตัวแปรและใช้โปรแกรม LISREL 8.72 ในการวิเคราะห์องค์ประกอบเชิงยืนยันอันดับที่สอง เพื่อตรวจสอบความตรงเชิงโครงสร้างการวัดการคงอยู่ของการบริหารคุณภาพโดยรวม ผลการวิจัยพบว่า พบว่า โมเดลมีความสอดคล้องกับข้อมูลเชิงประจักษ์ χ^2 = 985.39 p = 0.46, df = 981, GFI = 0.99, AGFI = 0.97 น้ำหนักองค์ประกอบขององค์ประกอบทั้ง 8 ตัว มีค่าเป็นบวก ขนาดตั้งแต่ 0.399 – 0.632 ซึ่งถือว่ามีขนาดใกล้เคียงกัน โดยองค์ประกอบที่มีค่าน้ำหนักองค์ประกอบสูง คือ การศึกษาและการฝึกอบรม ภาวะผู้นำ แรงขับเคลื่อน วัฒนธรรมการปรับปรุงคุณภาพอย่างต่อเนื่อง ปฏิสัมพันธ์และสัมพันธภาพระหว่างบุคคลากร การสนับสนุนและการยอมรับจากองค์กร การร่วมมือและการมีส่วนร่วมของบุคลากร และ การติดตามผลลัพธ์ สามารถอธิบายความแปรปรวนในโมเดล การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ร้อยละ 53.270

ลายมือชื่อนิสิต .....

ลายมือชื่ออาจารย์ที่ปรึกษา.....

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

สาขาวิชาพยาบาลศาสตร์

ปีการศึกษา 2549

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SOMSAMAI SUTHERASAN: DEVELOPMENT AND VALIDATION OF THE MEASUREMENT MODEL OF TOTAL QUALITY MANAGEMENT SUSTAINABILITY AS PERCEIVED BY PROFESSIONAL NURSES IN ACCREDITED HOSPITALS. THESIS ADVISOR: ASSOC.PROF. POL. CAPT. YUPIN AUNGSUROCH, PH.D.THESIS CO-ADVISOR: ASST. PROF. SUKUNYA PRACHUSILPA, DNSC. THESIS CO-ADVISOR: PROF. MARY L., FISHER, PH.D., 208 pp. ISBN: 974-14-2561-9.

The purposes of this study were to develop a Total Quality Management Sustainability (TQMSS) and investigate its reliability and validity. This study was a non-experimental study and used multistage random sampling. The researcher applied both qualitative and quantitative methods. Initially, the scale was developed from integrating the literature reviews with individual interviews of 10 Thai experts and experiences of TQM in hospitals. Later, the steps of DeVellis(1991) were followed in order to construct the items of the scale. To assess content validity a panel of Thai experts evaluated the TQMSS developed by the researcher to be context appropriate. The questionnaire was then administered to 2,565 staff nurses randomly recruited from 13 accredited hospitals. Data analysis was conducted on the 2,165 usable returned questionnaires. The reliability of the instrument, calculated by the Cronbach Alpha Coefficient is 0.96. The content validity index of the TQMSS was 0.88. The data were analyzed by EFA and CFA.

The results showed the eight components. For the components of the TQMSS, the eight factors consisted of 65 items and explained a total variance of 53.27%. The resulting eight factors included: (1) Education and training, (2) Leaderships, (3) Drivers, (4) Continuous quality improvement culture, (5) Support and recognition of organization, (6) Interaction and relationships among staff, (7) Cooperation and participation, and (8) Monitoring the results. The 8-factor model of the TQM Sustainability was also tested by confirmatory factor analysis. The model validation of the best-fitted model provided a chi-square goodness-of-fit test of the significant chi-square, was 985.387 (df =981), significant at 0.46 level, χ^2/df =1.00, GFI= 0.99, AGFI=0.97, and RMSEA=0.00. Cronbach's alpha of large sample was computed to test internal consistency, 0.97.

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Academic Year 2006 Co-advisor's Signature

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CONTENTS

		Page
Abstract (Thai)…….		iv
Abstract (English)…….		v
Acknowledgement…….		vi
Contents…….		vii
List of tables…….		ix
List of figures…….		x
Chapter 1	Introduction	1
	Background and significance of research problem…..……..	1
	Statement of the problem …….....	6
	Objective.....…….	8
	Research questions……	8
	Significance of the research…….....	8
	Significance of the Research	9
	Operational definitions…….....	17
	Summary……..……..	19
Chapter 2	Review of literature	20
	The concept of total quality management……..……	20
	The Concept of sustainability……..….....	23
	TQM Sustainability…….....	24
	Conceptualization of TQM sustainability……..……...	31
	Theories related with TQM sustainability ……...	40
	TQM Sustainability model used in this study…….….....	46
	Related literature…….……...	52
	Measurement model ……...……..	55
	Reliability ……...……..	57
	Validity ……..…….…....	59
	Factor analysis ……...……....	61
	Hospital accreditation ……....……..	62
	Summary……..……..	63

Page

Chapter 3 Research methodology

Research design……..…… 64

Research setting…….…… 64

Population and sample size……..…… 65

Protection of human rights……..……... 70

Instrument of measurement ……...……... 71

Development phase ……..... 71

Validity and Reliability ……..…….. 77

Data collection…….…….. 79

Data analysis……. 80

Summary…….....…….. 81

Chapter 4 Results

Identification of TQM Sustainability..... 82

Characteristics of the Sample 85

Assumption Testing …….....…….. 88

Analysis of research question…… 89

Validity of TQM Sustainability Scale……...…… 91

Summary…… 124

Chapter 5 Conclusion discussion and recommendation

Research issues……..…… 127

Validity of TQM Sustainability ……...…… 128

Reliability of the TQM Sustainability …….....…… 131

Discussion ……...….…..... 131

Recommendation ……...…..... 138

Limitation of the study ……..…… 140

Summary …….....….…..... 140

References…….....……. 142

Appendices …….....…… 152

Appendix A Qualitative phase…… 153

Appendix B Protection of Human Subjects……. 168

Appendix C A Letter to Directors of Hospitals Requiring Permission of Data Collection…… 173

Appendix D A List of Experts……. 176

Appendix E Research instrument…… 179

Biography……. 208

LIST OF TABLES

Tables		Page
1	Definitions of TQM sustainability…….....….....……....	28
2	Static versus Dynamic view of TQM sustainability.....	30
3	Different objects and subjects require different sustainability actions …….....	44
4	Accredited Hospitals and patient unit teams classified by owner of hospital. …….....	67
5	Characteristic of Registered Nurses (N=2,165).....	86
6	Means, Standard Deviations, Minimum, and Maximum Scores for Continuous demographic Variables. …….....	87
7	Cronbach's Coefficient Alpha Reliabilities….....	91
8	Results of one-way ANOVA……....	94
9	Items, Factors loadings, Percent of Variance, Eigenvalue, and Communalities ……....	102
10	Correlation among the Resulting eight factors of the TQMSS....	110
11	Statistic Overall Fitted Index Values of Measurement Models....	113
12	First -Order Measurement of Studied Variable by overall.....	115
13	Second-order measurement model of TQMSS by overall.....	124

LIST OF FIGURES

Figure		Page
1	Sustainability - a continuum of practice …….....	69
2	Sampling Configuration …….....	78
3	The Development and Validity of the TQM sustainability.....	98
4	Scree Plot for Factor Analysis …….....	126
5	The Measurement Model of TQM Sustainability.....	

CHAPTER I

INTRODUCTION

Background

Hospitals are being challenged to look at their operations and to find more efficient ways of doing business. The concept of total quality management (TQM) provides the approach to realize this fundamental business strategy. The forces that caused health care industry (particularly hospitals) to adopt TQM, also known as continuous quality improvement (CQI), include competition, customer satisfaction, perceived value, market share, and above all, the need to remain profitable under pending plans for health reform (Frederick et al, 2001: 43). In addition, the forces of change that have begun to exert significant pressures on healthcare providers to reassess their strategies, include rising standards of living and education, competitive pressures, advancement in medical breakthroughs, alternate healthcare delivery mechanisms, changing cost structures, monitoring by public and private groups, increased information availability, and markedly better-informed customers(Lim and Tang, 2000:103).

The total quality movement holds great promise for achieving such objectives and improving health-care quality and productivity (Ennis and Harrington, 1999:232). Furthermore, a large number of hospitals (70%) reported that they gained improved patient/customer satisfaction and an increase in quality using TQM techniques.

For quality improvement of hospital services, Thailand currently has received enormous interest. In 1993, the Health Systems Research Institute, Thailand initiated the pilot project on service quality improvement in public hospitals using the total

quality management approach (1998). TQM is an essential element of medical services quality improvement by applying the Hospital Accreditation (HA) process as a beneficial approach for Thailand's medical services and public health. The HA standard is based on TQM principles. Such significant innovation can stimulate health care service providers to focus on the systematic work flows for quality services rendered to patients and their relatives in addition to the development of the body of knowledge, skills and technology according to professional standards.

Quality improvement by using the Hospital Accreditation program approach is a concept and practice that yields beneficial results to patients, customers, hospital personnel, hospitals, Faculties of Medicine, society and the country as a whole. The quality improvement operation in performance organizations of nursing departments in hospital which participated in HA project was higher than non-participating hospitals (Laddawan Janyana, 2000). Lamaiporn Lohityothin (1999) found that there was a highly positive relationship between TQM and effectiveness of patient units. The overall risk management of head nurses who were trained in safety programs in hospitals in the HA program was higher than those with no training. (Pawaporn Paisanwatcharakit, 1999) Nurses who had continued the QI work over a 4-year period reported more activity in searching for research literature compared with those who had discontinued the QI work. The QI-sustainable nurses also reported more frequent participation in research-related activities, particularly in putting specific research findings into practice (Wallin, et al., 2002). Nevertheless, quality improvement processes include both system development and human resources development, which require time and dedication from all parties in bettering working procedures, work systems and organizational culture. Quality improvement needs to be continued (Jiruth Sriratanabul, 2002: 1).

Most organizations recognize that total quality management is important but many do not know where to begin or how to sustain it in the long run. A firm's success in the marketplace is not confirmed by attaining the goal of market leadership, but in sustaining that through the consistent delivery of superior quality service (Kandampully and Mengue, 2000: 175). According to Albrecht (1990), any methodology for achieving service excellence should have within it the means for sustaining and, even, enhancing the quality of service over the long term. Hence, it can be argued that it has become imperative for leading service firms to adopt strategies which will ensure that their offerings not only achieve a superior quality of service, but prove capable of being sustained over a long period of time.

Sustainability has become problematic as organizations encounter 'initiative decay', losing performance gains, perhaps because resources are diverted to other areas, or because changes in working practices and procedures are abandoned as their originality fades. Surveys suggest that initiative decay is widespread (Buchanan, Claydon, and Doyle, 1999; Doyle, Claydon, and Buchanan, 2000). The Modernization Agency (2002: 9) criticizes the 'improvement evaporation effect', where new processes and increased performance are not maintained.

However, sustaining process improvement momentum has proved very difficult (Kaye and Anderson, 1999; Griffiths, 1998), and eventually initial improvements made in the focus areas can be eroded back to their original pre-improvement level (Dale, 1996). TQM should not be reinvented at regular intervals but should become part of every day working life. TQM should not be a fad or a flavor of the month but a durable culture that promotes business improvement over time. One of the major problems of quality management is that it has been fragmented, misunderstood and not taken seriously. Only sustainable TQM and

integration of different quality management initiatives will convince business managers of the benefits to be gained Without sustainability there is little benefit to be gained from TQM (Curry and Kadasah, 2002: 209). However, facing the intense pressure of global competition, organizations need to consider incorporating the idea of sustainability in TQM, in order to sustain their competitive advantage and performance improvement. In addition, the focus of maintaining competitiveness does not simply emphasize the present time, but also the future (Zairi, 2002: 1161).

Almost all hospitals that have achieved accreditation status are asking the very same question. For example, we have received accreditation and now what, how can we maintain the momentum, the enthusiasm and commitment of the staff to avoid the relaxing and falling back into the old routine and system of doing things the way they were done before accreditation. Jitsiri Khannguan (2003) found that staff practices quality improvement discontinuously and separately not related to their job. Many hospitals slowed down or reduced their TQM activities after accreditation. The Institute of Hospital Quality Improvement & Accreditation (HA-Thailand) has found that 12 of 20 hospitals could not pass re-accreditation two years later (2004). In addition, many quality activities are likely to decrease within 6-12 months of passing accreditation (HA-Thailand, 2003). Sutherasan and Aungsuroch (2004) found that as the time-span from accreditation lengthened the TQM activities continually decreased at accredited hospitals. There are some very important principles to follow in order to maintain the TQM activities.

One area of particular concern is that, following the launch of the TQM program, a period of high optimism ensues, to be followed by the slowing down of progress, and signs that improvements are becoming more difficult to achieve. Foster et al (1994:42) found that TQM is likely to fail or run out of steam 18-24 months into

the endeavor. Green and Plsek (2002) noted that American hospitals cannot sustain innovations in step with their changing environment. A number of previous studies revealed that there were many indicators of the sustainability of TQM, especially in Western and European countries.

TQM sustainability is defined as “the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance.” It was perceived as to be the condition whereby organization maintained some degree of improvement after a process improvement activity or after obtaining quality certification. It includes five aspects: Environment as drivers, Orientation or dynamic operations, Holding the gains, Learning and Innovation, and Culture of continuous improvement. Due to the shortage of nurses, staff nurses have to face and deal with various changes, difficult management, complicated treatments and some advanced technology which may lead to a decrease in the quality of their work.

According to Donabedian (1980: 18), when several practitioners participate in the care of a patient, whether for a single episode or a succession of episodes, it is necessary to assess the separate contribution of each provider. When the practitioners involved are from different professions and occupations, the definition of quality, and the methods used to assess it, must reflect the different roles, values, objectives, and technologies of the several participants. In addition, there should be greater attention given to the continuity and coordination of care. But with several providers of care, failure in continuity and coordination is more likely; these attributes thereby become more important as determinants of the quality of care. This study will focus on staff nurses in order to contributing nursing sciences and nurse roles therefore it is necessary to study separately.

Due to the scarcity of the studies that can provide a better and sound explanation of TQM sustainability in patient units at university hospitals in Thailand, the study of the measurement model of TQM sustainability in patient units as perceived by professional nurses in accredited hospitals is needed. Components of TQM sustainability in patient units at accredited hospitals are not known. In addition, there is no available instrument to measure the TQM sustainability as perceived by professional nurses. Because of this, the following study was proposed. It is expected that the findings of the study would be of help in determining the utility of the models in explaining perceived TQM sustainability in patient units and in successfully intervening to increase the level of perceived TQM sustainability. This knowledge may be useful for nurses and other health professionals in designing and managing quality.

Statement of the Problem

Total Quality Management, a promising managerial innovation, is a process increasingly used by hospitals to improve quality and outcomes of care. It is increasingly being used by Thai hospitals to improve quality and outcomes of care. These improvements have involved changes in many areas at unit, departmental, and organizational levels. Nursing systems are a component of health care systems and therefore are impacted by organizational change and the environment. Nursing personnel are keys to the provision of good quality patient care to hospitalized patients and must be involved in TQM. Organizational subunits such as patient care units are contained within the relative environment of the larger hospital organization. However patient unit is considered to be intact work group consisting of employees and a manager. The patient unit refers to work unit varied in the degree to which the

members identified their unit as single team. They are all identified by organization as a team in that they had shared responsibility and resources, worked together and depended on one another for knowledge and effort, and had independent tasks to various degrees. Therefore in patient unit as nursing services are included in TQM sustainability as well.

According to, Jitsiri Khannguan (2003) studied that practice of TQM discontinuously, separately not related to their job, focus on education quality improvement knowledge, making documentation and had problems of evaluation the programs. Further, the longer the time the more the TQM activities decreased at accredited hospital Sutherasan and Aungsuroch (2004). This difficulty in maintaining and spreading process improvement has made many companies and hospitals search for the way to sustaining process improvement after accreditation. Currently, national health policies focus on quality in hospital; thus, indicators of TQM sustainability in patient units at accredited hospitals would be useful to guide quality management. In addition, there is a lack of knowledge about what is TQM sustainability in hospitals. According to an integrative review of TQM research in Thailand, there is no study conducted related to TQM sustainability in nurses at accredited hospitals.

However, a thorough review of the TQM sustainability reveals no established instrument to measure TQM sustainability in patient unit. Thus, development and evaluate tool is need in nursing quality management that can assess TQM sustainability.

Objective

To develop measurement model of TQM sustainability as perceived by professional nurses for assessing TQM sustainability in patient unit at accredited hospitals and determine its reliability and validity.

Research Questions

Research questions are as follows.

1. What are the components of TQM sustainability as perceived by professional nurses in patient units, accredited hospitals?

2. How valid and reliable is this newly developed TQM sustainability as perceived by professional nurses in patient units, accredited hospitals?

Significance of the Research

A review of the literature demonstrated that there is a need for a measurement model of TQM sustainability as perceived by professional nurses in accredited hospitals. This measurement model assesses the extent of sustainability, which in turn will provide objective data to assess the impact on quality management. This information can enable nurse managers, particularly administrators, to assess the level of TQM sustainability in order to improve and maintain quality in patient units. The TQM sustainability measure can be a valuable tool which may be applied in the other related fields, such as nursing education, nursing practice, nursing administration, nursing research, and theory development. Theory development can be developed by testing the results of this study with other methods such as using hypothesis testing approach, convergent and divergent validity.

This study should add to the knowledge base in TQM sustainability assessment, and the development and validation of TQM sustainability measurement as useful tools for nursing organization. In addition, future research could include the use of this instrument to assess the effect of TQM implementation. The instrument could also serve to investigate the relationship between TQM sustainability and the performance of organizations. Further, it could be used to investigate the relationships between nurses' demographics and factors that contribute to TQM sustainability.

Conceptual/ Theoretical Framework

The conceptual framework of the project consists of five main aspects: 1) concepts of TQM; 2) sustainability, 3) TQM sustainability, and 4) measure TQM sustainability

1. Concepts of TQM

During the 1980s, many health agencies adopted the philosophy of Total Quality Management or Continuous Quality Improvement, which has been used to improve productivity of such corporations (Lynn, 1991). Whestsell (1995:80-83) mentioned that TQM in health care is a structured, systematic process for creating organization-wide participation in planning and implementing continuous improvement in quality. According to TQM, quality is defined as meeting or exceeding the customer's expectations at a price that is reasonable to the customer. TQM combines a set of management principles with a set of tools and techniques that enable employees to carry out these management principles in their daily work activities. The principles and tools that define TQM are as follows: Customer focus; Quality first and quality in everything; Process management; Cross-functional

management; Employee involvement and teamwork; Continuous improvement; and Standardization

Buavaroon Srichaikul (2002) developed the TQM assessment scale for general hospitals under the Division of Rural Hospitals, Ministry of Public Health, Thailand. This consisted of 7 factors which has 119 items on questionnaires. The study has suggested that the more condensed 80 items version of TQM scale should be used. The seven factors were: 1) Senior Executive Leadership; 2) Information and Analysis; 3) Strategic Quality Planning;4) Human Resource Development and Management; 5) Management of Process Quality; 6)Quality and Operational Result; and 7) Customer Focus and Satisfaction.

The hospital accreditation standards of Thailand (HA Thailand, 2000) provide basic requirements for quality systems. The standards cover six categories of criteria.

1) Commitment in quality: Leadership and direction, strategic quality planning and quality goals and plans,

2) Resource and management: Human resources development, employer management, environment and risk management, equipment and information support,

3) Quality management process: clinical quality management, infectious control and general quality,

4) Professional standard and ethic: Medical and nursing organization,

5) Patient's right and organizational ethic,

6) Patient care and service including patient care team, preparing of care and treatment, care and treatment planning, implementation and evaluation, discharge and follow up.

2. Sustainability

Sustainability is a relatively new word in health care management. It usually implies maintaining something that already exists. The term is often equated with “self-sustaining” and “self-sufficient”, which means that no outside support is needed (Reynolds et al, 1993:7).

In this study, sustaining is taken to be increasing the regularity of improvement and, at the same time, holding the gains made. This is maintaining a process of continuous improvement. The emphasis is on seeking improvement opportunities, not just holding the *status quo*. Brinkerhoff and Goldsmith (1992 cited in LaFond, 1995:30) note that ‘sustainability is not an end state but ongoing input/ output processes. It is so difficult to pin down that sustainability represents a process rather than a static quality. In the case of health systems, sustainability indicators are a capacity to continue transforming resource inputs into health outputs on a continuous basis. Thus, any appraisal of sustainability must include indicators of effectiveness as well as continuity. Measures of sustainability at present tend to be an amalgam of economic, environmental and social indicators. (Fricker, 2001: 2). Liburd and Zairi (2001) showed consistency with the range of measures of success. Sustained quality improvement is where either quality activities are continued, or improved results are maintained or exceeded. It often means both: continuing to use quality activities to maintain target results. (Øvretveit, 2003)

In summary, sustainability means that the extent to which new ways of working and improved outcomes becomes the norm. Not only have the process and outcome changed, but also the thinking and attitudes behind them are fundamentally altered and the systems surrounding them are transformed in turn. Further, the changes have been able to withstand challenge and variation; they have evolved

alongside other changes in the context, and perhaps have actually continued to improve over time. Sustainability means holding the gains and evolving as required and definitely not going back.

3. TQM sustainability

TQM sustainability in a Thai context has not been reviewed and researched as in western cultures. Therefore, this study started with a review of the literature that was then used as a guide to develop key questions for conducting the interviews that were part of the study. Then, findings from both interviews and literature reviews were used to develop the TQMSS.

The various descriptions, definitions, and uses of TQM sustainability in research and theoretical literature, suggest that TQM sustainability usually implies the ability of an organization to adapt to change in the environment, so that it maintains or keeps up or prolongs TQM activities that already exist for a time while improving quality. It was perceived as the conditions that help to maintain some degree of improvement after a process improvement activity, or obtaining quality certification, while enhancing and improving quality.

TQM sustainability is multilevel concept that includes individualism, organization, and community. In this study, it concentrates mainly on the patient unit level as perceived by individuals. TQM sustainability is crucial to company performance. From research and literature review there are many elements of TQM sustainability. TQM sustainability components based on Zairi (2002: 1168-1170), Dale and others (1995), change theory and innovation adoption theory (Rogers, 1983) can be determined as follows:

3.1 Internal and external environment as drivers

The "driver" can be interpreted as the TQM approach that exemplifies characteristics that an organization needs to display to compete successfully in the market place. It must re-establish itself to be: quicker to respond to the market; customer-focused; innovative and flexible; and better able to cope with rapid change. The key drivers include competitive advantage based on the mission and vision of organization, work process improvement, positive work experience, customer focus and satisfaction, supplier relationships and performance, and support services (Zairi, 2002)

An external driver can be the management. It can plan around and include the ability to respond to the behavior of competitors, and the ability to recruit, develop and retain skilled employees. TQM will be sustainable only if accepted and promoted by the organization's leadership within a more transparent and democratic political environment (Cholewka, 2001). Stimson, (1998) presented quality management sustainability components which are leadership and marketability. Leadership refers to management's ability to adapt and integrate company resources in a dynamic environment. Marketability addresses the reality of the producer-customer relationship. It does little good to be the best if no one is aware of it.

Three internal factors are significant. These include meeting customer requirements; willingness to invest in new equipment, education and training; and uncertainty about the future (Dale, 1997). Griffiths (1990) considers customer satisfaction as the driving force of the whole quality process.

3.2 Orientation: dynamic operation

The concept of orientation reflects the degree and nature of the organization's adaptation to a specific situation or environment in which it has to

operate (Zairi, 2002: 1168-1170). Zairi (2002:1170) thus suggested that the road to TQM requires a paradigm shift that takes into account the four significant transitional periods: "production, service, customer and market orientations".

The component of quality management sustainability is technical and has to do with the dynamics of operations, whether they are production, service, or support. Dynamic operations are characterized by three properties: stability, capability, and improvability. It makes these properties controllable. A stable process provides a constant level of quality; a capable process provides quality that is acceptably close to a target value; an improvable process provides the ability to expanse an increasingly improved target value (Stimson, 1998:14-15). Curry and Kadasah (2002) suggest translating the customers' needs into features or technical specifications at each developmental stage. Meeting the needs and requirements of customers is the main thrust of TQM. Roberts (1999) supports the idea of the customer as the focal point of the decision making process. It is important to have measures in place to assess how well the products and services meet the customer requirements and to identify their future needs (Dale, 1997).

3.3 Holding the gains

These gains usually surface in terms of more efficient procedures, practices and processes, improved specifications, cost savings, development of people, changes in attitudes of people, enhanced competitiveness, improved value and satisfaction to customers Dale (1996). The same applies to quality management system registration, customer awards, customer accounts, market share and national and international quality awards.

In the literature, the focus of sustainability is on "holding the gains" –how to ensure that the target improvements are maintained ("results sustainability").

It is assumed that good results alone will make quality activities self sustaining. But quality activities need to be sustained in order to get results in the first place, and then to hold the gains and continue other improvements. If this is not achieved the improvement process will start to lose its momentum.

3.4 Learning and Innovation

Zairi (2002) proposed the core of measurement which is the source of strength, continuity and sustainable performance. Sustainable performance may be divided into two factors. These are learning and innovation, and the culture of continuous improvement. The organizational learning generates and encompasses the knowledge. The process task knowledge are similar to the 'science of the process', complete with the understanding of technology, human and task requirements, as explicated with precise operational definitions that guide activity and the measurement of quality. Incremental improvement is grounded in the literature on learning curves (Dutton et al., 1984). Innovation is also integrated into the concept of continuous improvement and to the proposition that visionary leadership enables the simultaneous creation of a cooperative and learning organization. Education and training should be continuous and widespread, in order to changes in attitudes and behaviors and to improve the skills base of the organization (Dale, 1994: 39).

3.5 Culture of continuous improvement

The culture of continuous improvement means better and better quality, and less and less variation, which results from process management practices that bring forth incremental improvements and innovations in products, services and processes. The organization must be capable of adapting to changing opportunities and the requirements of all key stakeholders. Fact-based decisions must be made from the analysis of data collected from sources including key customers, suppliers and

stakeholder interaction. Dale (1996) proposed the overall process of improvement should be sustaining a process of continuous and company-wide improvement. Quality improvements are actions taken throughout the organization to increase the effectiveness and efficiency of activities and processes to provide added benefits to both the organization and its customers. If an improvement process is to progress in a continuous and incremental manner it is necessary to evaluate it at regular intervals. This is done in order to: identify the next steps, what else needs to be done, what has worked well and the reasons for this and what has been unsuccessful. It must focus people's efforts, highlight issues and problems and areas of concern or weakness which need to be addressed, and must recognize improvement opportunities.

4. Measures for TQM Sustainability

Measures of sustainability are seen as objective conditions and subjective conditions. Objective conditions are measured by analyzing time series information on observable phenomena. Subjective conditions are measures of perceptions, feelings and responses obtained through questionnaires with graded scales (Fricker: 2001). In this study, TQM sustainability is measured as perceived conditions in terms of maintaining the level of improvement, and changing of principles, into the daily operations of staff nurses through using questionnaire with rating scales.

There are two major frameworks for measurement; norm-referenced measures, and criterion-referenced measures. A norm-referenced framework is used in this study. Norms are not standards or goals. The general purpose of a norm-referenced measure is to compare a person’s score with the scores of other people. In constructing norm-referenced measures, steps are usually taken to maximize variability in the scores. These are in order to discriminate among individuals as much as possible (Goodwin, 1996). Concerning a norm group, norm scores are used to

interpret the score of an individual by comparing it with scores of other individuals. There are two main aspects related to this measurement framework and these consist of:

4.1 TQM sustainability is the conceptual basis of the scale that measures a specific characteristic among subjects possessing differing amounts of that characteristic,

4.2 It is used to interpret the score of an individual by comparing it with those of other individuals (norm group).

Operational Definitions

TQM sustainability is defined as the condition of and the processes used by an organization to adapt to change in the environment to maintain or keep up or prolong TQM that is in place for a time while improving quality.

Drivers include human activities, processes and patterns which impact on sustainable TQM in patient units. External drivers can be management plans and include the ability to respond to the behavior of competitors, and the ability to recruit, develop and retain skilled employees. Internal drivers can be clear policies and goals related to TQM, the leaders of TQM and continuing to start new TQM projects.

The culture of continuous improvement means better and better quality, and less and less variation, which results from process management practices that bring forth incremental improvements and innovations in products, services and processes.

Interaction means that staff work as multidisciplinary teams, and staff participate and cooperate with other departments to improve the quality of care. It means linking from person to person and team to team. It includes distributing information and communication about TQM to staff, a community of practice and good relationships among staff, units and teams.

Cooperation must be the basis for working together. It is to provide joint action and assistance to work units and to practice by rules. To the extent possible, people in the organization must support one another's efforts, not compete with one another.

Support and incentives are linked to quality activities. They consist of the appraisal system, supporting the mind and morale, career advancement, and positive reinforcement. There must be enough people, equipment, time, experts and information technology.

Leadership is characteristics of leader in which will determine operating policies and change. All leaders must be committed, provide clear TQM policies, communicate goals, and assign quality activities to staff. Leaders must be good role models, participate, motivate staff, support daily actions of staff, and monitor TQM results.

Monitoring the results stands for continuous monitoring of outcome indicators in the organization and communicating the results to all staff. It means comparing the results across units and outside the organization.

Education and training. There should be continuing training, and sharing of best practices occurs at regular intervals. Staffs participate in sharing and learning, there is a positive learning climate, and staff study and visit other places, and systematic thinking is used for problem solving.

Nurse perceptions are the views of professional nurses about TQM sustainability.

Patient unit is considered to be the whole work group consisting of employees and a manager. The patient unit refers to the work unit varied to the degree to which the members identified their unit as single team. They are all identified by the

organization as a team in that they have shared responsibilities and resources, worked together and depended on one another for knowledge and effort, and had independent tasks to various degrees.

Summary

TQM sustainability in patient units in accredited hospitals is a useful starting point for nurses and health care profession to assess the degree of TQM sustainability. Therefore, the purpose of this study is to develop a measurement model for assessing TQM sustainability in patient units in accredited hospitals. Consequently, two research questions are raised: (1) What are the components of TQM sustainability as perceived by professional nurses in patient units at accredited hospitals? (2) How valid and reliable is this measure of newly developed TQM sustainability as perceived by professional nurses in patient units at accredited hospitals?

CHAPTER II

LITERATURE REVIEW

This chapter presents a review of the literature and research on total quality management, the meaning of sustainability, a conceptualization of Total Quality Management (TQM) Sustainability, measures of sustainability, TQM Sustainability as perceived by professional nurses in patient units in accredited Hospitals, and scale development. It is important to note that because there is no published research of TQM sustainability in patient units in accredited hospitals, and research is limited in other settings in Western and European literature; studies presented in this chapter are mostly based on general settings.

The Concept of Total Quality Management

Total Quality Management is an enhancement to the traditional way of doing business. TQM is the integration of management techniques, current improvement efforts and using technical tools directed towards continuous improvement. These are aimed at increasing customer/user satisfaction (Goetsch et al., 1997). It is a proven technique to guarantee survival in world-class competition.

According to the British Standards Institution (BS: Part 2, 1991: 4778) TQM is: “A management philosophy embracing all activities through which the needs and expectations of the customer and the community, and the objectives of the organization are satisfied in the most efficient and cost effective way by maximizing the potential of all employees in a continuing drive for improvement. Therefore, TQM is the art of managing the whole to achieve excellence.” TQM is defined as both a

philosophy and a set of guiding principles that represent the foundation of a continuously improving organization.

TQM requires six basic concepts (Besterfield, et al., 1999: 2) : 1) a committed and involved management to provide long term top-to-bottom organizational support; 2) an unwavering focuses on the customer, both internally and externally; 3) effective involvement and utilization of the entire work force; 4) continuous improvement of the business and production process; 5) treating suppliers as partners; and 6) establishing performance measures for the processes.

Ahire, Golhar and Waller (1996) also developed constructs which were compared with those included in the Malcolm Baldrige National Quality Award (MBNQA), using the results of a survey of 371 manufacturing firms in the motor vehicle parts and accessories industry, using the plant level as a strategic business unit. The 12 TQM constructs according to Ahire, and others are: 1) top management commitment; 2) customer focus; 3) supplier quality management; 4) design quality management; 5) benchmarking; 6) statistical process control usage; 7) internal quality information usage; 8) employee empowerment; 9) employee involvement; 10) employee training; 11) product quality; and 12) supplier performance.

Black and Porter (1996), in the identification of the critical factors of TQM, used the same criteria as those of the MBNQA model. The following critical factors were identified: 1) people and customer management; 2) supplier partnerships; 3) communication of improvement information; 4) customer satisfaction orientation; 5) external interface management; 6) strategic quality management; 7) teamwork structures for improvement; 8) operational quality planning; 9) quality improvement measurement systems; and 10) corporate quality culture. And Curry and Kadasah (2002) include preventive action and benchmarking as independent components.

During the 1980s, many health agencies adopted the philosophy of Total Quality Management or Continuous Quality Improvement, which were used to improve the productivity of such corporations (Lynn, 1991). Whestsell (1995:80-83) mentioned TQM in health care is a structured, systematic process for creating organization-wide participation in planning and implementing continuous improvement in quality. According to TQM, quality is defined as meeting or exceeding the customer's expectations at a price that is reasonable to the customer. Total quality management combines a set of management principles with a set of tools and techniques that enable employees to carry out these management principles in their daily work activities. The principles and tools that define TQM are customer focus, quality first and quality in everything, process management, cross-functional management, employee involvement and teamwork, continuous improvement, and standardization.

Buavaroon Srichaikul (2002) developed the TQM assessment scale for general hospitals under the Division of Rural Hospitals, Ministry of Public Health, Thailand. The scale consists of seven factors which has 119 items. The study suggested that researchers should use the more condensed 80- item version of the TQM scale. The seven factors were 1) senior executive leadership; 2) information and analysis; 3) strategic quality planning; 4) human resource development and management; 5) management of process quality; 6) quality and operational result; and 7) customer focus and satisfaction.

The hospital accreditation standards of Thailand (HA Thailand, 2000) provide basic requirements for quality systems. The standards cover six categories of criteria.

1. Commitment in quality: Leadership and direction, strategic quality planning and quality goals and plans.

2. Resource and management: Human resources development, employer management, environment and risk management, equipment and information support.

3. Quality management process: clinical quality management, infection control and general quality.

4 Professional standard and ethics: Medical and nursing organization.

5. Patient's right and organizational ethics.

6. Patient care and service: patient care team, preparing of care and treatment, care and treatment planning, implementation and evaluation, discharge and follow up.

TQM in this study is a structured, systematic process for creating organization- wide participation in planning and implementing continuous improvement in quality for meeting or exceeding the customer’s expectations at a price that is reasonable to the customer. TQM is an integrative management philosophy aimed at continuously improving the quality of products and processes to achieve customer satisfaction and responsibility for everyone in the organization. . The principles and tools that define TQM are patient focus, quality first and quality in everything, clinical and system quality management, cross-functional management, employee involvement and teamwork, continuous improvement, and professional standardization and ethic.

The Concept of Sustainability

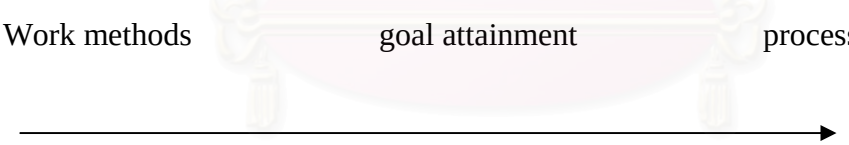
The theme of sustainability is an important one but it presents a number of challenges. It is relatively easy to encourage enthusiasm at the outset of a business initiative but sustaining commitment and motivation over time is more often than not

problematic. Since the essence of successful TQM programs is continuous improvement over time, sustainability becomes a critical factor.

Sustainability is a relatively new word in health care management. Webster's New World Dictionary of American English (1988) defies 'sustain' as to keep in existence; keep up; maintain or prolong. It usually implies maintaining something that already exists. The term is often equated with "self-sustaining" and "self-sufficient" which means that no outside support is needed (Reynolds et al., 1993:7).

Sustainability can be considered on a continuum (figure 1), concerning the stability of work methods, the consistent achievement of performance targets independent of underpinning methods, or the introduction of further developments in organizational configurations and performance beyond initial expectations. Maintaining work methods suggests a static view. A focus on ongoing development suggests a more dynamic or evolutionary perspective. (Modernisation Agency, 2004)

Figure 1: Sustainability - a continuum of practice



TQM Sustainability

In this study, sustaining is taken to be increasing the pace of improvement and, at the same time, holding the gains made. That is, maintaining a process of continuous improvement. The emphasis is on seeking improvement opportunities, not just holding the *status quo*. Quinn (2000: 25) has this idea on sustainability: 'development that meets the present needs without compromising the ability of future generations to meet their own need.' The dynamic of sustainability is about the rate of change, and

about equity between generations. Many see sustainability as a continually evolving process.

Brinkerhoff and Goldsmith (1992 cited in LaFond, 1995:30) noted that sustainability is not an end state but ongoing input/output processes. It is so difficult to pin down that sustainability represents a process rather than a static quality. Indicators of sustainability, therefore, capture this movement over time or capacity for continuity. In the case of health systems, sustainability indicators are a capacity to continue transforming resource inputs into health outputs on a continuous basis. Thus, any appraisal of sustainability must include indicators of effectiveness as well as continuity (LaFond, 1995:30). Measures of sustainability at present tend to be an amalgam of economic, environmental and social indicators. (Fricker, 2001: 2). Liburd and Zairi (2001) showed consistency with the range of success measures.

For the concept of sustainability to be meaningful, therefore, it must refer to maintaining, renewing or restoring something specific (Sutton, 1999). It must also include the ethical dimension of fairness of the trade-off between current economic pressures and the future needs of the environment.

Bateman and David (2002: 528) revealed that people involved with process improvement tended to define "sustainability" very diversely. At one extreme, sustainability was perceived as an activity that had managed to maintain some degree of improvement after a process improvement activity. At the other extreme, sustainability was not perceived to have taken place unless all improvements from an activity had been realized, all actions identified to fulfill further improvements had been closed out and the process improvement team had gone on, using improvement tools, to tackle new issues. This very demanding definition of sustainability is

essentially continuing the process of "process improvement" after the focused process improvement activity had taken place.

Dale (1996) argues that there are three main features to sustaining a process of continuous and company-wide improvement. These features can be considered to be both progressive and interlinked. All three of these features are influenced by the organizational culture and style of management. They are:

1) Individual elements of TQM. There are a number of individual elements of TQM, including: executive leadership, improvement infrastructure, teamwork, quality management system, quality management tools and techniques, internal and external performance measures, and communication. Most of the elements themselves are multi-faceted.

2) The overall process of improvement. If an improvement process is to progress in a continuous and incremental manner it is necessary to evaluate it at regular intervals in order to: identify the next steps; what else needs to be done; what has worked well and the reasons for this and what has been unsuccessful; focus people's efforts; highlight issues and problems and areas of concern or weakness which need to be addressed, and recognize improvement opportunities.

3) Holding the gains. "Holding the gains" is a term coined by Juran. If the gains made by specific improvement projects and individual actions are not held, the improvement effort will have been in vain. These gains usually surface in terms of more efficient procedures, practices and processes, improved specifications, cost savings, people development, changes in attitudes of people, enhanced competitiveness, and improved value and satisfaction to customers. Holding the gains also applies to some elements of TQM (i.e. the number of quality improvement teams in operation and the continued effective use of an individual quality management

tool/technique). If this is not achieved the improvement process will start to lose its momentum.

Rauscher (2003: 2) a Geriatric Medicine Consultant, Vancouver Coastal Health Authority, defined sustainability as: When new ways of working and improved outcomes become the norm; and holding the gains and evolving, as required, definitely not going back. Voinov (2002: 2) says that the words used may be different, the applications may vary, and priorities may differ. It is something about maintenance, sustenance, continuity of a certain resource, system, condition or relationship. In all cases there is the goal of keeping something at a certain level, of avoiding decline.

CQI Sustainability is defined by Rauscher (2003) as: When new ways of working and improved outcomes become the norm. Then holding the gains and evolving, as required, definitely not going back.

Sustained quality improvement is where either quality activities are continued, or improved results are maintained or exceeded. It often means both: continuing to use quality activities to maintain target results. (Øvretveit, 2003) Zairi & Liburd (2001:1162) define sustainability as “the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance.” This concept implies that sustainability is a means for an organization to maintain its competitiveness. However, it is important to note that there are some different among these definitions (Table 1).

Table 1 Definitions of TQM sustainability

Authors and year	**Definitions of TQM sustainability**
Brinkerhoff & Goldsmith (1992)	- not an end state but ongoing input/output processes - captures this movement overtime/capacity for continuity
Dale (1997)	- maintaining a process of continuous improvement - taken to be increasing the pace of improvement and, at the same time, holding the gains made.
Sutton (1999)	- maintaining, renewing or restoring something specific
Zairi & Liburd (2001)	- the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance.
Voinov (2002)	-keeping something at a certain level, of avoiding decline
Bateman & David (2002)	- perceived as an activity that had managed to maintain some degree of improvement after a process improvement activity. - not perceived to have taken place unless all improvements from an activity had been realized, all actions identified to fulfill further improvements had been closed out and the process improvement team had gone on, using improvement tools, to tackle new issues.
Rauscher (2003)	-holding the gains and evolving, as required, definitely not going bac
Øvretveit (2003	- continuing to use quality activities to maintain target results
Modernisation Agency-	-It's no going back, Not reverting to the old ways, and - ensuring that new practices are continued.
NHS (2004)	- sustainability is about always changing to better accomplish the purpose. - sustainability is not merely achieving a change and sticking to it, but involves a commitment to further improvement.

In conclusion, the various descriptions, definitions, and uses of TQM sustainability in research and theoretical literature, suggest that TQM sustainability usually implies that the condition and the process of an organization to adapt to change in the environment to maintain or keeps up or prolongs TQM that already exist for a time while improving quality. These are all maintaining behavior; and continuing with new systems and continuous achievement of targets and goals. TQM includes the organizing of new ideas, adapting to a continuously changing environment and delivering to unfold with time in a manner unique to the context of the organization. It extends to new ways of working, and improved outcomes become the norm, keeping something at a certain level, of avoiding decline, not reverted back to the old way or old level of performance. It means holding the gains and evolving as required. Further, it has been able to withstand challenge and variation; it has evolved alongside other changes in the context and, perhaps, has actually continued to improve over time ensuring new practices are continued. It was perceived as a condition and a process that has managed to maintain some degree of improvement after a process improvement activity, or obtaining quality certification, while enhancing improving quality.

Sustaining TQM

Quality activities include making changes which produce improved results. It may require further changes to sustain results as the situation changes. Effective quality activities are in general, carried out by employees and managers, but rapid improvement may happen in collaborative projects in particular. Effective QI improves patient satisfaction, clinical outcomes, efficiency or personnel competence. Four of the most common meanings in the literature are: 1) sustaining the results of an

activity; 2) sustaining a project; 3) sustaining the use of quality methods learned in a project outside of a project; and 4) sustaining and deepening an organizational capacity to improve quality, a social capacity which is more than the sum of the individuals' capacities.

Static or dynamic

One useful way of thinking about what is being sustained is to consider sustainability in terms of it being either static or dynamic. The static view would regard sustainability as a condition, whilst the dynamic view would regard it more as a process.

Table 2 Static versus Dynamic view of TQM sustainability (Modernisation Agency, 2004)

Static	Dynamic
• Maintain behavior • Continue with new systems • Continuous achievement of targets and Goals Or discontinuing certain behaviors • Sustainability is perceived as a condition	• Fluid - receptive to new ideas • Adapt to a continuously changing environment • Changes unfold with time in a manner unique to the context of the organization. • Sustainability is perceived as a process

This study uses both a static and a dynamic view for maintaining work methods and ongoing development.

Conceptualization of TQM Sustainability

Many different concepts can be applied as measurements and indicators of sustainable development.

The TQM sustainability model of Zairi (2002: 1168-1170) determined the sustainability indicators of TQM in an organization, based on three categories of indicators of sustainable development developed by Compton et al.(1998) as follows.

1. Driver. The key drivers that were identified in the literature include work process improvement, positive work experience, customer focus and satisfaction, supplier relationships and performance, support services, and competitive advantage.

2. Stages of Evolution. The concept of orientation reflects the degree and nature of the organization's adaptation to a specific situation or environment in which it has to operate. The road to TQM requires a paradigm shift that takes into account the four significant transitional periods found the literature: Production, Service, Customer and Market Orientations.

3. Sustainable performance. This is the issue of measurement, which is the source of strength, continuity, and sustainable performance. The 'Business Balanced Scorecard Approach', which is an overall method of tracking performance, helps to focus on both the qualitative and quantitative measures.

3.1 Learning and innovation.

Incremental improvement is grounded in the literature on learning curves (Cochrane, 1968). The author has proposed that extended production experience provides the employee with an opportunity for learning that may lead to a predictable decrease in the manufacturing cost per unit over time. Innovation is also integral to the concept of continuous improvement and to the proposition that visionary leadership enables the simultaneous creation of a cooperative and learning

organization (Deming, 1986). According to Deming, organizational learning generates and encompasses types of knowledge: the process task knowledge akin to the "science of the process" complete with the understanding of technology; human and task requirements, as explicated with precise operational definitions that guide activity and the measurement of quality.

3.2 Culture of continuous improvement

The culture of continuous improvement means better and better quality, and less and less variation, which results from process management practices. This means that the indicators shown are not necessarily directly linked through a causal relationship.

Dale Model. Dale and others (1995) describes an audit tool designed to investigate the issues impacting on the sustaining of total quality management and the way in which it can be used. The tool was developed as the result of an Engineering and Physical Sciences Research Council (EPSRC) funded contract that looked into the organizational impact of, and issues associated with, TQM. The objective of the audit tool is to identify the issues that impact on sustaining TQM. 'Sustaining' in this context means the maintaining of a process of quality improvement. The tool is primarily intended for use by a skilled interviewer who is knowledgeable in TQM, but can be used in self-assessment mode depending on the level of openness and trust in the company. The resultant audit tool, tested at seven sites, identifies five categories of factors which can jeopardize the sustainability of TQM.

Category 1: Internal and external environment

External factors can be destabilizing unless management can ‘plan around’ them, and include the ability to respond to the behavior of competitors, and

the ability to recruit, develop and retain skilled employees. Three internal factors are significant, including meeting customer requirements, willingness to invest in new equipment, education and training, and addressing ‘the fear factor’ or uncertainty about the future. Where fear is present, a protectionist attitude prevails, and decisions become reactive and short term.

Category 2: Management style

The first factor in this category is industrial relations; managers and staff must share the same objectives. The transition to ‘shared goals’ can be problematic, particularly where there is strong unionization, and adversarial ‘us and them’ collective bargaining. The second factor here is management-worker relationships. TQM should lead to high trust, high discretion relationships through empowerment and teamwork, and participation in decision making.

Category 3: Policies

These factors concern the extent to which the organization’s policies conflict with, or overlap with TQM goals. Human resource policies can encourage individualistic practices, undermining a teamwork ethos, for example through the rewards system. The complexity and transparency of salaries can contribute to perceived discrimination in relation to effort and reward, stifling initiative and commitment. A lack of consistency in applying appraisal systems can have a similar effect, as can discrimination between staff levels on issues such as sickness and leave of absence. Financial policies that encourage short-term decision making can inhibit the pursuit of longer-term goals. Maintenance policies focused on cost reduction, rather than planned maintenance, eventually affect equipment performance. Manufacturing policies which focus on output, rather than on quality and customer satisfaction, can also damage TQM sustainability, having a detrimental effect on

training, which comes to be seen as a waste of time, as are improvement team meetings in similar circumstances.

Category 4: Organization structure

There are five factors in this category. First, the role of the function responsible for change should be clear. Second, the barriers placed between departments, functions and shifts can be obstacles to teamwork and cross-functional co-operation. These barriers are often a legacy of established hierarchies, which lead to empire building, and a lack of understanding of other sections. Third, communications are significant, particularly methods by which achievements are recognized. Fourth, a high level of dependence on key people in specialized functions can put changes at risk if they leave, so degrees of job flexibility and cover are important. In addition, numerical and task flexibility are important in responding to changing demand and circumstances. Without that flexibility, a system under strain may abandon recent initiatives. Fifth, TQM involves reorganization using a team leader type supervisory structure, recognizing the limitations of a traditional autocratic supervisory role.

Category 5: Process of change

This category includes seven dimensions. First is adequacy of the improvement infrastructure in terms of steering committee, facilitators, problem-solving procedures, and confidence in management support. Second, are training in relation to individual and organizational needs. Third, effective teams, teamwork, and support mechanisms are needed. Fourth, are procedures to counteract problems and abnormalities. These include the ability of staff to understand procedures and the willingness of management to respond to suggestions for improvement. Fifth are the effectiveness of the quality management system and the need to ensure that quality

manual and procedure owners seek continuous improvements. Sixth are the planned approaches to applying tools and techniques and to integrate them with routine operations. Finally, there is the degree of confidence in top management. Confidence is damaged by lack of success, by an inability to complete projects, by inconsistency between promises and actions, by changes in management, and by conflicting priorities which suggest that improvement is no longer important.

The TQM sustaining audit tool (TQMSAT) is different in that it is looking for a specific set of predetermined negative factors; that is, those factors identified from the research which have been seen to have a detrimental effect on the sustaining of TQM. In four of the organizations where the audit tool was tested, self-assessment against either the MBNQA or EFQM TQM/business excellence models was taking place around the same time. The feedback from the collaborating organizations was that the findings from use of TQMSAT made a useful input to the collection of data with respect to some of the criteria, in particular obtaining views from a cross-section of the organization.

Øvretveit Model**.** (2003)

To create the TQM sustainability conditions, a quality sustainability system should consider which of the following elements suggested by research are the most needed in their organization (Øvretveit, 2003):

1. A process for relating external pressures to an organizational strategy for quality and for choosing which quality problems to work on.

2. Senior personnel with credibility outside the organization influence external pressures so as to allow the organization to devote resources to quality improvement.

3. Top management oversight of the sustainability system, including checking that elements are in place and reviewing the effectiveness of the system.

4. Responsibilities for quality improvement and reporting are defined in all job descriptions, and a responsible manager is assigned to oversee each quality.

5. Methods to balance QI work with immediate work demands: including guidelines on how to do this for all personnel, especially about how to make decisions about which activities to stop so as to switch resources into QI.

6. Simple methods for assessing the effectiveness of quality activities and projects, which allows time for indicators of progress to be registered, but also allows early termination of ineffective activities before they damage the credibility of the quality program.

7. Accountability for quality results and the resources used for quality activities, through quality reporting integrated into existing management process for performance reporting at all levels.

8. Systems for performance appraisal, rewards and incentives which encourage quality improvement (adapting existing systems, and new ones) and to allow the right balance with other organization priorities.

9. Expert support to each level of management and quality teams, including a network of facilitators, capability for quality data measurement and analysis, provision of comparative reports of quality indicators, and expertise to assist with how to standardize and document procedures which need to be integrated into everyday work.

10. There is a process for documentation and formulating standards. The organization uses these processes appropriately to document quality activities and the

changes proposed by quality teams, defines standards, and defines the ways in which the standards will be implemented.

11. An updated register of all quality activities undertaken in the organization, with responsible managers indicated and documentation of objectives, activities, performance indicators and contact persons.

12. Continued training for all personnel, which is linked to the practical quality activities they need to do, at convenient times, and using modern adult learning methods.

13. There is a way of identifying quality champions at all levels and personnel groups and of giving support and recognition.

14. A further element of a quality sustainability system is a way to assess opinion leader's current views and aspects of culture important to sustainability, and to intervene in these.

15. Ongoing programs of publicity about quality.

16. A way of identifying different quality experience and expertise in the organization and allowing this to be used in other parts.

17. Evaluation of sustainability: regular data collection and evaluation of whether different activities and results are sustained and using this to revise the sustainability system.

18. A sustainability strategy is a plan for formulating, implementing and continually revising a quality sustainability system, and for creating the necessary conditions for CQI which the system does not currently ensure.

For those concepts developed to be Indicators of quality sustainability, the 18-item checklist helps to assess to what extent an organization has taken the necessary actions for quality sustainability, and has the processes and structures

required. The checklist has not been validated, but was created from a review of research into the subject. A score of between 0 and 18 indicates a high likelihood that the organization will sustain quality improvement. In contrast, a score of between 70 and 90 indicates a high likelihood of any quality activities which have been started will have limited success and last no longer than 1 year.

Klaus and Thomsen model (1994: 47-49) have obtained a clear picture of what managers can do to sustain the TQM process over a long period of time, so that quality becomes a way of life and a way of managing the organization. They are eleven things you can do to sustain the TQM process after the first 12 months, as outlined below.

1. Quality and service improvements must be a habit at all levels in the company.

2. Every manager must incorporate service and quality activities in his own department plans.

3. The company must make an annual TQM status report and a plan for the following year.

4. The company must make an annual internal marketing plan for the TQM process.

5. Make your TQM results visible in the whole organization.

6. The company must integrate service and quality results into the recognition and reward system.

7. Quality status days for middle managers are a good catalyst for the TQM process

8. Service and quality training must be a part of the introductory education of all new employees.

9. Make a specific plan for how top management can be visible in the TQM process.

10. Quality reviews must be included in the annual appraisals.

11. Establish benchmarking relationships with other companies and use them for increasing the TQM ambitions of your company.

The Kock Model (1992) identified ten key components in health care providers' units which, if addressed, can help sustain staff commitment and maintain the initial momentum established by introducing the TQM approach. These are:

1. Maintaining senior management and clinician commitment;
2. Practicing total communication;
3. Measurement and audit;
4. Emphasizing tangible results;
5. Integration of clinical activity monitoring with quality monitoring and applying both to purchasing strategy;
6. Introducing concept and practice of benchmarking;
7. Continual review of structure for quality;
8. Training and education;
9. Identifying and overcoming barriers and obstacles; and
10. Continual transformation of the unit's culture towards vision of TQM.

Key Factors for Sustainability: These are taken from the NHS 'Sustainability Rating Tool and include benchmarks that are predictive of sustainability. The tool is copyrighted and Fraser Health Authority has copyright permission. (Cited in D Rauscher, 2003)

1. Benefits beyond helping patients- improve efficiency and makes jobs easier.

2. Staff belief in benefits from new process- benefits immediately obvious, supported by evidence, believed by staff.

3. Adaptability of new process- adaptable to organizational change and system in place for continually improving the process.

4. Ability to remove barriers to sustainability- barriers identified and removed and system in place to do so routinely.

5. Staff involvement and training to sustain- staff involved from the beginning and adequately trained to sustain the improved process.

6. Staff attitudes to maintaining- staff feel empowered and believe the improvement will be sustained.

7. Senior leaders credibility and involvement- Credible and take responsibility for the efforts to sustain the process.

8. Clinical leaders credibility and involvement- Credible and take responsibility for the efforts to sustain the process.

9. Effectiveness of the system to monitor the progress- system monitors progress using evidence, acts on it and communicates the results.

10. Fit with organizational goals and culture- History of successful sustainability, and the improvement's goals are consistent with organizational goals.

11. Infrastructure to sustain- Staff, facilities and equipment, job descriptions, policies, procedures and communication systems are appropriate to sustain the improved process.

Theories related with TQM sustainability

Change can occur at various levels as proposed by psychologists. TQM sustainability applies to the issue of the sustainability of changes in work processes.

The new capabilities may include new ways of thinking, new skills and new ways of knowing if performance is good or bad. New beliefs may include that the new way is better than the old way to meet patients' needs, and a new sense of purpose may be a real commitment to the new way. Individuals may adapt their behaviors and participate in change during the course of a focused improvement effort. But if they do not emerge from the effort with fundamentally new capabilities, new beliefs and a new sense of purpose associated with the change, old behaviors may soon return and the performance benefits erode away. This will lead back to the old ways of working.

Sustaining change in the complex systems of health and social care requires attention to structures, processes and patterns and the interactions and feedback loops among them. A change in structure such as issuing a new policy or the setting up of a new role may not lead to sustainable change in performance if processes are not also modified to support the new policy or role. The whole system in the change must be considered. Studies of innovation and change often note the phenomenon of resistance. The systems in place seem to be actively working against the new idea. Stated in another way, a current system seems determined to sustain itself.

Change theories

Sustainability of results is conditional on changes being made in the first place. Health personnel need to change how they spend their time so as to work on quality improvement. Then, change is to learn new ways to think about their service and use quality methods to analyze and make changes. Also, quality teams propose or make changes to everyday working and organization, which often requires other people to change. The sustainability issue here is how to create the conditions for personnel to continue to use the methods or to sustain the conditions for quality activities.

Change in individuals

Rogers (1983) proposed that individuals pass through a series of stages in deciding whether to adopt an innovation: knowledge, persuasion, decision, implementation and confirmation. The last stage involves seeking further confirmation about the innovation leading to retaining or discontinuing it. “Confirmation” in different ways is certainly likely to be important for people to continue to use quality methods. Evidence of effectiveness is that other people value the activities especially, influential peers, the profession, and that management confirms by recognizing and rewarding the activities. However, this theory implies individuals only take a rational decision-making approach to deciding whether to continue an activity. Behavioral change is a process through which practitioners can progress with the help of interventions appropriate to their current stage, and that the individuals’ environment of social supports and rewards is important to maintaining changes in behavior.

In summary sustaining change involves:

- The different approaches that are needed to sustain quality activities in individuals and groups at different levels of understanding and experience with quality methods.

- Change that is more likely to be maintained if many of the individuals’ environments support quality activities. Continuing quality activities must be valued and supported not just by the workplace, but in educational, professional, community, administrative, financial, and political environments.

Innovation adoption

An innovation has been described as an idea, practice, or objective perceived as new by an individual, a group, or an organization (Rogers, 1983). He offers that

diffusion is the process by which an innovation is communicated among members of a social system. Once an innovation is adopted, and then put into routine use, it is considered to have reached a state of infusion. Rogers (1983) characterized people in terms of their response to new innovations. “Early adopters” seek out and use new innovations and “innovators,” “lead the way.” This suggests that certain individuals in an organization are more likely to start using quality methods than others. Sustainability requires persistence and supporting systems and structures. “Early adopters” may not have the patience to establish the necessary institutionalization, being more interested in moving on to “the next best thing.”

Eight preconditions for successful change are proposed by Eccles (1994) which can be rephrased slightly as the following conditions for continued change in an organization:

1) continued pressure for improvements
2) a clear and shared vision of the goal and direction of improvement
3) effective liaison and trust between those involved
4) the will and power to carry-on acting
5) capable people with sufficient resources
6) suitable rewards and accountabilities
7) actionable steps to take to ensure sustainability
8) a capacity to learn and adapt.

If these factors and one more belief in effectiveness are present then an organization’s readiness for continuation is likely to be high, and resistance local and less significant.

Systems theory

Systems theory explains that changing one part of a system will have an effect on other parts. Systems theory is relevant to understanding sustainability in a number of ways. A system is collection of parts which interact with each other and function as a whole to produce an effect. Systems thinking are seeing the connections: how problems are caused by a number of interacting influences, or how patient outcomes are produced by many different interacting practitioners. Systems theory helps to see why a change made by a quality team may take time to have an effect or irregular effects.

To decide which actions to take to sustain quality improvement, it is first necessary to be clear about what the objective of these actions is. Sustaining quality improvement "or "quality sustainability" refers to all four of these types of sustainability. This section has distinguished types of sustainability because the actions and factors depend on what is to be sustained and in what or whom. These distinctions are summarized in the table below.

Table 3: Different objects and subjects require different sustainability actions (Øvretveit, 2003)

What is sustained?	In whom or, individual	In what? Or quality project tem	(Subject) unit	Organization
("Object") Specific changes for improvement results	E.g. Individuals continue to follow procedure developed by the quality team	After achieving their target, a team will analyze threats to the results and devise more changes to "hold the gains"	Different changes which are needed in the unit are maintained, e.g. by procedures or supervision.	The organization ensures the results are maintained in cross-unit processes.

What is sustained?	In whom or, individual	In what? Or quality project tem	(Subject) unit	Organization
A particular project team	Individuals continue to take part in the team	A team itself pays attention to the conditions which it thinks are necessary to sustain its work	A unit understands and supports an improvement team working within the unit	The organization provides resources to a particular team
Use of quality methods in different situations by individuals	Individuals use QI methods outside of the team		A unit will welcome the use of quality methods in situations other than an improvement team	The organization encourages quality methods and thinking in many situations
QI organizational capability	Individuals interest and motivation is stimulated by others	Personnel who leave are replaced, skills are updated.	The unit learns new ways of collaborating with other units for system improvement	Organizational networks are nurtured

In summary, TQM sustainability in this study is defied as the organization's conditions and processes used to adapt to change in the environment to maintain or keep up or prolong TQM activities that already exist for a time. It is perceived as a condition and process that maintains some degree of improvement after a process

improvement activity or obtaining quality certification while continuing quality improving.

TQM Sustainability Model used in this study

TQM sustainability is crucial to company performance. From the research and literature review it can be seen that there are many elements of TQM sustainability (on Zairi (2002: 1168-1170), Dale and others (1995)). These include change theory and innovation adoption theory (Rogers, 1983). Components of TQM sustainability are:

1. Internal and external environment as drivers

The "driver" can be interpreted as the TQM approach that exemplifies characteristics that an organization needs to display to compete successfully in the market place. It must re-establish itself to be quicker to market, customer-focused, innovative, flexible, and better able to cope with rapid change. The key drivers include competitive advantage based on mission and vision of organization, work process improvement, positive work experience, customer focus and satisfaction, supplier relationships and performance, support services (Zairi, 2002: 1168-1170).

External drivers can be management plans and include the ability to respond to the behavior of competitors, and the ability to recruit, develop and retain skilled employees. TQM will be sustainable only if accepted and promoted by organization leadership within a more transparent and democratic political environment. Cholewka (2001) identified TQM program development and sustainability factors. External organizational factors include:(1) Political and economic stability of the healthcare system; (2) Government (Ministry of Health/MOH) support; consistent, non-conflicting, non-ambiguous policies; (3) Government-healthcare practitioner partnership to develop practice standards, audit criteria, reachable goals, and corrective action plans. Internal organizational

factors include: (1) Management long-term commitment with demonstrable support. (2) Resource support to encourage and reward innovative ideas. (3) Managerial knowledge and skills to assess, motivate, support, and maintain staff behavior change (as well as readiness to change).

Stimson (1998) presented quality management Sustainability components which are leadership and marketability. Leadership refers to management's ability to adapt and integrate company resources in a dynamic environment. Marketability addresses the reality of the producer-customer relation: it is no good to be the best if no one is aware of it.

Three internal drivers are significant, including meeting customer requirements, willingness to invest in new equipment, education and training, and how the organization deals with uncertainty about the future (Dale, 1997). Griffiths (1990) considers customer satisfaction as the driving force of the whole quality process.

The foundation of a sustainable effective performance measurement system is based on measuring performance through assessment of the organization's vision and mission statements (Hacker and Brotherton, 1998). They are the guides to be followed by employees and drive them to improve quality. Mission statements are used by individual sub-business units (e.g. distribution centers, manufacturing sites, specific operations, etc) to communicate how they contribute to the business unit's vision. Value statements are time-independent principles that communicate how individuals in the organization are expected to behave as they follow the organization's vision and mission. The strategy and system needs to be based on an assessment of employee's readiness to make quality activities a permanent part of

their everyday work, on the local barriers to continuing these activities, and with the involvement of employees and managers.

2. Orientation: dynamic operation

The concept of orientation reflects the degree and nature of the organization's adaptation to a specific situation or environment in which it has to operate. Zairi (2002: 1168-1170) suggested that the road to TQM requires a paradigm shift that takes into account the four significant transitional periods: "production, service, customer and market orientations."

The components of quality management sustainability are technical and have to do with the dynamics of operations, whether they are production, service, or support. Dynamic operations are characterized by three properties: stability, capability, and improvability. It makes these properties controllable. A stable process provides a constant level of quality; a capable process provides quality that is acceptably close to a target value; an improvable process provides the ability to tract an increasingly improved target value (Stimson, 1998:14-15).

It can be perceived as employees' TQM practices consist of use of information and data, processes and quality results management, and customer focus and satisfaction (Sainfort et al., 1996). Curry and Kadasah (2002) suggest translating the customers' needs into features or technical specifications at each developmental stage. Meeting the needs and requirements of customers is the main thrust of TQM. Roberts (1999) supports the customer as the focal point of the decision making process. It is important to have measures in place to assess how well the products and services meet the customer requirements and to identify their future needs (Dale, 1997).

3. Holding the gains

If the gains made by specific improvement projects, and individual actions, are not held, the improvement effort will have been in vain. These gains usually surface in terms of more efficient procedures, practices and processes, improved specifications, cost savings, people development, changes in attitudes of people, enhanced competitiveness, improved value and satisfaction to customer. The same applies to quality management system registration, customer awards, customer accounts, market share and national and international quality awards.

When sustainability is considered in the literature, the focus is on “holding the gains” –how to ensure that the target improvements are maintained (“results sustainability”). Little attention is given to how to sustain the team’s quality activities – how to ensure that the changes which allow people to meet, learn and work on quality problems are maintained. It is assumed that good results alone will make quality activities self sustaining. But quality activities need to be sustained in order to get results in the first place, and then to hold the gains and continue other improvements. Consideration must be given to how to sustain the change which resulted in the improvement.

Holding the gains also applies to some elements of TQM (i.e. the number of quality improvement teams in operation and the continued effective use of an individual quality management tool/technique). If this is not achieved the improvement process will start to lose its momentum.

4. Learning and Innovation

Zairi (2002: 1168-1170) proposed that measurement is the core which is the source of strength, continuity and sustainable performance. Sustainable performance is divided into two factors. They are learning and innovation, and culture

of continuous improvement. According to Deming (1986), organizational learning generates and encompasses two types of knowledge- the process task knowledge akin to the 'science of the process,' This includes understanding of technology, human and task requirements, and with precise operational definitions that guide activity and the measurement of quality. Incremental improvement is grounded in the literature on learning curves (Dutton et al., 1984).

Innovation is also integrated with the concept of continuous improvement and the proposition that visionary leadership enables the simultaneous creation of a cooperative and learning organization. Education and training should be continuous and widespread, in order to changes in attitudes and behaviors and to improve the skills base of the organization (Dale, 1994: 39)

5. Culture of continuous improvement

The culture of continuous improvement means better and better quality, and less and less variation, which results from process management practices that bring forth incremental improvements and innovations in products, services and processes. The organization must be capable of adapting to changing opportunities and the requirements of all key stakeholders. Fact-based decisions must be made from the analysis of data collected from sources including key customers, supplier and stakeholder interaction. Dale (1996) proposed the overall process of improvement to sustaining a process of continuous and company-wide improvement. Quality improvements are actions taken throughout the organization to increase the effectiveness and efficiency of activities and processes to provide added benefits to both the organization and its customers. If an improvement process is to progress in a continuous and incremental manner it is necessary to evaluate it at regular intervals in order to: identify the next steps, what else needs to be done, what has worked well and

the reasons for this and what has been unsuccessful, focus people's efforts, highlight issues and problems and areas of concern or weakness which need to be addressed, and to recognize improvement opportunities. The progress of the improvement process can be measured and demonstrated in terms of:

5.1 Changes in behavior and attitude (i.e. reduced industrial relations conflicts, or the ease with which procedures crossing a variety of functions are changed).

5.2 Improvements in the key operational and business performance indicators (i.e. reduction in internal defect rates, field failures, warranty claims, customer retention and savings from individual improvement projects).

5.3 The degree to which quality improvement projects are aligned with the company's articulated strategies, policies and guidelines.

This requires changing people’s behavior, attitudes and working practices in a number of ways. They are as follow (Dale, 1997).

1. Everyone in the organization must recognize that whatever they do can be improved.
2. Employees must be encouraged to identify wastage in all its various forms to take out cost and to get more value into a product or service.
3. Employees can stop a process without reference to management if they consider it to be not functioning correctly.
4. Employees must inspect their own work.
5. Defects must not be passed, in whatever form, on to the next process.
6. Each person must be committed to satisfying their customers, both internal and external. External customers must be integrated into the improvement process.
7. Mistakes must be viewed as an improvement opportunity.

8. Honesty, sincerity and care must be an integral part of daily business life.

There is no implied causality among these components. This means that the indicators shown in the rows or columns are not necessarily directly linked through a causal relationship.

Researches related with TQM sustainability

Few empirical studies focus on TQM sustainability in health care organizations. Even less research has extended more than three years and none has specifically studied TQM sustainability.

Pongsak Saithanya (1994) studied maintaining quality system using a case study of a plastic injection factory. The major factors which affected the maintenance of the quality system are; internal quality audit, performance indicators, corrective actions, management reviews and training. The internal quality audit includes planning, conducting, reporting and evaluating. The results can be used to consider non-conformance of the quality requirements and the audited sections. From the result of this study, it is proven that the quality system can be maintained by auditing the internal quality, correcting the performance based on the evaluation, frequently having a management review, and training the personnel to understand their work.

Redman, Tom, Wilkinson, Adrian, Snape, Ed (1996) examined the factors which underpin the success of total quality management (TQM) initiatives. It used data drawn from an in-depth, longitudinal case study of British Steel Teesside Works. The key factors in the sustaining of TQM in the case organization were the continuing restructuring of the industry and associated redundancies that made winning and maintaining employee commitment a priority. The gaining of competitive advantage from TQM depends critically on executive commitment, building a quality culture and employee involvement rather than such "technical" TQM staples such as

benchmarking, tools and techniques etc. The aligning of managerial practices, in particular the use of subcontractors and HRM systems (especially employee involvement and remuneration), to the aims and philosophy of the TQP program, have also helped sustain it.

Dale et. al (1997) piloted studies at 7 manufacturing sites and in each case was successful in identifying a number of issues which were impeding the sustaining of TQM. The tool is primarily intended for use by skilled interviewers who are knowledgeable about TQM, but it can be used in self-assessment mode depending on the level of openness and trust in the company. TQMSAT has been piloted and tested at seven manufacturing sites. In each case it was successful and able to identify a range of issues which had the potential to have a negative impact on the sustaining of TQM. This has helped management to identify some fundamental causes, rather than just see symptoms.

Ying-Jung Yeh (2003) established that a successful TQM implementation required employees' engagement in extra-role behaviors. This study examined the critical factors embedded in the organizational system that may enhance or hinder employees' participation in TQM activities. Factors, including individual training and project involvement, job characteristics, organizational structure, social support, and employees' self-efficacy, were all expected to influence employees' extra-role behaviors, e.g. continuous quality improvement activities. A study model was tested with the empirical data collected from a city government in the USA. A total of 848 surveys were returned (overall response rate of 38 per cent). Three factors that most strongly predicted employees' practices of TQM were: a standardized organizational structure, interpersonal support of the organization, and employees' self-efficacy. Individuals' project involvement and training had no direct effect on the practices of

quality management, but had indirect positive effects through the impact of self-efficacy. The suggestions for designing a TQM training program were discussed.

A four year study of six Norwegian hospitals conducted by Øvretveit and Aslaksen's (1999) found that only hospitals with top and middle management and doctor involvement and project team reporting and facilitation in TQM programs were able to maintain quality improvement. A qualitative study was conducted by Bradley (2003). Results are based on a qualitative study of 8 hospitals and included in-depth interviews with 45 clinical and administrative staff from these hospitals. By reinforcing their current involvement or by identifying potential gaps in their involvement in quality improvement efforts, practitioners enhance their effectiveness in promoting and sustaining quality in clinical care.

Jisiri Khamgum (2004) launched participatory action research that provide members with opportunities to express their ways of thinking towards improving quality. Data collection was made by note taking from interviews and group discussions in session in conferences and workshops, participation observation in quality improvement activity, study of documentation, and data analysis by using content analysis. This research found that most persons valued quality improvement as a policy, everybody had responsibility, and they considered it less important than routine work. As a result they did not practice it continuously, they did it separately and not related to their job. They focused on education for improving knowledge of quality improvement, producing documentation, and had problems in the evaluation of programs. Major factors that affect on quality improvement programs are participation, working lifestyle and organization culture relating to management, communication, and the culture of seniority.

Panee Sitakalin (2003) interviewed 32 managers and revealed that each of the four hospitals implemented quality strategies, including joining the HA-Thai program as a way to maintain quality during the economic downturn.

According to Wallin (2003), most nurses (80-90%) had a positive attitude to research. Those who had continued the quality improvement work over a 4-year period reported more activity in searching research literature compared with those who had discontinued the QI work ($P = 0{\cdot}005$). The nurses geared to quality improvement sustainability also reported more frequent participation in research-related activities, particularly in implementing specific research findings in practice ($P = 0{\cdot}001$).

Measurement Model

Measurement is defined as the process of assigning numbers to objects to represent the kind and/or amount of attributes or characteristics possessed by those objects. It consists of rules for assigning numbers to objects in which the number represents the quantity of the attribute being studied. Measurement is a process that employs rules to assign numbers to phenomena (Waltz, Stricland & Lenz, 1991). It is the process of operationalizing abstract constructs into concrete variables. The measurement that would be produced if the instrument was perfectly accurate is the true score.

Measures of Sustainability

Measures of sustainability can be objective conditions and subjective conditions. Objective conditions are measured by analyzing time series information on observable phenomena. Subjective conditions are measure of perceptions, feelings and responses obtained through questionnaires with graded scales (Fricker: 2001).

This concern is with measuring cognition which assesses the subject's knowledge or achievement in a specific content area. Indicators of cognitive behavior are obtained self-evaluation measures designed to determine subjects' perceptions of the extent to which cognitive objectives have been met. In this study, TQM sustainability will be measured as a perceived condition of the process of maintaining the improved level and changed principles into daily operations in patient units by staff nurses through using questionnaires with rating scales. These include:

1. On-going measurement of important performance outcomes to reflect at least maintaining the improved level of performance achieved in the original project.

2. Measuring the number of change principles that remain in place in the process over some reasonable time period (years perhaps) as compared to the total number of change principles originally implemented in the improvement effort.

A TQM sustainability scale can be developed at the individual, organizational or community level. The dimensions of each scale are different because each is developed for specific contexts and populations.

There are two broad categories of measurement; psychometric and physical. Psychometric measures involve measurement of attributes such as intelligence, self-esteem and quality of life. Physical measures involve measurement of attributes such as blood pressure, heart rate, and lung volumes. With in the behavioral and social sciences, psychometrics has evolved as the sub-specialty concerned with measuring psychological and social phenomena. The focus of measurement is the operationalization of concepts by specifying systematic approaches to their quantification (Strickland, 2001).

Psychometrics, ,is the specialty area of the social sciences that is concerned with measuring social and psychological phenomena and has historical antecedents

extending back to ancient times DeVellis (2003). Waltz, Strickland & Lenz (1991: 61) argued “What is measured is not the object but a characteristic or attribute of the object.” It is important to remember that only attributes of objects are measured, not the object themselves. The quality of an instrument can be evaluated by its reliability and validity.

Reliability

The score or value obtained by an individual measure has traditionally been viewed as comprising two components: an underlying “true” score and error caused by imprecision in measurement (Nunnally 1978). Reliability of measure refers to the measure’s ability to detect the true score rather than measurement error. It may also be defined as the fit between true scores and obtained scores (Knapp, 1985). Reliability is defined as repeatability, reproducibility, stability, dependability, consistency, or predictability of measurements (Engstrom, 1998). It is the extent to which the instrument yields the same results on repeated measures. Another way to define reliability is in terms of accuracy. The concept of reliability is based on two central considerations (Switzer, et al., 1999):

1. Do the items purportedly belonging to a scale actually assess a single construct, and

2. Do scales measuring a single construct produce consistent estimates of that construct across multiple measurements?

There are several approaches for determining the reliability of an instrument with internal-consistency and multiple measurement consistency which have several variations. These include test-retest, alternate form, split-half and inter-rater.

However, internal consistency (Cronbach's alpha) that can be applied to this study are discussed below.

Internal consistency describes estimates of reliability based on the average correlation among items within an instrument (Nunnally & Bernstein, 1994). Most commonly assessed with Cronbach's alpha, which provides an estimate of the extent to which items covary, or hang-together as a common unit (Cronbach, 1951). Alpha ranges from 0.00 to 1.00, with higher scores indicating greater internal consistency of the scale. Alpha is sensitive to the number of items in a scale and typically increases as the number of items increases. When subjects answer consistently across items within the instrument, it is said to have item homogeneity. In order for items of a measure to be homogenous, they must measure the same characteristic. The items must also be well written and free of technical flaws that may cause subjects to respond on some basis unrelated to the content. The internal consistency coefficient is, thus, an index of both item content homogeneity and item quality. Internal consistency reliability is most frequently employed for cognitive measures when concern is with the consistency of performance of one group of individuals across the items a single measure. It is wise to consider the following when alpha is employed (Waltz, Strickland and Lens, 1991):

1. Alpha is a function of test length. The longer the test, that is the more items included, the higher the resulting alpha value.

2. A spuriously high alpha may be obtained in a situation in which it is not possible for most respondents to complete the test or measure. Equivalently, alpha should not be used when speed tests are employed.

3. As with all reliability estimates, alpha should be determined each time a test is employed.

4. Alpha is dependent upon the total test variance; that is, the higher the value of the total test variance, the greater the alpha value obtained.

5. Alpha is dependent upon the shape of resulting distribution of test scores. When alpha is employed with a group of subjects homogeneous in the attribute being measured, alpha will be lower than when a heterogeneous group id measured.

Test-retest reliability is obtained by reassessing individuals with the same measure at second time point after the initial measurement. It is appropriate for assessing characteristics known to be relatively stable over time period under investigation. Test-retest procedures are usually employed for determining the reliability of effective measures. There are some serious limitations in using test-retest methods.

Validity

Validity is most often defined as the extent to which an instrument measurement measures what is was intended to measure (Nunnally & Bernstein, 1994). It is matter of fit between the construct and the true score. Validity is context specific; validating measure must be view as a process of accumulating evidence that supports the meaningfulness of the measure rather than a discrete endpoint at which validity is proven (Stewart and Ware, 1992). Validity of an instrument can be decreased by systematic errors, which are predictable errors of measurement. They occur in one direction, consistently overestimating or underestimating the true scores. Systematic errors would contribute to the score of all subjects equally and thus test values are not true representations of the quantity being measured (Portney & Watkins, 1993). Three broad types of validity are most often cited as central to any validity argument: content, construct and criterion.

1. Content validity represents the universe of content, or the domain of a given construct. The universe of content provides the framework and basis for formulating items that will adequately represent the content (Wood & Haber, 1998). Experts in the content area may be called upon to analyze the items to see if they represent adequately the hypothetical content universe in the correct direction (Polit & Hungler, 1991). Waltz, Strickland, & Lenz (1991) suggest utilizing Content Validity Index (CVI) to quantify the extent of agreement among the experts. To compute the CVI, at least two content specialists are given the objectives and items and are asked to independently rate the relevance of each item to the objects using a 4-point rating scale: (1) not relevant, (2) somewhat relevant, (3) quite relevant, and (4) very relevant. The CVI is defined as the proportion of items given a rating of quite or very relevant based on 4-point scale by all rates.

2. Construct validity reflects the ability of an instrument to measure an abstract construct. Constructs are not real, that is they are not directly observable, and exist only as concepts that are constructed to represent an abstract trait (Portney & Watkins, 1993). The significance of construct validity is in its linkage which theory and theoretical conceptualization. Construct validity can be tested by known-groups or contrast group technique, hypothesis testing approach, multitrait-multimethod approach, and factor analysis.

3. Criterion-related validity is said to exist when the results of the instrument being evaluated are similar to those obtained from a highly-regarded external instrument, or a gold standard. There are two subtypes of criterion-related validity, concurrent validity and predictive validity (Knapp, 1998). Concurrent validity refers to the ability of an instrument to distinguish individuals who differ in their present status on some criterion (Polit & Hungler, 1991). Predictive validity refers to the

degree to which an individual's future level of performance on a criterion can be predicted from knowledge of performance on a prior measure (Waltz et al., 1991). Correlation coefficients are commonly used to compare the results obtained from a new instrument and the goal standard.

Factor Analysis

The direct purpose of factor analysis is to reduce a set of data so that it may be described and used easily. Other purposes include instrument development and theory construct. In the research literature of nursing and other health care professions, factor analysis is most often used as a part of the instrument development process. Factor analysis may be a vital part of creating a new measurement tool. It is method for organizing the items into factors. A factor is a group of items that may be said to belong together. The building of theory is a principal purpose of research, and factor analysis may support such efforts in a variety of ways-to describe clinical phenomena, to explore relationships, to identify constructs that unite a set of elements, to create units of classification for system construction, and even to test hypotheses. All of these are theory-building functions.

In a truly exploratory approach, a researcher uses factor analysis to discover a structure that can be meaningfully interpreted. The researcher begins without preconceived expectations about the nature of the structure that will emerge; rather, the structure is allowed to unfold from the data. In a truly confirmatory approach, a hypothesis is developed, and variables relevant to that hypothesis are then identified and submitted to factor analysis. The researcher asks whether the data fit the hypothesized model better than they fit alternative models.

Hospital accreditation

In Thailand, The office of the Permanent Secretary to the Ministry of Public Health adopted the “Quality Hospital policy” in 1995 with the aim that all provincial hospitals will implement Hospital Accreditation (HA) by the year 2000.The Thai Hospital Accreditation System seeks to establish and maintain a quality of hospital services appropriate to Thai society and the environment. The system evaluates and accredits the quality of hospital services based on a set of standards, and its philosophy has been established to promote the provision of quality and the efficient use of hospital resources. Following its launch in 1997, the organization was deluged with requests from volunteer hospitals wanting to join the accreditation program. There are two processes in the hospital accreditation program. First is the self-assessment report. The hospitals use self-assessment to improve services. The second process is the survey process which is conducted by a team of surveyors that visit the hospital. Following the survey visit, the team reports its finding against the standards document and recommends an accreditation status. The HA-Thai officers review the report for consistency and alignment with the standards. Finally, the Thai board of HA approves the level of accreditation status granted to the hospital. The possible options, depending on the level of compliance achieved by the organization, are: Accreditation, Accreditation with Report, Accreditation with a Focus Visit, and Non-Accreditation. The hospital is sent a copy of the report and the certificate with the accreditation status. To date, 1,103 hospitals have joined HA-Thai and 178 hospitals have certified accreditation. In this study, accredited hospitals that have been accredited for a year have been selected as samples.

The Thai general hospital system is a mix of public and private sector institutions. Most are financed and controlled by the government. The Ministry of

Public Health provides approximately ninety percent of public hospitals. The Ministry runs the 708 community hospitals, the 75 general hospitals, and the 17 regional hospitals and medical centers. There are other public hospitals which are run by other government sectors such as the medical schools, run by the Ministry of Education.

Community hospitals are small hospitals with 10 to 60 beds, focusing on disease prevention, health promotion, and treatment of diseases.

General hospitals are hospitals with 200 to 600 beds, focusing more on treatment of diseases and rehabilitation.

Regional hospital and medical centers are hospitals with 600 to 1,500 beds, providing both services and education by specialists in the area of health promotion, disease prevention, treatment of diseases, and rehabilitation.

Summary

A TQM sustainability scale, as perceived by professional nurses in patient units at accredited hospitals in Thailand and other countries, has not been developed. Only a few studies by Dale and others (1997) have developed TQM sustaining tool for organization, and Ovretveit (2003) has developed indicators of quality sustainability to assess an organization. Klaus and Thomsen (1994: 47-49) developed sustaining TQM process for managers. The NHS (2003) developed sustainability Rating Tool developed for staff. Even though the TQM sustainability concept is promoted through managing organizations, nobody has developed a scale to assess their score of perceived TQM sustainability in patient units.

CHAPTER III

RESEARCH METHODOLOGY

Research design

The methodology of this study includes the development and psychometric evaluation of the perceived TQM sustainability scale which measures the degree of sustainability of TQM in patient units at accredited hospitals. Two research questions were proposed for the study. (1) What are the components of perceived TQM sustainability in patient units of accredited hospitals? (2) How valid and reliable is this newly developed perceived TQM sustainability in patient units of accredited hospitals?

This chapter discusses the research methodology including the setting, the population and sample, as well as the description of the development of an instrument, the protection of human subjects' rights, data collection, the treatment of data, and data analysis.

Research Setting

The setting of this study comprised 65 accredited government hospitals in Thailand (HA Thailand, 2006). These hospitals are the government-operated hospitals that were accredited for one year because their staff had experience of continuing TQM. More over, HA-Thailand will give certification for two years. This means that accredited hospitals can maintain quality for two years. Of the 65 hospitals five are university hospitals under the Ministry of Education, two belong to the Thai Red-Cross Society. The others include nine regional hospitals and medical centers, five specialty hospitals, a hospital of Bangkok Metropolitan, 10 general hospitals and

26 community hospitals under the Ministry of Public Health, and seven army hospitals. In this study, the private hospitals, the army and Thai Red-Cross Society hospitals were excluded because they are high cost and their policies and organizational administration differ from those of the government accredited hospitals. The community hospitals are excluded because of their different infra structure and organization. The subjects are hospital staff nurses who work in patient units at target hospitals**.**

Population and Sample Size

The target population was 17,663 staff nurses in 1,516 patient unit teams which is finite population from 65 government accredited hospitals (HA-Thailand, 2006). In exploratory models of factor analysis, statistical significance is not tested, and strictly speaking, the concept of "power" does not apply (Munro, 2002:309). In factor analysis, the number of subjects needed is usually assessed in relation to the number of variables being measured. For a sample size, the larger the number of items to be factored and the larger the number of factors anticipated, the more subjects should be included in the analysis (DeVellis, 1991; Nunnally & Bernstein, 1994). Various investigators have offered rules of thumb for the determination of sample size in relation to the number of variables (Pedhazur & Schmelkin, 1991). Munro (2002) proposed a ratio of at least 10 subjects for each item is desirable to generalize from a sample to a wider population. Moreover, Sapnas and Zeller (2002) suggested that traditional psychometric should be 10 respondents per item. Tinsley and Tinsley (1987) suggested a ratio for factor analysis of about 5-10 subjects per item, and the ratio can be relaxed when the sample is as large as 300. Thondike (1982: 91) asserted that for data consisting of items, samples of 500 or 1000 would seem none too large.

Comrey and Lee, 1992 recommended that 200 is a fair number, 300 is good and 500 is excellent. Tabachnick and Fidell (2002:588) suggested that the sample should be a minimum of 300. However, Nunnanlly and Bernstein (1994) stated that at least 200-500 subjects are a rule of thumb to provide sufficient stability for factor analysis.

In this study, the maximum number of items was 79 for the measured perceived TQM sustainability. Three measurement models were developed and validated so that the sample size in each model would be 790. Therefore, the minimum sample size in this study would be 2370. This study randomly sampled five employees per patient unit which included both managers of each unit and employees (Campion et al., 1996: 435).

To obtain the sample, the following multi-stage random sampling technique was used.

Stage 1. There was a total of 24 target accredited hospitals. They were classified into 3 organizations. These hospitals were divided into three types: University hospitals, medical centers, and general hospital, before they were selected.

Stage 2. The target accredited hospitals were proportionate to be 1:2 and randomly selected by a simple lottery method without replacement.

Stage 3. The patient units were then randomized proportionately from each hospital in each group.

Stage 4. Finally, five staff nurses were randomly selected from each patient unit (Campion et al, 1993). Given the limits of the patient units, the sample size was 13 hospitals which consisted of 514 patient units and 2,565 subjects. The sampling frame configuration is depicted in figure 2.

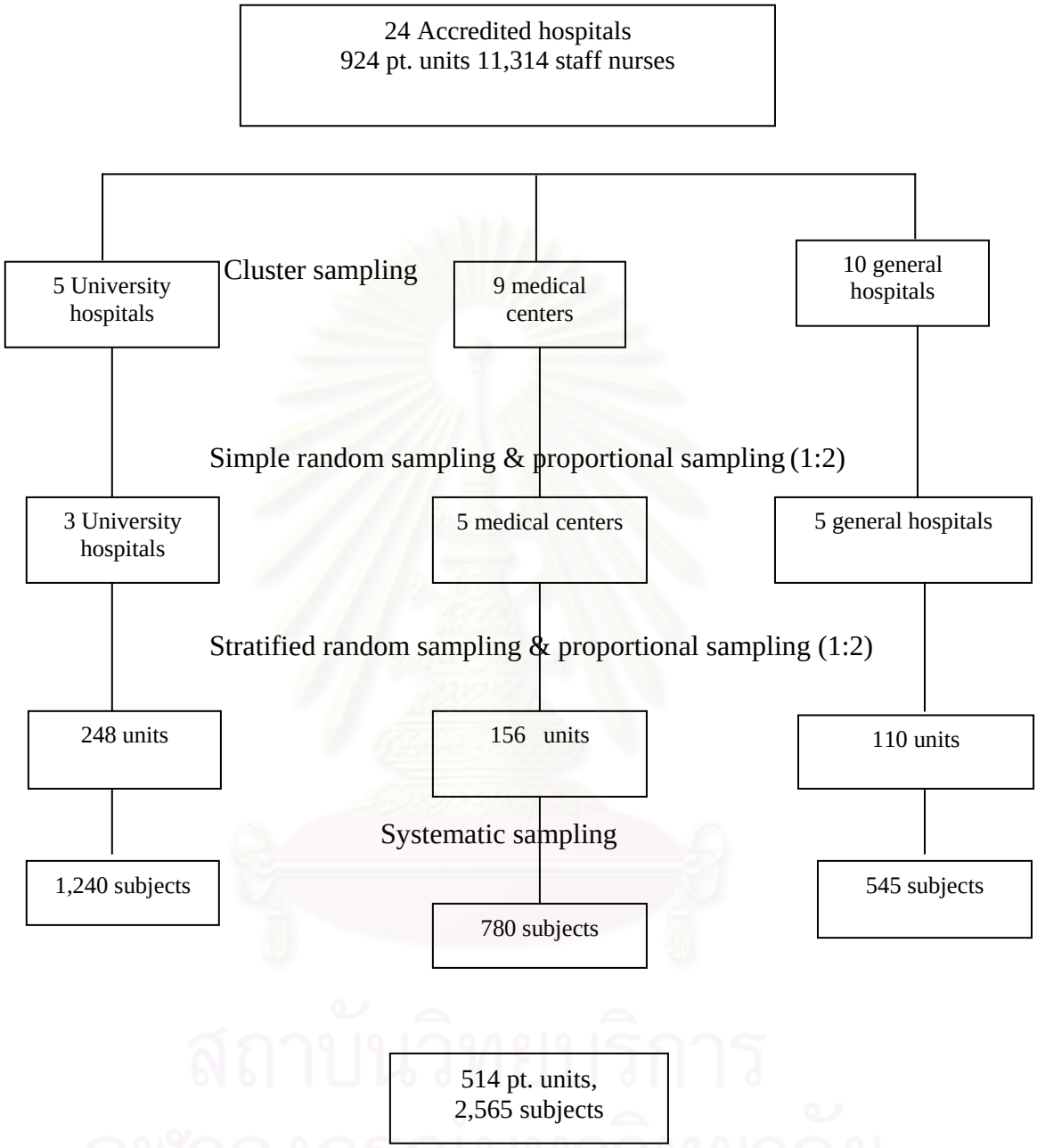
The number of patient units and samples in accredited hospitals is shown in Table 4.

Table 4 Accredited Hospitals and patient unit teams classified by owner of hospital.

Owner of Hospitals	population		samples	
	Pt units	subjects	pt units	subjects
24	(n=514)	2,565	(N=924)	11,314
University Hospitals	446	6201		
1. Songkhla Nagarin	43	846	Songkhla Nagarin	33 165
2. Sirirat hospital	178	2026	Sirirat hospital	136 680
3. Maharaj Nakorn Chiang Mai	103	1406	Maharaj Nakorn Chiang Mai	79 395
4. Rama Thibodi Hospital	73	1213		
5. Srina- garind Hospital	49	710		
Medical Centers	280	3111		
1. Chiangrai Regional Hospital	40	421	Chiangrai Regional	34 170
2. Yala Regional Hospital				
3. Noparat Rajthanee Hospital	21	290		
4. Hatyai Regional Hospital	32	320	Hatyai Regional	28 140

Owner of Hospitals	population		samples	
	Pt units	subjects	pt units	subjects
24	(n=514)	2,565	(N=924)	11,314
5. Khon Kaen Hospital	43	583	Khon Kaen	37 185
6. Maharat Nakhonratchasima Hospital	46	473	Maharat Nakhonratchasima	40 200
7. Prapok-klau Hospital	30	300		
8. Saraburi Hospital	20	204	Saraburi Hospital	17 185
9. Surin provincial hospital	18	180		
General Hospitals	198	2002		
1. Uthai Thani Hospital	12	165		
2. Krabi Hospital.	14	145	Krabi Hospital	15 75
3. Lop Buri hospital	21	211	Lop Buri hospital	21 105
4. Songkla hospital	22	224	Songkla hospital	22 110
5. Nakornping	22	218	Nakornping	22 110
6. Kalasin Hospital	29	246	Kalasin Hospital	29 145
7. Damnuensaduak Hospital	14	151		
8. Sena Genaral Hospital	11	163		
9. Sungaigolok Hospital	12	96		
10. Makaruk Hospital	10	81		

Figure 2 Sampling Configuration



The inclusion criteria for the study sample were:

1. Professional nurses who worked full-time for at east one year in the hospital; and

2. Professional nurses who had at least one year's experience in the clinical setting

Only nurses who worked full-time in the hospital rather than part- time nurses were included in this study because nurses who worked part-time may not have had enough opportunity to participate in the quality system, thus affecting the results of the study. In addition, new registered nurses in Thailand have to work at least six months to demonstrate their nursing competencies before they become permanent full-time staff in the hospital. During the first six months, newly registered nurses may focus their nursing practice on clinical skills. Furthermore, theses nurses are not expected to be involved in TQM.

Protection of Human Rights

Prior to data collections, to assure the protection of the subjects' human rights, a cover letter with a set of questionnaires was mailed to each subject. The letter included statements about (1) the purpose of the study, (2) assurance of subjects' anonymity, (3) subjects' voluntary to participate in the study, (4) the name and address of the investigator, (5) the usefulness of the results of the study to the nursing service, nursing administration, nursing research and nursing education in Thailand, and (6) a statement that the research study was approved by Chulalongkorn University for human subject issues. Confidentiality and anonymity of individual responses was guaranteed by a statement in the cover letter. Code numbers were used instead of names. The code numbers were deleted from each completed questionnaire when

received; and a non-identifying code number substituted. Thus, computer data entry involved anonymous data. Information provided by the subjects was used only for the purposes of the study and remained confidential.

Instrument of Measurement

Two instruments were used in this study: the Demographic Data Form and Hospital Information, and a TQM sustainability Scale.

A demographic and hospital data form was developed for the general information purpose of this study. The following demographic variables were measured by the self-reported items: 1) age, 2) marital status, 3) educational level, 4) area of practice, 5) years of experience in nursing service as a registered nurses, 6) years of experience in working with TQM activities 7) hour of training in TQM/quality activities/ related hospital accreditation program in preparation, 8) coursework in TQM / HA/ CQI/RM in preparation, 9) continuing education in TQM/HA/ CQI. Hospital information was also measured as follows: 1) operating organization, 2) characteristic of hospital service, 3) starting TQM implementation date, and accredited hospital date.

The TQM sustainability scale was developed by the researcher.

The TQM Sustainability Scale (TQMSS): Development phase

As no research has produced a valid, reliable and efficient scale to measure TQM sustainability in patient units in accredited hospitals, the current research set out to fill this gap by developing and testing a TQM sustainability scale. The researcher developed the measurement model and TQM sustainability scale as follows:

Step 1: The theoretical model of TQM sustainability was developed from the literature review. From research and the literature review, the researcher used the concept TQM sustainability, change theory, innovation adoption theory and system theory as the core of explanation. The components of TQM sustainability are applied as followings: internal and external environment as drivers, orientation, holding the gains, leaning and innovation, and culture of continuous improvement.

Step 2: Generating an initial items pool.

This step started with interviews of 10 experts and personnel who had experience of total quality management, in order to develop a practical model. The sample included chief an executive director, a hospital director, nurse directors, and staff nurses who had experience with quality management. Lists of precise questions were used for the interviews. However, the guidelines were derived from the literature reviews. The interview list was reviewed by one measurement and two content experts. Conclusions drawn from the interview data were given to experts to review again. When no new information was identified, the interview was ended. The experts were asked to describe situations from their practice that they perceived represented sustainability of TQM. Each expert received one interview. Each interview lasted 1-2 hour and was audio taped. Tape recordings were transcribed and typed into a word processor.

Next, content analysis described by Waltz, Strickland, and Lenz (1991) was used to discover themes that identified TQM Sustainability issues. Content validity was determined by three researchers. Both of researchers arranged themes of data interview into the table grid based on TQM sustainability and system theory, by individually. Then, this produced a list of themes to be compared with those of the researchers. Those deemed inconsistent were discussed with the respondents,

clarified, and resolved via phone conversation and email (Appendix A). The researcher and main advisor and foreigner mentor discussed the results of data analysis to reach 100 % agreement on themes and representative statements. Two steps were started by generating an initial items pool and determining the format for measurement as follows:

1. Generation of an items pool. The items for TQM sustainability was developed from table grid of the interview data using qualitative matrix method. First, the summary of the qualitative interviews was organized under the categories and sub categories in the table grid (Appendix A). Items were generated as a large pool of items.

The researcher generated 9-19 items for each subscale. Subscale 1 (Drivers) consisted of 19 items. Subscale 2 (Culture) consisted of 18 items. Subscale 3 (Communication/cooperation/interaction) consisted of 9 items. Subscale 4 (Reward and recognition) consisted of 8 items. Subscale 5 (Support) consisted of 8 items. Subscale 6 (Leadership) consisted of 13 items. Subscale 7 (Monitoring and results) consisted of 13 items. Subscale (Education) of 8 consisted of 12 items. Therefore, the TQM sustainability: draft 1 consisted of 100 items. Then a first draft of for the instrument was completed.

2. Determining the format for measurement. The TQM sustainability scale was designed to measure the level of sustaining TQM in patient units using the five-point Likert scale of strongly agree to strongly disagree. Scoring was from 1 for strongly disagree to 5 for strongly agree. The summated rating scale was the most appropriate type of instrument to construct for this study for these reasons: (1) scales of this type have been widely used and are the standard methodology in TQM research, (2) techniques have been developed to further analyze, refine, and validate

this type of the scale which result in scales that have good psychometric properties, (4) this type of scale is relatively inexpensive and easy to develop, and (5) this type of the scale can be used by observers.

3. When developing categories from the data themselves using an inductive approach, it was necessary to avoid premature closure by sharing the categories and their basis with a trial audience. Overly delayed closure was avoided by keeping the study's purpose and research questions clearly in mind and collaborating with a group of colleagues. (Waltz et al. 2005: 243). The peer debriefing, the process whereby the researchers invited people to comment on interpretations (Lincoln and Guba, 1995), was conducted with at least one other researcher familiar with naturalistic inquiry. So the first draft of the scale was reviewed by peer, by four PhD students of IUPUI. They considered the duplication of items, alignment with matrix and made recommendations for editing. Twenty one items were deleted and the wording of five items was modified. The TQMSS version 2 consisted of 79 items.

Step 3: Determining of content validity. The initial item pool was reviewed by experts to determine if questions were totally representative of the interview data. Ten Thai experts reviewed the first version of the TQM Sustainability Scale including: five persons who had experience of and worked as coordinators of TQM in accredited hospitals, three persons who were experts in TQM in education and two persons who were experts in research and statistics. The experts were asked to:

1) Link each objective with its respective item.

2) Assess the relevancy of the items to the content addressed by the objectives using a 4-point rating scale: 1 = not relevant, 2 = a little relevant, 3 = quite relevant and 4 = very relevant. A Content Validity Index (CVI) was used to identify the extent of agreement between the experts.

3) Identify clarity and conciseness of items using “yes” and “no” responses.

In addition, the experts were asked to suggest alternatives for items that were “not relevant,” “a little relevant,” “not clear,” and “not concise.”

Scores from the relevance scale were computed for the Content Validity Index (CVI) using a formula described by Waltz, Strickland & Lenz (1991). Eight items from 79 items were judged by the experts as not relevant (1), a little relevant (2), and somewhat relevant (3), very relevant. This resulted in the measure of 0.88 of the CVI.

Step 4. Analysis of Reliability. Testing the scale. The scale was tested with 30 staff nurses working in Sonklanakarind hospital, who were similar to those for whom the instrument was designed. They were asked to review the clarity of language and format, ease of understanding, appropriateness of the instrument length, and to make suggestions. This was done to determine clarity, feasibility of the study, adequacy of the instrument for the research to be conducted, and freedom from problems in administering the instruments and bias.

Internal consistency or homogeneity of a measure test was used as the try-out process for TQMSS version 4 (79 items). It is the extent to which the halves of a test or instrument measure the same thing. If the two halves correlate highly, the instrument is said to be internally consistent or to have high homogeneity of scores (Cronbach’s alpha Formula.). Cronbach’s coefficient alpha was used to determine the internal consistency reliability of the individual subscales and the total scale. The overall coefficient alpha was .9682. Coefficients around .70 were considered adequate, and below.50 showed unreliability because it indicates that at least 50 % of the observed variance was associated with random measurement error (Kline, 1998). The estimates of internal consistency for the TQMSS were well above the standard of

0.03 to 0.70 set by Nunnally (1978) for newly developed research tools. According to DeVellis (1991), when the overall reliability is > 0.90, shortening the scale should be considered. . In TQMSS version 4 (79 items), there were 11 items where the item-total correlation was lower than .3 when considering all coefficient alpha if deleted and the concept of TQM sustainability. The researcher decided to delete 3 items; S1, I5, D3 which the coefficient alpha was .9692 that consisted of 76 items and continued to test in a larger sample for exploratory factor analysis, by which data reduction could be performed. These three items removed from the TQMSS were as follows: S1: “The rewards and incentives of your organization are linked to quality activities.”; I5: “Successful organizations distribute information and communication about TQM to staff.”;D3: “When staff internalize the value of TQM, it is more likely that they will consistently perform TQM.”

Furthermore, four items were modified for reasons of precision, objective wordings and to increase the sequences of words in each item. Regarding these two items were modified for one objective in each item, such as from “External forces and internal forces drive TQM in health care organizations” to “External forces drive TQM in health care organizations” and internal forces drive TQM in health care organizations” Four items were maintained for keep concepts.

Step 5: This stage was to determine the components of the TQM sustainability and its psychometric properties. The new instrument (TQM sustainability version 5=76items) was presented after finishing the step 5 of the study (Figure 4). The final step consisted of:

5.1. Determining the construct validity using exploratory factor analysis (EFA). EFA was used to explore possible subscales within the group of items.

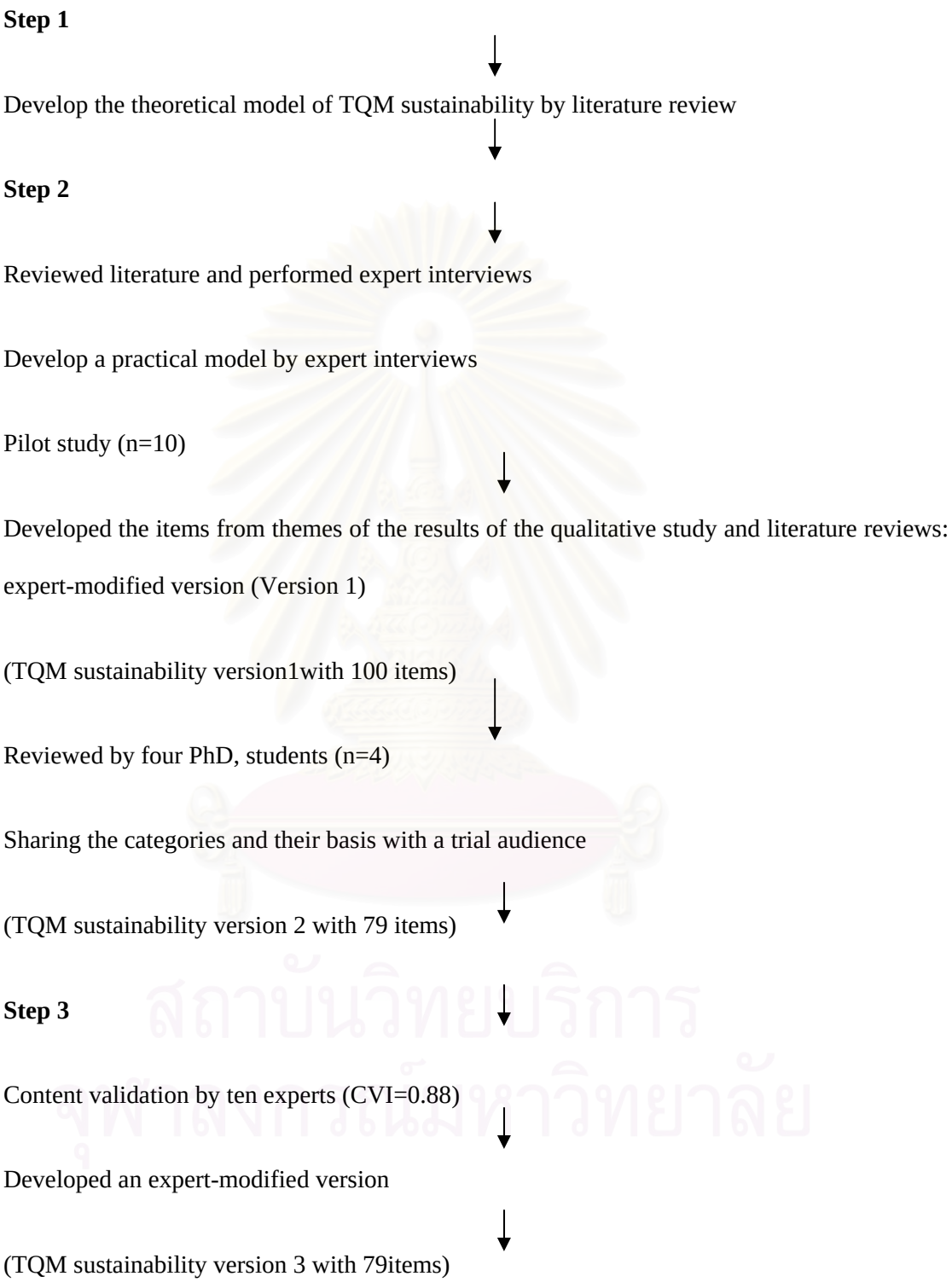
5.2 Test the model with confirmatory factor analysis as a second order model. The greatest benefit of the application of second-order factor analysis is to gain a broader picture or level of generalization that was not revealed by the first-order factor analysis alone (Gorsuch, 1983). As Gorsuch (1983: 240) explained, primary factors indicate areas of generalizability. More generalization can occur within a factor than across factors, but this does not eliminate generalization across factors. When factors were correlated, some generalization was possible. These areas of generalization across the primary factors form the higher-order factors.

Validity and Reliability

On the first-order level of measurement models, the standard factor loadings of observed variables (items) on latent variables (factors) were estimates of the validity of the observed variables. Since the model fits the data well, we interpreted the loadings of indicators as validity coefficients and squared multiple correlations (R^2) as the reliability of the observed measure.

Another coefficient estimated in the second-order model was the relationship between first- order factors and second-order factors. For second or higher levels, the standard structural coefficients of factors on higher-order constructs were estimates of the validity of the factors.

The steps involved in developing the instrument are outlined in Figure 3.



Step 4

Pilot test version (n=30)

(TQM sustainability version 4 with 76 items)

Step 5

Field test (n= 2,565)

Construct validity (EFA), testing alpha coefficient

(TQM sustainability version 5 with 65 items)

Test the model with confirmatory factor analysis (CFA)

Figure 3 The Development and Validity of the TQM sustainability

Data Collection Procedure

Data study was conducted in the following sequences:

1. The researcher received permission from the directors of hospitals

2. The researcher obtained the list of the subjects who met eligibility criteria from the selected hospitals. Then the subjects were selected by using proportional random sampling method from the list.

3. A cover letter was provided to the prospective subject to explain the nature and the purpose of the study, an invitation for participation, method for insuring confidentiality and assurance that participation was voluntary.

4. The researcher directly contacted the directors of nursing services or responsibility persons over the phone to provide information regarding this study.

5. The questionnaires were delivered by mail to the subjects. The researcher collected them within one to two weeks.

Data Analysis

Questionnaires returned from the subjects were examined for completeness and individually numbered. Missing items of the TQM Sustainability Scale were replaced by a mean score of each missing items. Data were entered in a microcomputer by the investigator using the Statistical Package for the Social Sciences, Version 11.5

In order to answer the research questions, the following analyses were performed.

Research question 1: What are the components of the perceived TQM Sustainability in patient units at accredited hospitals?

Research question 2: How valid and reliable is this newly developed TQM sustainability instrument?

Descriptive statistics were computed for all study variables and examined for marked skewness, systematic missing data, and outliers.

To answer these two questions, data were first read and screened, then correlations and the covariance matrixes were computed using LISREL 8.72 (Scientific Software International,1999). The resulting factor structure that best conformed to the concept of TQM sustainability of the construct and was most efficient, was selected from the various rotations.

Factor analysis is the last approach to determine construct validity. Factor analysis provides information about the extent to which a set of items measures the same underlying construct or dimension of a construct (LoBiondo-Wood and Haber,

1998). It examines interrelationships among large numbers of variables and disentangles those relationships to identify clusters of variables that were most closely linked together. Factor analysis may support such efforts in a variety of ways-to describe clinical phenomena, to explore relationships, to identify (name) constructs that unite a set of elements, to create units of classification for systems construction, and even to test a hypothesis. It is a useful approach for assessing construct validity when the researcher has designed a measure to assess various dimensions or subcomponents of a phenomenon of interest and wishes to empirically justify these dimensions or factors (Waltz et al., 1991).

Confirmatory Factor Analysis (CFA) as second-order process was used in this study. In CFA, the factor structure was restricted *a priori* according to guidelines offered by theory. The obtained data was then compared with the restricted, theoretical model. Chi-square statistics indicated the degree of correspondence, or the "goodness of fit," between a proposed model and the empirical data. CFA was usually conducted after examination of the correlation matrix (Burns and Grove, 2001: 533). A confirmatory factor analysis tests the validity of the structural model of a TQM sustainability scale.

Summary

The objective of this study was to develop a measurement and a psychometric evaluation of TQM sustainability in patient units at accredited hospitals. Initially, the scale was developed from literature reviews and interviews with 10 experts of TQM in hospitals. Content analysis was used to develop themes. Finally, the construct validity of perceived TQM Sustainability was determined by second-order confirmatory factor analysis.

CHAPTER IV

RESULTS

The findings of this study are organized into three sections: identification of TQM sustainability in patient units, demographic characteristics of the study sample, and results of analysis related to validity and reliability of TQM sustainability.

Results

1. Identification of TQM Sustainability in patient units

To define TQM sustainability in patient units in accredited hospitals, a comprehensive review of the literature and interviews with experts and persons who were assumed to be able to provide meaningful information were conducted. To define TQM sustainability in patient units, 2 physicians consisted of 1 head of quality management at the national level and 1 Director of an Accredited Hospital,1 nurse educator, 1 nursing administrator, 1 nurse who is a quality facilitator, 3 head nurses from different accredited hospital level and 2 senior nurse were interviewed by using a list of questions (Appendix A 03). Interviewees with a high level of seniority are more likely to know information needed for the research requirements. Quality managers were accepted as the personnel involved in TQM. A nursing administrator, a quality facilitator of nursing, 3 head nurses, senior nurses and nurse educators were accepted as the personnel who know the values involved in nursing management and practice. They may also experience the difficulties of maintaining their quality management systems. From interviews and the literature review definition of TQM sustainability and its components were addressed as follows:

1.1 Definition of TQM sustainability

TQM sustainability is defined as the condition and the process of an organization to adapt to change in the environment to maintain or keep up or prolongs TQM that already exist for a time while improving quality. These conditions and processes are needed for maintaining behavior; continuing with new systems and for continuous achievement of targets and goals. It includes organizing for new ideas, and adapting to a continuously changing environment. Then this extends to new ways of working and improved outcomes and becomes the norm, keeping something at a certain level, of avoiding decline, not reverted back to the old ways or old levels of performance.

1.2 Components of TQM sustainability

A total of 7 components of TQM sustainability were derived from the expert interviews and literature reviewed using the procedure described above. The seven components are namely drivers, culture, interaction and cooperation, support & recognition, leadership, monitoring and results, and education & training.

1. Drivers indicate human activities, processes and patterns which impact on sustainable TQM in patient units. External drivers can be management plans and include the ability to respond to the behavior of competitors, and the ability to recruit, develop and retain skilled employees. Internal drivers can be clear policies and goals related TQM, leaders of TQM and starting and continuing new TQM projects, passing accreditation, continuing performance reviews and work improvement. Also involved is public marketing of TQM successes and celebration of TQM successes, internal and external surveys.

2. Culture. The culture of continuous improvement means better and better quality, and less and less variation, which results from process management practices that bring forth incremental improvements and innovations in products, services and processes. It is composed of staff's commitment, the organization's core values embedded in daily activities and routine work, understanding the TQM process, everyone being responsible, staff empowerment, feeling challenged to perform TQM, staff consciousness of TQM, constant awareness of patient needs, good attitudes to TQM, accepting others' opinions and loyalty to the organization.

3. Interaction & cooperation. Interaction is a kind of action which occurs as two or more objects have an effect upon one another. The idea of a two-way effect is essential in the concept of interaction instead of a one-way causal effect. This means staff work as multidisciplinary teams, staff participate and cooperate with other departments to improve the quality of care. Linking takes place by person to person and team to team. Information is distributed and communicated about TQM to staff, a community of practice and good relationships exists among staff, units and teams. Cooperation must be the basis for working together. To the extent possible, people in the organization must support one another's efforts, not compete with one another.

4. Support and recognition. The rewards and incentives are linked to quality activities. They consist of appraisal systems, supporting the mind and morale, career advancement positive reinforcement, and sufficient people as resources, equipment, time, experts and information technology.

5. Leadership. Leadership is the process needed to induce others to take action toward common goals. All leaders are committed, provide clear TQM policies, communicate goals, and assign quality activities to staff. Leaders are good

role models, participate, motivate staff, support daily actions of staff, and monitor TQM results.

6. Monitoring and the results. This means continuous monitoring of outcome indicators in the organization and communicating the results to all staff. Comparing the results across units and outside the organization takes place. Indicators related to customer satisfaction, complaints, incident reports and TQM projects are required. An internal audit of TQM occurs usually and uses the results as data for work improvement. Most patients and clients should be satisfied with services of your organization. Most staff should enjoy working in the organization.

7. Education and training. There is continuing training, sharing of best practices occurs at regular intervals, staff participates in sharing and learning. There is a positive learning climate, and study and visits to other places, and systematic thinking for problem solving takes place.

2. Characteristics of the Sample

Of the 2,565 surveys distributed by mail, and followed-up with managers by phone one week later, 2,225 (86.74%) were returned. Of this number, 60 (2.34 %) were incomplete. Thus, the 2,165 (84.41 %) completed surveys comprised the study sample.

Table 5 describes the characteristics of the subjects. The majority of subjects graduated with a bachelor in nursing degree (86.2%) and a master degree (13.8%). Most subjects worked in medical units (17.3%), in University hospital (46.8%), in regional hospitals and medical centers (26.2 %), and in general hospitals (20.1%). They are working as head wards/units (14.4%) and working as staff nurses (85.7%).

Table 5 Characteristic of Registered Nurses (N=2,165)

Nursing Characteristics	General Hospital (N=435)	Medical Center (N=717)	University Hospital (N=1,013)	Overall samples (N=2,165)
Education level	(%)	(%)	(%)	(%)
Bachelor degree	88.9	86.7	84.8	86.2
Master degree	11.1	13.3	15.1	13.8
Upper Master degree	0.0	0	0.1	0.1
Area of practice				
Medical	19.3	15.7	17.6	17.3
Surgical /Ortho	10.8/6.9	15.7/9.9	10.8/7.7	12.4/8.3
Neuro	3.2	4.3	1.7	2.9
OB/Gyn	15.2	10.1	12.8	12.4
Pediatric	12.6	10.9	9.6	10.6
FR/ICU/RCU	9.4	11.3	10.0	10.3
OPD/ER	6.4	5.6	3.2	4.6
OR	3.9	2.8	6.5	4.8
Others	12.2	13.7	20.1	16.4
Position				
Head	13.9	15.2	14.3	14.4
Staff nurse	68.1	84.8	85.7	85.7

As shown in table 6, the subjects ranged in age from 22 to 60 years old with average age of 37 years (SD = 9.06). They had an average of 14 years (SD = 9.10) of nursing experience, and 64.16 hours (SD = 52.10) training in TQM. The majority had continued training in TQM. The average of years in their current position was 11 (SD =10.84).

Table 6 Means, Standard Deviations, Minimum, and Maximum Scores for Continuous demographic Variables.

Variable	N	M	SD	Min	Max
General Hospital					
Age	1011	36.824	9.587	20	59.0
Year in Nursing practice	1011	13.7844	9.3980	.00	36.00
Year in current position	1003	11.973	8.977	.0	35.0
Hour training in TQM/HA/CQI/QA	1013	72.369	51.134	.0	600.0
Medical Center					
Age	717	37.105	8.496	23.0	60.0
Year in Nursing practice	717	14.8770	8.6011	1.00	39.00
Year in current position	708	8.872	7.135	.3	38.0
Hour training in TQM/HA/CQI/QA	717	50.962	57.216	.0	672.0
University Hospital					
Age	435	37.952	8.132	22.0	60.0
Year in Nursing practice	435	15.7356	8.0818	1.00	36.00

Variable	N	M	SD	Min	Max
Year in current position	432	9.792	7.332	1.0	34.0
Hour training in TQM/HA/CQI/QA	435	66.807	45.325	1.0	240.0
Over all					
Age	2164	37.172	9.057	22	60.0
Year in Nursing practice	2164	14.5780	9.0953	.00	39.00
Year in current position	2157	11.083	10.835	.0	38.0
Hour training in TQM/HA/CQI/QA	2165	64.162	52.996	.0	672.0

Assumption Testing

TQM Sustainability in patient units had a high score (Mean= 3.00-4.43, SD=0.668-1.3). Factor analysis is based on a matrix of correlation between variables, so all data assumptions applicable to calculation and interpretation of correlations apply to factor analysis as well. Data should be interval level as typically occurs with Likert-type self-report data. Data should be approximately normally distributed. There are two types of assumptions for confirmatory Factor Analysis (CFA): general statistical and estimation method-specific assumptions. These are as follows: (1) normality; (2) linearity. The results are as follows:

Normality

Normality was accepted because of the large sample size and a random sampling technique. Univariate normality statistics, related to the indicator variables for the underlying latent constructs, are presented in Appendix F. Most of these variables in TQM sustainability revealed that the data raw to be somewhat highly skewed, ranging from -0.24 to 3.24 which was higher than the absolute values of 3.00 (Kline, 1998). This indicated that the skewness coefficient of variables was severely positive. According to Jacobson (1997:42), a skewness value 0. 2 or below -0.2 indicates severe skewness. Regarding kurtosis, Jacobsen (1997) noted that if the value, produced by dividing the kurtosis statistics by the standard error, is not beyond -1.96-1.96 the distribution has a normal curve. The data indicted low to high kurtosis, ranging from -0.12 to 1.26. The skewness coefficient of age appeared to be close to zero, indicating that the distribution of age was fairly symmetrical.

Linearity Testing

The common method to assess linearity is to graph the coordinate data points, to examine scatter plots of the variables, and to identify any nonlinear patterns in the data. By examining the scatter plots between all variables, there was no evidence of non-linearlity between pairs of variables.

3. Analysis of research question: Research Question 1

How reliable is the TQMSS in measuring the extent of it as perceived by Thai professional nurses in patient units in accredited hospitals?

This question was answered with Cronbach's coefficient alpha internal consistency reliability. The 65-item TQMSS has a standardized alpha of .97 (N = 1, 912), indicating a highly reliable internal consistency. Table 7 showed that the reliabilities of eight factors and total scale ranged from 0.804-0.952, and 0.973

respectively. The item-total correlations were next examined and indicated that all items had item-total correlations below .40 (0.339), the usual cutoff. Because of the multidimentionality of TQMSS, no item was dropped at this point. Factor 1: Education and Training had the highest reliability with alpha of 0.952. While Factor 8: Monitoring the Result, had the lowest reliability with standardized alpha of 0.805. However, all eight factors and the TQMSS total score had internal consistency reliabilities. The alpha coefficient was 0.97 for the entire scale (79 items) and ranged from 0.80–0.95 for the eight dimensions.

Table 7 Cronbach's Coefficient Alpha Reliabilities for the Resulting Eight Factors and the TQMSS Total Score and Statistics (N= 2,165)

Factor	N	M	SD	Alpha
I. Education and Training	12	42.21	7.68	.952
II. Leadership	13	48.70	8.35	.932
III. Drivers	8	33.74	4.00	.869
IV. Continuous quality improvement culture	8	29.45	4.64	.856
V. Interaction & participation	7	28.56	3.65	.863
VI. Support and recognition	6	20.10	3.83	.863
VII. Cooperation & participation	6	22.88	3.54	.882
VIII. Monitoring the results	5	19.09	3.41	.804
TQMSS total score	65	245.03	31.32	.973

4. Validity of the TQM Sustainability Scale (TQMSS) in Patient Units

Content and construct validity of TQM Sustainability were studied. The content validity was established by the content validity index. The construct validity of TQM Sustainability was established by exploratory and confirmatory factor analysis.

4.1 Content Validity

Content validity index (CVI) of TQM Sustainability, the proportion of items given a rating of quite relevant or very relevant based on 4-point scale by ten experts, were calculated. This revealed that the CVI of TQM Sustainability was acceptable 88 %. This means that the ten experts agreed that 88 % of the TQM Sustainability was quite relevant or very relevant to the objectives of the instruments.

No major change was recommended by the experts. Only two items of scale were suggested to be selected because of having the same meaning, without changing the meanings. One item was suggested to divide into two items to separate the meaning. It was suggested that thirteen items be slightly reworded. They were revised, this being based on the experts' suggestions, before the instruments were administered to subjects.

4.2 Construct Validity.

Three types of analysis were utilized to established construct validity of TQMSS. The results of those analyses are presented in the following order: 1) results of known-groups technique, 2) results of exploratory analysis, and 3) confirmatory analysis.

4.2.1 Results of Known-groups Technique

Known-groups technique is a common procedure for determining construct validity of a measuring instrument (Knapp, 1998). In this procedure score of two groups of subjects who are known to be high and low in the characteristic being measured are compared. If the instrument is sensitive to individual differences in the characteristic, the mean score of these two groups should differ significantly (Waltz et al., 1991). In the present study, mean scores of the TQMSS of three types of hospitals were compared by ANOVA. TQM sustainability scores were compared with demographic variables for each factor and all subscales after performing exploratory factor analysis.

Results from this step provided evidence whether there were any significant differences in TQM sustainability scores among their demographic variables. Based on data analyses of large scale testing of the instrument, there was sufficient evidence to support this hypothesis. For all subscale (Table 8), there were

significant differences in TQM sustainability scores for age groups, position, areas of practices and type of hospitals at the level of .05.

Nurses who were in the 41-45 age groups had significantly higher TQMS scores than those who were in the 22-25, 26-30, 31-35, and 36-40 age groups, respectively. In line with Yimpong (1999) age was the most important factors in TQM acceptance. Position and leadership behavior also had a significant correlation with the acceptance of TQM.TQM sustainability scores of the University hospitals had significantly lower TQMS scores than medical centers and general hospitals. This result probably was explained by the type of hospitals and nurse effects. University hospitals might be more complex, using high technology and emphasizing training /learning for all staff.

Educational levels, years of nursing practice, years in current position and hours of training related to TQM were not significant statistic in relation to TQMS scores. This phenomenon may be due to sample specificity. These findings supported construct validity of the TQMSS.

Table 8 Results of one-way ANOVA comparing selected professional nurses' demographic variables with the mean rating of TQMS scores for overall samples

Variable	Category	N	Mean ± SD		F-Value	Significance
Age	22-25 years	148	3.76 ±	.46	2.532	.039
	26-30 years	410	3.78 ±	.48		
	31-35 years	311	3.76 ±	.48		
	36-40 years	296	3.71 ±	.51		
	41-55 years	711	3.81 ±	.46		
Education level	Bachelor degree	1638	3.78 ±	.47	T-Value 2.081	0.19
	Master degree	271	3.81 ±	.51		
Year in nursing practice	Lower than 2 years	66	3.71 ±	.49	.995	.394
	2 - 3 years	124	3.79 ±	.45		
	4 – 6 years	250	3.79 ±	.49		
	6 years up	1460	3.78 ±	.48		

Variable	Category	N	Mean ± SD		F-Value	Significance
Position	head/	279	3.86 ±	.45	4.107	.017
	nurse	1597	3.77 ±	.48		
	Others	31	3.79 ±	.41		
Area of practice	Medical	331	3.76 ±	.49	1.900	.048
	Surgical	229	3.74 ±	.47		
	Ortho	162	3.82 ±	.51		
	Trauma	56	3.71 ±	.56		
	OB/Gyn	253	3.85 ±	.49		
	Pediatric	194	3.81 ±	.43		
	FR/ICU/RCU	204	3.79 ±	.42		
	OPD/ER	88	3.74 ±	.43		
	OR	82	3.67 ±	.46		
	Others	310	3.79 ±	.5		

Variable	Category	N	Mean ± SD		F-Value	Significance
Year in current position	Lower than 2 years	161	3.75 ±	.48	1.763	.152
	2 - 3 years	248	3.81 ±	.45		
	4 – 6 years	378	3.82 ±	.47		
	6 years up	1105	3.76 ±	.48		
Hour training related TQM	Lower than 25 hours	666	3.77 ±	.48	2.116	.096
	26 - 50 hours	170	3.84 ±	.45		
	51 – 100 hours	996	3.77 ±	.48		
	101 hours up	80	3.87 ±	.43		
Types of hospitals	University	874	3.72 ±	.49	14.962	.000
	Medical Center	633	3.84 ±	.47		
	General	405	3.83 ±	.45		

4.2.2 Establishing the Measurement Models

The exploratory factor analysis (EFA) was used to assess the construct validity before evaluating the measurement models. Factor analysis refers to a family of analytic techniques designed to identify factors, or dimensions that underlie the relations among set of observed variables or items of an instrument (Crocker and Algina, 1986). Exploratory factor analysis utilizes mathematics to discover the main constructs or dimensions; whereas confirmatory factor analysis determines how well the model, hypothesized based on relevant theory or upon previous studies, fit the data (Kline, 1994).

Analysis was undertaken of the research question: What are the components of the TQMSS? The research question was answered by subjecting the 76-item TQMSS to principle component analysis. The matrix sampling adequacy was .98 and the Barlett Test of Sphericity was significant (χ^2 [2,850], N= 2,165) =101047.312, p<.000. This result suggested that all the correlations, tested simultaneously, were statistically different from 0; therefore, the correlation matrix based on the present data was suitable for factor analysis. For analyzing and interpreting the factor analysis, four criteria were set including: (1) the factors with Eigenvalues greater than 1, (2) the scree plot, (3) an item loading cutoff point of at least .40, and (4) theoretical congruence in each factor. In this study, four models were established and discussed as follows.

Measurement Model of Overall TQM Sustainability (N=2,165)

Examination of the initial solution yielded 11 factors with eigenvalue greater than 1. An examination of the Scree plot (Figure 4) indicated that

7 and 8 factors should be examined. From the qualitative phase, TQMSS was hypothesized to have 8 underlying dimension; an 8 factor solution using varimax rotations was originally specified. Finally, the 8 factor varimax solution was judged to be the most efficient and theoretically interpretable.

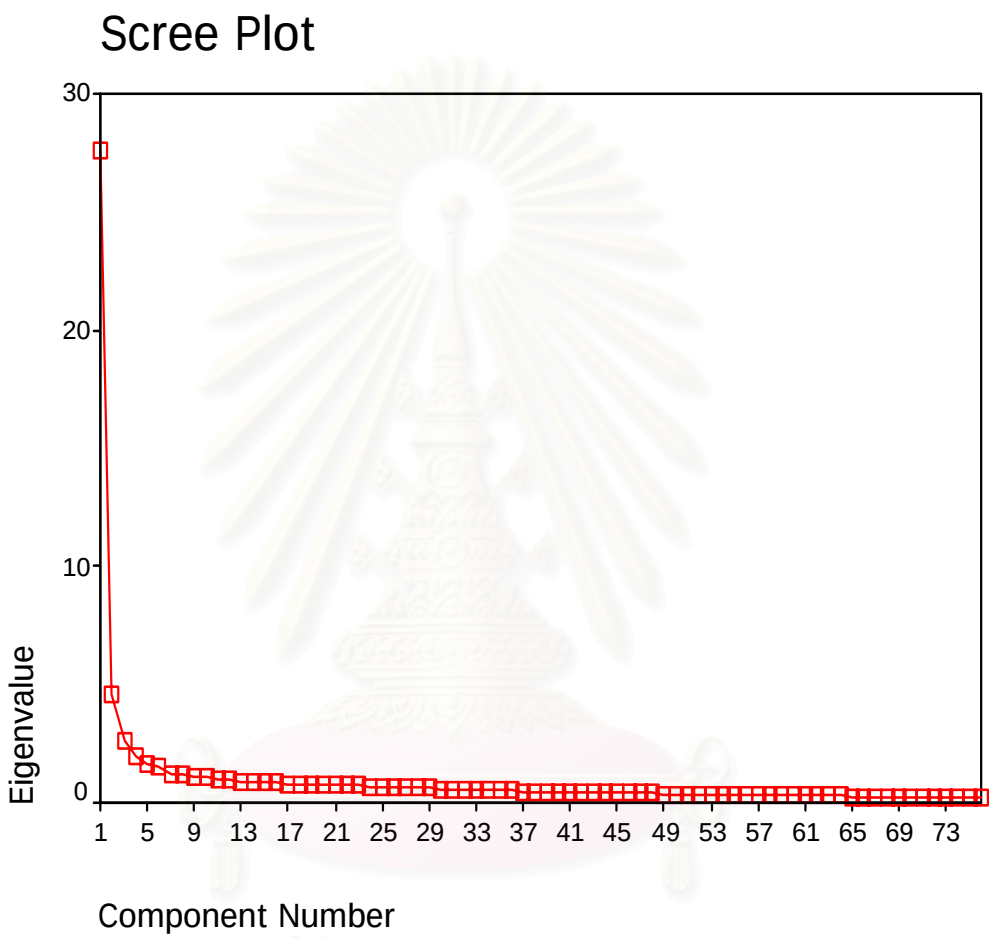


Figure 4 Scree Plot for Factor Analysis

Note. Break in Size of Eigenvalues occurs between the seventh and the eight Factors.

The factors consisted of 65 items and displayed a total of 53.270% of variance. The resulting eight factors included: (1) Education and Training. (2) Leaderships (3) Drivers, (4) Continuous quality improvement culture, (5) Interaction and relationship among staff, (6) Support and recognition of organization, (7)

Cooperation and participation, and (8) Monitoring the results. Communalities of TQMSS were reported in Table 9.

Factor 1 consisted of 12 items with factor loadings ranging from 0.492- 0.772, and accounted for 11.984 % of variance with an eigenvalue of 9.108. An examination of the item content, as shown in Table 3, revealed that these items focused on education and training. These consisted of: continuous self-development, continuing training related TQM, knowledge sharing, staff participation, positive learning climate, understanding TQM (11 items). This was comparable to the hypothesized underlying subscale of the 76-item TQMSS. There was only one item (TQMSS 64: Most staff enjoys working in the organization) in this factor that did not mention participation in activities with others. It should be part of the result of TQM activity. However, this factor was labeled as "Continuing education and training related TQM." When analyzed individually, it was revealed that all 12 items can be included in one factor and total variance explained at 65.83 %.

Factor 2 consisted of 13 items with factor loadings ranging from 0.425-0.735, which accounted for 10.279 % of variance with an eigenvalue of 7.812. An examination of item contents, as shown in Table 4, reveal that these items focused on commitment and roles of lead team or leadership (12 items), which were comparable to the hypothesized underlying subscale of the 76-item TQMSS. There were two items (TQMSS the item 54, item55: Outcomes of TQM are congruent with organizational goals, and there is continuous monitoring of outcome indicators in the organization) in this factor that did not mention participation with others. When considering the meaning of these items, they also referred to the roles of leadership which focused on the results. Therefore, they should be included in Factor 2. This

factor was labeled as “Leaderships.” After individual analysis, 13 items can be included in one factor with total variance explained at 57.80 %.

Factor 3 consisted of 8 items with factor loading ranging from 0.467-0.750, and accounted for 6.367 % of variance with eigenvalue of4.839. An examination of the item content, as shown in Table 6, revealed that these items focused on Drivers as environment (8 items) which is comparable to the hypothesized underlying subscale of the 76-item TQMSS. Thus this factor was labeled as “Drivers.” After being analyzed individually 8 items can included in one factor with total variance explained at 52.40 %.

Factor 4 consisted of 8 items with factor loading ranging from 0.455-0.639, and accounted for 5.971 % of variance with an eigenvalue of4.538. An examination of the item content, as shown in Table 7, revealed that these items focused on culture of quality improvement. There was only one item (TQMSS 54: Quality management policies and goals are clear.) in this factor that did not mention links with others. When considering the meaning of this item, it also included participation with others. Therefore, this item was concluded in this factor. This factor was labeled “Continuous quality improvement culture.” After individually analysis 8 items can included in one factor with total variance explained 50.57%.

Factor 5 consisted of 7 items with factor loading from 0.404-0.714, and accounted for 5.324 % of variance with eigenvalue of4.046. An examination of the item content, as shown in Table 8, revealed that these items focused on interaction and relationships among staff which were comparable to hypothesized underlying subscale of 76-item TQMSS. This factor was labeled as “Interaction and relationship

among staff.” After being analyzed individually 7 items can included in one factor with total variance explained at 55.28%.

Factor 6 consisted of 6 items with factor loading from 0.486-0.645, and accounted for 5.191% of variance with eigenvalue of3.945. An examination of the item content, as shown in Table 9, revealed that these items focused on support and recognition of organizations which were comparable to the hypothesized underlying subscale of the 76-item TQMSS. Thus this factor was labeled as “Support and recognition of organization.” After being analyzed individually 6 items can included in one factor with total variance explained at 59.60 %.

Factor 7 consisted of 6 items with factor loadings ranging from 0.535-0.630, and accounted for 4.884 % of variance with eigenvalue of3.712. An examination of the item content, as shown in Table 10, revealed that these items focused on cooperation and participation of staff in TQM activities. Thus this factor was labeled as “Cooperation and participation.” After being analyzed individually 6 items can included in one factor with total variance explained at 62.97 %.

Factor 8 consisted of 5 items with factor loadings ranging from 0.482-0.662, and accounted for 3.231 % of variance with eigenvalue of 2.486. An examination of the item content, as shown in Table 11, revealed that these items focused on monitoring the results. For the reason that, all were considered as the same meaning. Thus this factor was labeled “Monitoring the results.” After individual analysis 5 items can be included in one factor with total variance explained at 57.04%.

Table 9 Items, Factors loadings, Percent of Variance, Eigenvalue, and Communalities of the Measurement Model of TQMSS for Overall Accredited Hospital (N=2,165)

	Item number and description	Factors loadings	Communalities
	Factor 1:12 Education and training		
TQMSS74	There are many ways for knowledge sharing related to TQM.	.772	.753
TQMSS75	Staff uses system thinking for problem solving.	.742	.717
TQMSS76	Staffs have easy access to TQM resources.	.724	.687
TQMSS69	Most staff participates with sharing and learning about TQM.	.715	.732
TQMSS72	Most staff engages in continuous self-development.	.711	.725
TQMSS73	Some staff goes to study and visit other places to improve the quality of care.	.702	.602
TQMSS68	There is a positive learning climate in my organization.	.698	.717
TQMSS70	All levels of staff understand TQM.	.694	.688
TQMSS67	Sharing of best practices occurs at regular intervals.	.669	.684
TQMSS71	New staffs are trained in TQM.	.662	.612

	Item number and description	Factors loadings	Communalities
	Factor 1:12 Education and training		
TQMSS66	All level of staff has continuing training related TQM.	.614	.508
TQMSS64	Most staff enjoy working in the organization.	.492	.628
	Eigenvalue 9.108		
	% of Variance 11.984		
	Factor2: 13 Leadership		
TQMSS52	Leaders monitor TQM work performance continuously.	.735	.772
TQMSS53	Leaders provide clear TQM policies.	.696	.738
TQMSS50	Leaders give suggestions related to quality improvement.	.693	.716
TQMSS46	Leaders are good role models for TQM.	.652	.663
TQMSS49	Leaders support daily actions of staff related to quality activities.	.651	.681
TQMSS55	There is continuous monitoring of outcome indicators in the organization	.634	.658
TQMSS48	Leaders motivate staff to include quality improvement their work.	.645	.686
TQMSS47	Leaders walk around and make improvements from staff suggestions.	.629	.691

	Item number and description	Factors loadings	Communalities
	Factor2: 13 Leadership		
TQMSS51	Leaders monitor TQM results continuously	.587	.404
TQMSS44	Leaders participate in the TQM program.	.526	.611
TQMSS43	Leaders communicate goals related quality management.	.505	.614
TQMSS54	Outcomes of TQM are congruent with organizational goals.	.482	.309
TQMSS56	Leaders communicate outcome indicators and the results to all staff.	.425	.266
	Eigenvalue 7.812		
	% of Variance 10.279		
	Factor 3: 8 Drivers		
TQMSS 7	Incorporating TQM requirements in performance reviews makes quality improvement more consistent.	.750	.685
TQMSS 6	Hospitals pass accreditation based on their continuing TQM.	.695	.597
TQMSS 5	Organizations that always improve are more likely to survive than their competitors.	.685	.590
TQMSS 8	Celebration of TQM successes enhances sustainability of improvements.	.683	.613

	Item number and description	Factors loadings	Communalities
	Factor 3: 8 Drivers		
TQMSS 4	Continuing starting new TQM projects drives the organization to always improve.	.632	.507
TQMSS 9	TQM managers use data for encouraging quality improvement.	.574	.585
TQMSS 3	In order for TQM to be sustained, the organization needs a director-level leader of TQM.	.507	.570
TQMSS10	Core TQM policies continue even after leadership change.	.467	.526
	Eigenvalue 4.839		
	% of Variance 6.367		
	Factor 4: 8 Continuous Quality Improvement Culture		
TQMSS12	Commitment related to TQM is imbedded in the organization's culture.	.639	.634
TQMSS14	Everyone values TQM when compared to their other work.	.601	.596
TQMSS18	Staff wake up and feel challenged to perform TQM.	.560	.625
TQMSS19	TQM is embedded in staff's minds.	.552	.627
TQMSS15	All levels of staff understand the TQM process.	.534	.405

	Item number and description	Factors loadings	Communalities
	Factor 4: 8 Continuous Quality Improvement Culture		
TQMSS13	TQM is most effective when tied to the organization's core values.	.488	.571
TQMSS11	Quality management policies and goals are clear.	.460	.536
TQMSS17	Staffs are empowered to perform TQM by themselves.	.455	.337
	Eigenvalue 4.538		
	% of Variance 5.971		
	Factor 5: 6 Interaction and relationships among staff		
TQMSS31	Good relationships among staff, units and teams foster improved TQM.	.714	.650
TQMSS27	Successful TQM requires linking from person to person or team to team.	.694	.657
TQMSS29	Successful TQM empowers all staff to participate and offer their opinions to improve patient care.	.692	.676
TQMSS30	A community of practice is essential for successful TQM.	.657	.610
TQMSS16	TQM is everyone's responsibility.	.510	.479
TQMSS28	Quality management leadership focuses its work at the multidisciplinary team level.	.483	.551

	Item number and description	Factors loadings	Communalities
	Factor 5: 6 Interaction and relationships among staff		
TQMSS36	All staff can access information technology (IT) support for TQM.	.404	.516
	Eigenvalue 4.046		
	% of Variance 5.324		
	Factor 6: 6 Support and recognition of organization		
TQMSS35	Your organization supports enough people, equipment, time, experts and information technology to achieve TQM goals.	.645	.659
TQMSS38	Your organization tries to decrease staff workload in support of TQM.	.626	.531
TQMSS34	Positive reinforcement for quality activities is offered frequently	.597	.646
TQMSS33	Your organization supports the mind and morale of all staff.	.587	.633
TQMSS37	Staffs have ability to use technology for TQM.	.512	.536
TQMSS41	Staffs make TQM simple.	.486	.542
	Eigenvalue 3.945		
	% of Variance 5.191		

	Item number and description	Factors loadings	Communalities
	Factor 7: 6 Cooperation and participation		
TQMSS24	Staff works as multidisciplinary teams, cross-functional teams and/or patient care teams to improve the quality of care.	.630	.656
TQMSS25	More than 90% of staff, regardless of discipline, participate in the TQM program.	.625	.649
TQMSS26	More than 90% of staff cooperates with other departments to improve the quality of care.	.612	.674
TQMSS23	All level of staff accepts others' opinions related to quality improvement.	.567	.643
TQMSS22	All level of staff has good attitudes related to TQM.	.544	.664
TQMSS21	All level of staff is constantly aware of patient needs.	.535	.543
	Eigenvalue 3.712		
	% of Variance 4.884		
	Factor 8: 5 Monitoring the results		
TQMSS58	An internal audit of TQM occurs every six months.	.662	.541
TQMSS59	The evaluation system for the organization and the staff includes results of current TQM processes.	.572	.703

	Item number and description	Factors loadings	Commu nalities
	Factor 8: 5 Monitoring the results		
TQMSS61	The organization compares their results with across units and outside of organization.	.557	.659
TQMSS60	The quality service and system evaluation includes teamwork performance.	.513	.401
TQMSS62	Staffs use the result data for work improvement.	.483	.651
	Eigenvalue 2.486		
	% of Variance 3.271		

The eight subscales were examined for correlations using Pearson product-moment. As shown in Table 10, there were statistically significant correlations at a level of .01 between all of the Factors. The inter-correlation among eight factors indicated that all factors were positively associated with each other. These factors were also positively associated with TQM sustainability.

Table 10 Correlation among the Resulting eight factors of the TQMSS

Factor	II	III	IV	V	VI	VII	VIII
I. Education and Training	.683*	.433*	.600*	.515*	.700*	.626*	.610*
II. Leadership		.464*	.530*	.544*	.637*	.574*	.615*
III. Drivers			.530*	.688*	.387*	.548*	.403*
IV. Continuous quality improvement culture				.518*	.623*	.664*	.455*
V. Interaction & participation					.435*	.611*	.458*
VI. Support and recognition						.552*	.482*
VII. Cooperation & participation							.466*
VIII. Monitoring the results							

- Correlation is significant at the 0.01 level (2-tailed).

Measurement Model of TQMSS for University Hospital

The EFA was used to assess the construct validity for 76-item of TQMSS for University Hospitals (N=1,013). The results indicated that 8 factors were extracted accounting for 64.38 % of the variance explained. The first factor included 16 education and training. The second factor included 15 leaderships. The third factor included 7 continuous quality management cultures. The fourth factor included 9 drivers. The fifth factor included 7 interaction and relationship among staff. The sixth

factor included 6 cooperation and participation. The seventh factor included 4 support and recognition of organization and 3 monitoring the results were loaded on the eighth factor. Cronbach's alpha coefficient was 0.98 for the results.

Measurement Model of TQMSS for Medical Center or regional Hospital

The EFA was used to assess the construct validity for 76-item of TQMSS for regional Hospitals (N=717). The results indicated that 7 factors were extracted accounting for 63.73 % of the variance explained. The first factor included 16 education and training .The second factor included 11 leaderships. The third factor included 10 continuous quality management cultures. The fourth factor included 9 drivers. The fifth factor included 6 interaction and relationship among staff. The sixth factor included 6 support and recognition of organization and 3 monitoring the results were loaded on the seventh factor. Cronbach's alpha coefficient was 0.97 for the results.

Measurement Model of TQMSS for General Hospital

The EFA was used to assess the construct validity for 76-item of TQMSS for University Hospitals (N=435). The results indicated that 8 factors were extracted accounting for 67.272 % of the variance explained. The first factor included 13 education and training. The second factor included 15 leaderships. The third factor included 10 continuous quality management cultures. The fourth factor included 7 drivers. The fifth factor included 6 interaction and relationship among staff. The sixth factor included 7 support and recognition of organization and 5 monitoring the results were loaded on the seventh factor. Cronbach's alpha coefficient was 0.97 for the results.

4.2.3 Evaluating Measurement Models

The assessment of the measurement models was a primary concern since it was critical that the measurement of each latent variable was psychometrically sound. Formulation of measurement sub-scale independent variables was based on the substantive theory and exploratory factor analysis. Confirmatory Factor Analysis (CFA) was employed to verify that the theoretical constricted contained in the model were acceptably represented by observed variables.

The CFA procedure using LISREL 8.72 was employed and was composed of two methods as follows: (1) overall fit and (2) measurement model fit. In this study, the measurement model fit was used to examine the indicators for each construct and assess the reliability of each construct. There are two approaches to evaluate the measurement model fit; fixed value and free value. They can be evaluated separately in order to estimate the construct variance directly. To test the theory proposed in this present investigation, free value was employed.

The first step for evaluating the measurement model fit was to examine the observed variable loadings for statistical significance level of 0.05 related to the specific constructs, and to verify the posited relationships among indicators and the constructs (Hair, et al., 1998, p.623). The second step was to examine the squared multiple correlation (R^2) of observed variable. R^2 values rang from 0-1.00. The squared multiple correlations (R^2) served as reliability indicators of the extent to which each adequately measured its respective underlying construct (Byrne, 1998, p. 104). The statistical overall fit and measurement model fit are presented in Table 11.

Table 11 Statistic Overall Fitted Index Values of Measurement Models (Overall N=2,165) (University hospitals=1,013, Medical centers=717 and general hospitals=435)

TQMSS Model	Chi-square (χ^2)	*df*	χ^2/df	*p*	GFI	AGFI	RMSEA
Overall Model (N=2,165)	985.387	981	1.00	0.46	0.99	0.97	0.00
University Hospital (N=1,013)	5217.52	2003	2.60	0.0	0.85	0.84	0.04
Medical Center (N=717)	4141.82	1717	2.41	0.0	0.83	0.81	0.05
General Hospital (N=435)	4774.00	2220	2.15	0.0	0.75	0.73	0.05

Note: GFI = Goodness of fit index, AGFI = Adjusted Goodness of fit index

RMSEA = Root mean square error of approximation

The results of CFA demonstrated that there was an overall measurement model indicating overall fit when conducted with the overall model. It had low Chi-square values resulting in non-significant level of probability 0.05. The χ^2/df ratio fit within the recommended level of 1-2 (1.00) or less than 5.00 (Diamantopoulos & Siguaw, 2000). A χ^2/df ratio was developed as the basis for goodness of fit indices that took a more pragmatic approach. Both GFI and AGFI of overall model values close to 1.00 or equal to 1.00 indicated a good fit. RMSEA values 0.00, indicating a good fit, ranging however from 0.05 to 0.08 were deemed acceptable (Hair et al., 1998, p. 656) in terms of validity of the measurement model.

The CFA analysis revealed that the TQMSS for University hospital, medial center, and general hospital did not fit the data. The University Hospital, Medical Center and General Hospital had large Chi-square values resulting in significant levels of probability 0.05 valuing but the χ^2 /*df* ratio valued 2.60, 2.41, and 2.15.The GFI(.85,.83,.75), and AGFI (.84,.81,.73) were below.90, indicating a poor fit to the data. These did not meet the criteria., the RMSEA (.04, .05, .05) was below 10 and the χ^2 /*df* was less than 3.00. Cronbach's alpha coefficients indicated acceptable internal consistency with TQMSS = 97, 96, and 96, respectively. The inconsistent results might be attributed to the increase of sample size from this setting because the fit indices substantially underestimate goodness of fit in small samples (Hatcher, 1994).

Table 12 to table 13 illustrate squared multiple correlation coefficients (R^2) for each observed variable of the latent variables, ranging from the low score (0.19) to the high score (0.93) for the overall model. However, squared multiple correlation coefficients of second-order measurement are ranged from 0.601-0.926. These range from 0.1-0.72 for University Hospital model, 0.12-0.76 for Medical Center, and 0.31-0.73 for General Hospital model. All t-values were higher than 2.0; all loadings were significant at the p = 0.05 level.

Table 12 First -Order Measurement of Studied Variable by overall (n= 2,165)

Variables	Loading	T-value	SE	Factor Score	R^2
Factor1: Education and Training					
M74 There are many ways for knowledge sharing related to TQM.	0.914	38.989	0.023	0.046	0.61
M75 Staffs use system thinking for problem solving	0.860	36.371	0.024	0.052	0.59
M76 Staffs have easy access to TQM resources.	0.868	37.927	0.023	0.040	0.58
M69 Most staff participates with sharing and learning about TQM.	0.968	44.942	0.022	0.069	0.68
M72 Most staff engages in continuous self-development.	0.907	39.959	0.023	0.078	0.65
M73 Some staff goes to study and visit other places to improve the quality of care.	0.858	30.694	0.028	0.007	0.41
M68 There is a positive learning climate in my organization.	0.984	48.071	0.020	0.044	0.67
M70 All levels of staff understand TQM.	0.982	39.637	0.025	0.062	0.63
M67 Sharing of best practices occurs at regular interval	1			0.116	0.66

Variables	Loading	T-value	SE	Factor Score	R^2
M71 New staffs are trained in TQM.	0.938	36.628	0.026	0.066	0.56
M66 All level of staff has continuing training related TQM.	0.944	41.137	0.023	0.095	0.59
M64 Most staff enjoys working in the organization	0.871	35.612	0.024	0.120	0.55
Factor2: Leaderships					
M52 Leaders monitor TQM work performance continuously	0.947	45.926	0.021	0.072	0.69
M53 Leaders provide clear TQM policies.	0.959	43.027	0.022	0.097	0.68
M50 Leaders give suggestions related to quality improvement.	1			0.081	0.66
M46 Leaders are good role models for TQM.	0.974	38.500	0.025	0.045	0.60
M49 Leaders support daily actions of staff related to quality activities.	0.942	41.243	0.023	0.094	0.64
M48 Leaders motivate staff to include quality improvement their work.	0.935	40.034	0.023	0.061	0.64

Variables	Loading	T-value	SE	Factor Score	R^2
M55 There is continuous monitoring of outcome indicators in the organization	0.818	35.917	0.023	0.090	0.56
M47 Leaders walk around and make improvements from staff suggest ions.	0.992	41.663	0.024	0.105	0.65
M51 Leaders monitor TQM results continuously.	0.928	24.513	0.038	0.010	0.27
M44 Leaders participate in the TQM program	0.884	35.365	0.025	0.048	0.55
M43 Leaders communicate goals related quality management.	0.959	36.037	0.027	0.164	0.62
M54 Outcomes of TQM are congruent with organizational goals.	0.910	20.177	0.045	0.011	0.20
M56 Leaders communicate outcome indicators and the results to all staff.	0.964	19.785	0.049	0.099	0.19
Factor3 Drivers					
M7 Incorporating TQM requirements in performance reviews makes quality improvement more consistent.	0.827	22.983	0.036	0.037	0.43

Variables	Loading	T-value	SE	Factor Score	R^2
M6 Hospitals pass accreditation based on their continuing TQM.	0.788	20.523	0.038	-0.006	0.33
M5 Organizations that always improve are more likely to survive than their competitors	0.771	19.682	0.039	0.024	0.34
M8 Celebration of TQM successes enhances sustainability of improvements.	0.904	22.682	0.040	0.021	0.45
M4 Continuing starting new TQM projects drives the organization to always improve	0.731	19.960	0.037	-0.003	0.29
M9 TQM managers use data for encouraging quality improvement	0.964	28.996	0.033	0.166	0.52
M3 In order for TQM to be sustained, the organization needs a director-level leader of TQM.	0.582	16.587	0.035	-0.010	0.21
M10 Core TQM policies continue even after leadership change	1			0.155	0.46

Variables	Loading	T-value	SE	Factor Score	R^2
Factor4 Continuous quality improvement culture					
M12 Commitment related to TQM is imbedded in the organization's culture.	0.877	21.401	0.041	0.033	0.47
M14 Everyone values TQM when compared to their other work.	0.868	22.068	0.039	0.089	0.51
M18 Staff wake up and feel challenged to perform TQM.	0.962	22.101	0.044	0.139	0.58
M19 TQM is embedded in staff's minds.	0.995	21.993	0.045	0.172	0.59
M15 All levels of staff understand the TQM process.	1			0.044	0.27
M13 TQM is most effective when tied to the organization's core values	0.699	18.540	0.038	0.096	0.39
M11 Quality management policies and goals are clear.	0.787	19.771	0.040	0.175	0.44
M17 Staffs are empowered to perform TQM by themselves.	0.883	17.298	0.051	0.034	0.22

Variables	Loading	T-value	SE	Factor Score	R^2
Factor 5 Interaction & participation					
M31 Good relationships among staff, units and teams foster improved TQM.	0.835	24.859	0.034	0.081	0.42
M27 Successful TQM requires linking from person to person or team to team.	0.829	25.254	0.033	0.058	0.42
M29 Successful TQM empowers all staff to participate and offer their opinions to improve patient care.	0.948	27.315	0.035	0.139	0.55
M30 A community of practice is essential for successful TQM.	0.909	24.757	0.037	0.069	0.44
M16 TQM is everyone's responsibility	0.881	22.770	0.039	0.155	0.40
M28 Quality management leadership focuses its work at the multidisciplinary team level.	1			0.201	0.51
M36 All staff can access information technology (IT) support for TQM	0.934	23.842	0.039	0.199	0.44

Variables	Loading	T-value	SE	Factor Score	R^2
Factor 6 Support and recognition					
M35 Your organization supports enough people, equipment, time, experts and information technology to achieve TQM goals	0.935	32.010	0.029	0.107	0.50
M38 Your organization tries to decrease staff workload in support of TQM.	0.871	22.437	0.087	0.028	0.30
M34 Positive reinforcement for quality activities is offered frequently	0.972	43.335	0.022	0.085	0.52
M33 Your organization supports the mind and morale of all staff.	1			0.069	0.50
M37 Staffs have ability to use technology for TQM.	0.798	28.084	0.028	0.150	0.48
M41 Staffs make TQM simple.	0.937	27.800	0.034	0.143	0.49
Factor7 Cooperation & participation					
M24 Staff works as multidisciplinary teams, cross-functional teams and/or patient care teams to improve the quality of care.	0.986	30.045	0.033	0.136	0.56

Variables	Loading	T-value	SE	Factor Score	R^2
M25 More than 90% of staff, regardless of discipline, participate in the TQM program.	0.980	28.622	0.034	0.105	0.53
M26 More than 90% of staff cooperate with other departments to improve the quality of care.	0.925	30.235	0.031	0.146	0.57
M22 All level of staff has good attitudes related to TQM.	1			0.138	0.59
M21 All level of staff is constantly aware of patient needs.	0.772	27.437	0.028	0.169	0.38
Factor 8 Monitoring the results					
M58 An internal audit of TQM occurs every six months.	0.851	15.080	0.056	0.023	0.21
M59 The evaluation system for the organization and the staff includes results of current TQM processes.	0.921	20.133	0.046	0.266	0.66
M61 The organization compares their results with across units and outside of organization	0.987	19.669	0.050	0.153	0.60

Variables	Loading	T-value	SE	Factor Score	R^2
M60 The quality service and system evaluation includes teamwork performance.	1			0.022	0.23
M62 Staffs use the result data for work improvement.	0.958	19.311	0.050	0.294	0.68

Table 13 Second-order measurement model of TQMSS by overall

Variables (TQMSS)	Loading	T-value	SE	Factor Score	R^2
Factor1 Education & Training	0.632	30.204	0.021		0.926
Factor2 Leaderships	0.542	29.223	0.019		0.719
Factor3 Drivers	0.399	24.280	0.016		0.607
Factor4 Continuous quality improvement culture	0.507	20.909	0.024		0.729
Factor5 Interaction & participation	0.415	25.584	0.016		0.635
Factor6 Support and recognition	0.537	30.028	0.018		0.793
Factor7 Cooperation & participation	0.496	32.096	0.015		0.729
Factor8 Monitoring the results	0.478	18.422	0.026		0.601

Table 12 and table 13 illustrate squared multiple correlation coefficients (R^2) for each observed variable of the latent variables, ranging from the low score (0.18) to the high score (0.93) for the overall model.

Summary

This chapter presented the results of analyses of sample characteristics and two research questions. The subjects were 2,165 staff nurses who worked in 1,516 patient units in 13 accredited hospitals. A high percentage of the staff nurses

graduated with a bachelor in nursing degree and worked in either surgical units or medical units. Almost half worked in a University hospital. They were on average 37 years of age and had 10 years of clinical experience. The majority had continued training in TQM of an average of 59.59 hours.

The components of TQMSS consisted of eight factors. The eight factors consisted of 65 items and presented a total of 55.755 % of variance. The resulting eight factors included: (1) Education and training, (2) Leaderships,(3) Drivers, (4) Continuous Quality Improvement Culture, (5) Support and recognition of organization, (6) Interaction and relationships among staff, (7) Cooperation and participation, and (8) Monitoring the results.

The findings of the reliability and validity of the TQMSS included: (1) a content validity index, which was 0.88; (2) construct validity using EFA on the total sample and then confirmed with CFA; (3) Cronbach's coefficient alpha internal consistency reliability demonstrated the alpha of eight factors and a total scale ranging from 0.804-0.952, and the total scale was 0.970.

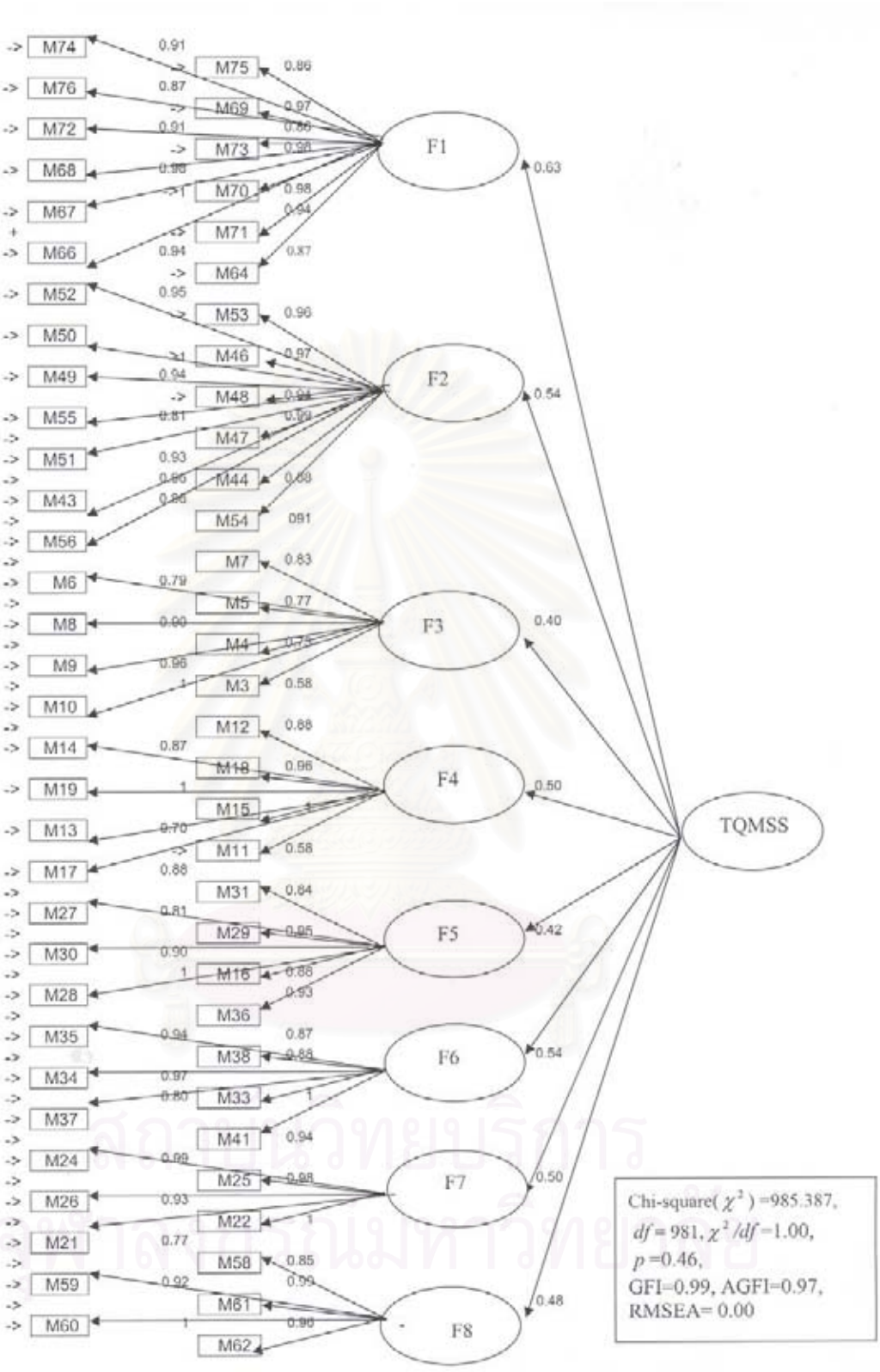


Figure 5 The Measurement Model of Total Quality Management Sustainability as Perceived by Professional nurses (N=2,165)

CHAPTER V

CONCLUSION DISCUSSION AND RECOMMENDATION

This chapter consists of a summary and discussion of findings, conclusion, and the implications for future research. The major purpose of this study was the development and validation of the measurement model of TQM sustainability. More specifically, the study was designed to establish the content and construct validity, as well as the reliability of the measurement of TQM sustainability. The content validity of this measure was determined by the consensus among 10 Thai experts in TQM. Construct validity of the instrument was studied by exploratory and confirmatory factor analysis. The reliability of the TQM sustainability that was investigated in the present study included internal consistency and test-retest reliability.

Research Issues

The study addressed the following research issues:

1. The content validity of TQM Sustainability
2. The construct validity of TQM Sustainability by conducting exploratory and confirmatory factor analysis on the instrument.
3. The internal consistency reliability of the measure of TQM Sustainability

Issues one and two will be discussed in the following section, the validity of TQM Sustainability section. Issue three will be discussed in the reliability of the TQM Sustainability section.

Validity of TQM Sustainability

Content Validity

The content validity of TQM Sustainability was examined by the content validity index (CVI) which is the proportion of items given a rating of quite relevant or very relevant to the objectives of the tools by the ten experts. The CVI of TQM Sustainability was 0.88 %. The CVI of TQM Sustainability reflected a high agreement among experts that items of this instrument were relevant to the objectives of the instrument. Since there is no previous study regarding content validity of TQM Sustainability, the high CVI of the TQM Sustainability may be the result of the revision of the instrument by experts who are experienced in real situations. The other possibility is that all experts in this study worked in the quality management area, whereas two of them are specialist and top executive leader in the Hospital Accreditation program at National level, while two experts work as surveyors, and others related to the TQM program in their organization.

In the pilot study it was suggested that five items of TQM Sustainability be revised. In the main study, there was no suggestion for major change of items. The items, TQMSS 4, 7, 14, 49 and 66 required only slight rewording based on the experts' suggestions. The fewer items needing revision reflected the better content validity of the instrument, compared to the results of the pilot study. In summary, the results of the content validity study indicated that the TQM Sustainability had satisfactory content validity.

Construct Validity

Construct validity of TQM Sustainability was determined by conducting:

a) Exploratory factor analysis to examine if factor structures of the instruments match the theory and previous studies.

b) Confirmatory factor analysis to examine if the models of factor structure of the TQM Sustainability instrument that emerged from the exploratory factor analysis fit the data.

Validity of the Overall of TQM Sustainability Scale (TQMSS)

Due to its psychometric properties the TQMSS offers a valid and reliable measure of TQM sustainability as perceived by staff nurses in patient units at accredited hospitals. The results of this study supported the construct validity of the TQMSS by using exploratory factor analysis with a total sample score (N = 2,165). Then, testing the factor structure by using confirmatory factor analysis technique was used on the same sample. In addition, hypothesis testing was used to examine the construct validity of the TQM Sustainability Scale, the demographic variables and the results.

Exploratory and factor analysis of the TQM Sustainability overall model. The results of exploratory factor analysis suggested that an eight factor model of TQM Sustainability includes: (1) Education and training, (2) Leaderships, (3) Drivers, (4) Continuous Quality Improvement Culture, (5) Support and recognition of organization, (6) Interaction and relationships among staff, (7) Cooperation and participation, and (8) Monitoring the results. The result was consistent with the 3 previous models of structure of TQM Sustainability (Dale,1995; Zairi, 2002: Øvretveit Model, 2003). Although these three models yield the same factor structure of TQM Sustainability they are case study, tested model and conceptual articles.

The strength of the relationships and positive relationship among the eight factors was found. In this study the eight factors accounted for 53.270% of the total variance. The factor structure of the TQMSS was similar to the factor structure of the

Total Quality Management sustaining Assessment Tool TQMSAT (Dale, 1995) and TQM sustainability model of Zairi (2002). It was also comparable to the theory of change theory and innovation adoption. The results of the exploratory factor analysis in this study, therefore, supported the construct validity of the TQM Sustainability.

The 8-factor model of the overall TQM Sustainability Scale was also tested using confirmatory factor analysis. The significant chi-square, which is measure of how well the model fits the data overall, was 985.387 (*df* = 981), significant at .46 level. The chi-square measures the 'fit' in the sense that a small chi-square value corresponds to a good fit and a large chi-square to a bad fit (Kalliath, Bludorn and Gillespie, 1999). Joreskog and Sorbom (1993) pointed out that the use of chi-square analysis was based on the assumption that the models fit exactly to the population, which may not be a reasonable assumption. As a result, the models that fit approximately in the population will be rejected in large sample. Based on this criterion, the 8-factor model of the overall TQM Sustainability adequately fit the data.

Other indices of 'fit', GFI (Goodness of fit Index (0.99), AGFI (Adjusted Goodness of Fit Index) (0.97), and RMSEA (Root Mean Square of Approximation) (0.001), also suggested a good fit of the model to the data. The CFI (Comparative Fit and Conners, 1997) as indicative of the excellence of fit to the data. When considering overall fit indices, the 8-factor model of overall TQM Sustainability was an acceptable model. This model was congruent with both the Zairi's model (2002), which suggested TQM sustainability included Drivers, Stages of Evolution, Learning and innovation, and Culture of continuous improvement, and Dale's model (1995) with its Integrated Internal and external environment, Management style, Policies, Organization structure, and Process of change. In addition the design of the TQM Sustainability measure fitted the data well. The result of the confirmatory factor

analysis in this study, therefore, supported the construct validity of TQM Sustainability.

Reliability of the TQM Sustainability

The internal consistency coefficients (Cronbach's alpha) of the TQM Sustainability measure were above .97, both at the first and second administration of the instruments to the subjects. This is similar to what was found in the pilot study. The Cronbach's alphas found in this study suggested that the TQM Sustainability measure possessed an acceptable level of internal consistency for the further use of this instrument in applied studies.

Discussion

The TQM Sustainability scale (TQMSS) presented in this study represents one of the efforts to develop a measure of TQM sustainability in patient units, which have not previously been developed. This measure focused on the organizational level as an interesting topic and was measured using individual perception. The main purpose of this study was to develop a valid and reliability measure to explore the components of the TQMSS for patient units in accredited hospitals.

By subjecting the original 79-item TQMSS to principal components of analysis, the initial solution yielded 8 factors with an eigenvalue greater than 1. An examination of the Scree plot indicated that factors 7, 8, and 9 should be examined. From the qualitative stage, the TQMSS was hypothesized to have 8 underlying dimensions. The factor loading cutoff point was set at .40. Kline (1994) proposed factor loading greater than .30 can be regarded as significant. Theoretical congruence

in each factor was considered as criteria for factor solution. Finally, the 8-factor varimax solution was also judged to be the most efficient and interpretable.

The 8-factor model of the overall measure of TQM Sustainability was also tested by confirmatory factor analysis. The results of TQMSS as a total scale and the 8 factors with 65 items of the TQMSS were reliable. (coefficient alpha = 0.97). The eight factors included: Factor1: Education and training (12 items), Factor 2: Leaderships (13 items), Factor 3 Drivers (8 items), Factor 4: Continuous Quality Improvement Culture (8 items), Factor 5 Support and recognition of organization (7 items), Factor 6: Interaction and relationships among staff (6 items), Factor 7: Cooperation and participation (6 items), and Factor 8: Monitoring the results (5 items). The discussion of the findings is presented in two parts; the components of the TQMSS and its psychometric properties.

1. The components of the TQMSS

Factor 1: Education and Training of staff nurses

This first factor consisted of 12 items with factor loadings ranging from 0.492-0.772. This factor was labeled as “Education and Training of staff nurses. ” The first component in this study was similar to learning and innovation, one of three categories that are indicators of the TQM sustainability model of Zairi (2002). This proposed that extended production experience provides the employee with an opportunity for learning leading to a predictable decrease the manufacturing cost per unit over time. According to Demimg organizational factors generates and encompasses knowledge. This is congruent with category 5 of TQM sustaining audit tool (TQMSAT) (Dale, 1995). The second of seven dimensions is training in relation to individual and organizational needs. This factor supported a quality sustainability system studied by Øvretveit (2003) that is continued training for all personnel,

which is linked to the practical quality activities they need to do, at convenient times, and using modern adult learning methods. Further, service and quality training must be a part of the introductory education of all new employees Klaus and Thomsen (1994). The implications are that sustaining continuing quality activities must be valued and supported not just by the workplace, but in educational training, since behavioral change is a process through which practitioners can progress with the help of interventions appropriate to their current stage. In addition, Kock (1992) identified ten key components in health care providers' units that can help sustain staff commitment and maintain the initial momentum in training and education. An emphasis on continuous learning and improvement induces a positive culture where there is sufficient behavioural modification to warrant a sustainable TQM climate;

Factor 2: Leaderships

The second factor consisted of 13 items with factor loadings from 0.425 - 0.735. Kock (1992) stated that maintaining senior management and clinician commitment can help sustain staff commitment and maintain the initial momentum. Klaus and Thomsen (1994: 47-49) have proposed that every manager must incorporate service and quality activities in his own department plans. As with one measure of the TQMSS in this study, "All leaders in the organization are committed to TQMSS42." Leaders participate in the TQM program and TQMSS46 leaders are good role models for TQM." In addition, top management oversight of the sustainability system is necessary, including checking that elements are in place and reviewing the effectiveness of the system (Øvretveit, 2003). Similarly to the TQMSS51: "Leaders should monitor TQM results continuously and TQMSS55: "There is continuous monitoring of outcome indicators in the organization." Most

quality experts agree that strong leadership from senior management is absolutely necessary to develop and sustain a quality-based culture in an organization.

Factor 3: Drivers

The third factor consisted of 8 items with factor loadings from 0.467-0.750. This factor was focused on activities that drive or force TQM work continuously. The key drivers that were identified in the literature include work process improvement, positive work experience, customer focus and satisfaction, supplier relationships and performance, support services, and competitive advantage (Zairi, 2002). Three internal drivers are significant, including meeting customer requirements, willingness to invest in new equipment, education and training, and how the organization deals with uncertainty about the future (Dale, 1997). For instance, TQMSS4: Continuing starting new TQM projects drives the organization to always improve, and TQMSS5: Organizations that always improve are more likely to survive than their competitors. Griffiths (1990) considered customer satisfaction as the driving force of the whole quality process. For instance, one participant in a qualitative study said, “Drive of organization gets from marketing and competitiveness will make TQM sustaining”. Lastly, Eccles (1994) proposed the first condition for continued change in an organization is continued pressure for improvements.

Factor 4: Continuous quality improvement culture

The fourth factor consisted of 8 items with factor loadings ranging from 0.455- 0.639. All items reflected staff’ values, feeling, understanding, and minds related to TQM. The culture of continuous improvement means better and better quality, and less and less variation, which results from process management practices. This means that the indicators shown are not necessarily directly linked through a causal relationship. In this present study, culture consists of the beliefs, values, and

underlying assumptions supporting behavioral patterns and artifacts (Zeitz et al, 1997). It is assumed that culture is distinct from TQM programs and practices even though the two often overlap in practice. TQM practices are formal, programmatic, and behavioral, whereas culture refers to attitudes, firmly held beliefs, and situational (and often not formally sanctioned) interactions. One clear operational distinction between the two is that cultural dimensions can be readily recognized without a TQM program present (Zeitz et al., 1997). Sustained improvements can only come through the commitment and participation of everyone involved. An item reflected value, for example TQMSS14: Everyone values TQM when compared to their other work: TQMSS18: Staff wake up and feel challenged to perform TQM.

Factor 5: Interaction and relationship

The fifth factor consisted of 7 items with factor loadings ranging from 0.404-0.714. This factor focused on linking and cooperation among personnel at every level. Interaction is a kind of action which occurs as two or more objects have an effect upon one another. The idea of a two-way effect is essential in the concept of interaction instead of a one-way causal effect. Interaction outside of science includes communication of any sort, for example two or more people talking to each other, or communication among groups and organizations. This factor was similar to the first factor in the category that is industrial relations; managers and staff must share the same objectives and management-worker relationships (Dale, 1995). TQM should lead to high trust, high-discretion relationships through empowerment and teamwork, and participation in decision making. A system is collection of parts which interact with each other and function as a whole to produce an effect. Kock (1992) stated that practicing total communication can help sustain staff commitment and maintain the initial momentum. For example, one participant in a qualitative study said, “There is

Interaction among team work, people, and working. Each jobs or works are interaction". Some items of this factor, TQMSS16: TQM is everyone's responsibility and TQMSS27: Successful TQM requires linking from person to person or team to team.

Factor 6: Support and recognition of organization

The sixth factor consisted of 6 items with factor loadings ranging from 0.486-0.645. Many studies supported this factor. Sebastianelli and Tamimi (2003) analyzed factors on managers' ratings of frequently cited barriers to TQM revealed constructs such as: 1) inadequate human resources development and management; 2) lack of planning for quality; and 3) inadequate resources for TQM. Zelealem and Getachew (2002) emphasized short-term profitability, lack of resources, business planning and vision as being among the main obstacles to the adoption of a formal TQM programs. Resource and reward were significantly correlated with participative management behavior leading to employees' participation (Piriyawadi, 2002). Appropriate rewards must also be provided and these should be aligned to the quality performance indicators. An example of item, TQMSS35: Your organization provides enough people, equipment, time, experts and information technology to achieve TQM goals.

The last stage of change involves seeking further confirmation about the innovation leading to retaining or discontinuing it (Roger, 1983). Evidence of effectiveness is that other people value the activities, especially influential peers, the profession, and that management confirms this by recognizing and rewarding the activities. Behavioral change is a process through which practitioners can progress with the help of interventions appropriate to their current stage, and that the individuals' environment of social supports and rewards is important to maintaining changes in behavior. Change is more likely to be maintained if the individuals'

environments support quality activities. Continuing quality activities must be valued and supported, not just by the workplace, but in the educational, professional, community, administrative, financial, and political environments.

Factor 7: Cooperation and participation

The seventh factor consisted of 6 items with factor loadings ranging from 0.535- 0.630. This factor is congruent with previous studies. In them TQM success has resulted from employee involvement (Anjard, 1995). Furthermore, job involvement and positively significant relationships, and predicted the job performance of professional nurses (Saisadudee, 2001). For examples, TQMSS24: Staff work as multidisciplinary teams, cross-functional teams and/or patient care teams to improve the quality of care, and TQMSS25: More than 90% of staff, regardless of discipline, participate in the TQM program.

Factor 8: Monitoring the results

This last factor consisted of 5 items with factor loadings ranging from 0.483-0.662. One of the most powerful ways of supporting constancy of purpose is a regular, objective assessment of the company's TQM efforts. The group felt that if they audited their own operations, there would be a clear conflict of interest (Hutton, 1992: 45). According to Saithanya (1994) the major factors which affected the maintenance of quality system are; internal quality audit, performance indicators, corrective actions, management reviews and training. The internal quality audit includes planning, conducting, reporting and evaluating. For example, TQMSS58: An internal audit of TQM occurs every six months.

Recommendations

The TQM Sustainability Scale was developed to measure the level of TQM sustainability in patient units in accredited hospitals. This measurement concentrated on the patient unit level of TQM sustainability. The TQMSS from this study had robust psychometric properties that will be useful to assess the sustainability status related to TQM in hospitals in eight dimensions including: (1) Education and training, (2) Leaderships, (3) Drivers, (4) Continuous Quality Improvement Culture, (5) Support and recognition of organization, (6) Interaction and relationships among staff, (7) Cooperation and participation, and (8) Monitoring the results. These are all as perceived by nursing staff. However, other methods of assessing psychometric properties of the TQMSS are recommended, such as known group validation and multi-trait-multi method approach.

The TQMSS may prove to be a useful measure for the success of nursing professionals, research, and the theory development.

1. Nursing practice

The use of the TQMSS in this study can determine the level of sustainability related to TQM in patient units. Nurse Managers can use the TQMSS to assess the level of sustainability of TQM in their units before and after quality improvement. It helps them to know the direction needed for improving and supporting their works. The results of this will provide health care providers, particularly nurses, and nurse managers, with guides for maintaining quality and decreasing risk factors. With that knowledge, nurses can also develop programs or guidance regarding TQM sustainability which will further promote quality in nursing practice. Consequently, as an ultimate outcome, that knowledge will be useful to

enhance continued quality of care, since nurses will provide care for the patients' best interests based upon TQM sustainability model.

2. Nursing education

Nursing educators can use this valuable scale to demonstrate to nursing students the extent to which sustainability relates to quality management. Nursing students can learn from their educators from a complete and perfect model that may guide them in practice after completing their studies.

3. Nursing administration

At present, total quality management sustainability is an important concept that is relevant to all hospitals and nursing organization. Nursing administrators can use the results of the implication of this TQMSS study for planning the use of resources such as manpower, budgets and organizational system that can prevent decreased TQM.

4. Nursing research

The TQMSS will be very useful for researchers who are interested to describing and applying the components of TQM sustainability in similar settings and populations. In addition, this can also be provided to researchers for measuring the extent of TQM sustainability in patient units as a result of an intervention study. For example, using the TQMSS before and after an intervention program of TQM, a valuable measurement model can determine the effectiveness of study programs. Further study regarding psychometric properties of TQMSS in other types of hospitals is recommended.

5. Theory development

The results of this study demonstrate that TQMS Scales can have reliable and valid components. If other researchers confirm this result in diverse cultural

backgrounds or by using another methodology to test this result in the same group or other groups, using processes such as confirmatory factor analysis (CFA), then a theory of TQM sustainability can be developed. In brief, the TQMSS developed through this study can generate a body of knowledge of the TQM sustainability concept at the unit level and can be used in further TQM sustainability scale studies.

Limitation of the study

Limitations related the study design, data collection, and analyses should be considered when interpreting the finding of this study.

Firstly, Generalization from this study should be made cautiously due to the following factors. Firstly, the research design is cross-sectional. Secondly, the sample was limited to the nurses working in government accredited hospitals. Therefore, this sample is not representative of all accredited hospitals. The results may not be generalized to other populations.

Secondly, this study uses a cross-sectional design, which does not allow for changes over time. Thus, longitudinal studies may concisely explain and predict TQM sustainability revealing changes, development process, and causal explanations.

Summary

The purpose of this study was to develop a measurement model (scale, items) to explore the components of TQM sustainability as perceived by staff nurses in patient units in accredited hospitals and to determine its reliability and validity. The items of the TQMSS were developed during September 2005 to January 2006 from the qualitative study carried out between April and October 2005 by the investigator. Combining the literature review with the themes from 10 experts experience in TQM

activities and interviews and validated by 10 experts on TQM in hospitals, seven themes of TQMSS emerged including: Drivers, Culture, Interaction/cooperating/communication, Reward and recognition, Leadership, Monitoring the results, and Education and training. In the quantitative study, the content validity of TQMSS was determined by ten Thai experts. The pilot test yielded 76 items of TQMSS, showed high reliability with alpha of 0.967. By subjecting the 76-item TQMSS to principle components analysis, examination of the initial solutions yielded 11 factors with eignvalue greater than 1. An examination of the scree plot indicated that 7, 8 and 9 factors should be examined. The resulting eight factors consisted of 65 items with high reliability of alpha 0.970 and displayed a total of 53.270 % of variance.

Confirmatory factor analysis indicated that an eight-factor model provided, with minor modification, acceptable fit to the data. The final model consisted of 65 items with eight factors: The resulting eight factors included: (1) Education and training (12 items), (2) Leaderships (13 items), (3) Drivers(8), (4) Continuous Quality Improvement Culture(8), (5) Support and recognition of organization(7), (6) Interaction and relationships among staff (6), (7) Cooperation and participation (6), and (8) Monitoring the results(5).

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APPENDICES

Appendix A

Qualitative phase:

A. 01: Components of TQM Sustainability in patient unit at accredited hospitals: Focus on expert interview results

A. 02: Table grid for TQM Sustainability

Components of TQM sustainability in patient unit at accredited hospitals: Focus on expert interview results

Abstract

The identification of TQM sustainability components in patient unit is important for quality management in hospitals. This article identifies 8 components that define TQM sustainability. Managerial implications for leader are discussed.

Introduction

Total quality management is an essential element of medical services quality improvement by applying the Hospital Accreditation (HA) process as a beneficial approach for Thailand's medical services and public health. HA standard is based on TQM principles. Quality improvement by using the Hospital Accreditation (HA) approach is a concept and practice that yields beneficial results to patients, customers, hospital personnel, the hospital, the Faculty of Medicine, the society and the country as a whole. The operation based on key characteristics of high performance organization of nursing departments in hospital participated in HA project were higher than non participated hospitals (Laddawan Janyana, 2000). Lamaiporn Lohityothin (1999) founded that there was a highly positive relationship between TQM and effectiveness of patient units. The overall risk management of head nurses who were trained in safety program in hospital participated in HA program was higher than those with no training. (Pawaporn Paisanwatcharakit, 1999) Nurses who had continued the QI (quality improvement) work over a 4-year period reported more activity in searching research literature compared with those who had discontinued the QI work. The QI-sustainable nurses also reported more frequent participation in research-related activities, particularly in implementing specific research findings in practice (Wallin, et al., 2002).

However, sustaining process improvement momentum has proved very difficult (Kaye and Anderson, 1999; Griffiths, 1998), and eventually initial improvements made in the focus areas can be eroded back to their original pre-improvement level (Dale, 1996). TQM should not be reinvented at regular intervals but should become part of every day working life. TQM should not be a fad or a flavor of the month but a durable culture that promotes business improvement over time. One of the major problems of quality management is that it has been fragmented, misunderstood and not taken seriously. Only sustainable TQM and integration of different quality management initiatives will convince business managers of the benefits to be accused. Without sustainability there is little benefit to be gained from TQM (Curry and Kadasah, 2002: 209).

Almost all hospitals that have achieved accreditation status are asking the very same question. For example, we have received accreditation and now what, how can we maintain the momentum, the enthusiasm and commitment of the staff to avoid the relaxing and falling back into the old routine and system of doing things the way they were done before accreditation. Jitsiri Khannguan (2003) found that staff practices quality improvement discontinuously and separately not related to their job. In shortage nurses situation, staff nurses have to face and deal with various changes, difficult management, complicated treatments and some advanced technology which may lead to decreased quality work. Individuals may modify their behaviors and

participate in change during the course of a focused improvement effort. But if they do not emerge from the effort with fundamentally new capabilities, new beliefs and a new sense of purpose associated with the change, old behaviors may soon return and the performance benefits erode away. This will lead to the old ways of working.

Many hospitals are followed by slowing down of TQM activities after accreditation. The Institute of Hospital Quality Improvement & Accreditation (HA-Thailand) has found that 12 of 20 hospitals could not pass re-accreditation in two years later (2004). In addition, there are many quality activities likely decreased within 6-12 months after pass accreditation (HA-Thailand, 2003). In nursing shortage situations, staff nurses have to face and deal with various changes, difficult management, complicated treatments and some advanced technology which may lead to decreased quality work. There are some very important principles to follow in order to maintain the accreditation activities.

One area of particular concern is that, following the launch of the TQM program, a period of high optimism ensues, to be followed by the slowing down of progress, and signs that improvements are becoming more difficult to achieve. Foster et al (1994:42) found that TQM is likely to fail or run out of stream 18-24 months into the endeavor. This difficulty in maintaining and spreading process improvement has made many companies and hospitals search for the way to sustaining process improvement after accreditation. A number of previous studies revealed that there were many indicators of the sustainability of TQM, especially in Western countries and European countries.

TQM sustainability is defied as the condition of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance. To maintain or keeps up or prolongs TQM that already exist for a time while improving quality. Maintaining behavior, continue with new systems and continuous achievement of targets and goals. Receptive to new ideas, adapt to a continuously changing environment and changes unfold with time in a manner unique to the context of the organization. It extents the new ways of working and improved outcomes becomes the norm, keeping something at a certain level, of avoiding decline, not reverted back to the old way or old level of performance. It means holding the gains and evolving as required. It includes five aspects: External and internal drivers, stage of evolution, Holding the gains, Learning and Innovation, and Culture of continuous improvement.

Due to the scarcity of the studies that can shade and provide a better and sound explanation of perceived TQM sustainability so the study of the measurement model of perceived TQM sustainability in patient units, accredited hospitals is needed. It was not known what components of perceived TQM sustainability in patient units at accredited hospitals. In addition, there was no available instrument to measure the perceived TQM sustainability. It is expected that the finding of the study would be of help in determining the utility of the models in explaining perceived TQM sustainability in patient units and in successfully intervening to increase level of perceived TQM sustainability. This knowledge may be useful for nurses and other health professionals in designing and managing quality. This study present qualitative data related to TQM sustainability and framework initial components of TQM sustainability

Purposes of the qualitative study

This study, as a part of dissertation aims to explore and describe meaning of TQM sustainability and its components by qualitative study. In order to meet such a research requirement and answer this question, it was decided that the strategy of semi-structured interviews would be used to obtain information on the areas identified for the research. It was obvious that semi-structured interviews could obtain more dynamic, detailed information on TQM sustainability. A qualitative method typically produces a wealth of detailed information about a much smaller number of people and cases. This increases understanding of the cases and situations studied but reduce generalization (Patton, 1990).

Methods

It started with interviews experts of quality management to develop the TQM sustainability model applicable in practice, the meaning of TQM sustainability, and problems and difficulties of TQM sustainability. A qualitative, descriptive design was uses for this study.

Two qualitative aims were explored:

What is the meaning of TQM sustainability in patient units at accredited hospitals?

What are the predominant components of TQM sustainability in patient units at accredited hospitals?

The sample population consisted of a convenience group of 10 experts of TQM in hospitals of Thailand. Inclusion criteria consisted of selecting quality managers in a managerial, director, or executive role.

Data collection and sample

Informal, semi-structured interviews were conducted with 10 experts to identify the meaning of TQM sustainability and the predominant components of TQM sustainability in patient unit (April 2005-July 2005). Sample included 2 physicians, head of quality management in national level,1 Director of Accredited Hospital,1 nurse educator, 1 nursing administrator, 1 nurse of quality facilitator, 3 head nurses from different hospital level and 1 senior nurse. Interviewees with a high level of seniority are more likely to know much more information for the research requirements. Accredited hospitals may have more experience in how to sustain TQM. They may also experience the difficulties of maintaining their quality management systems. Interviews ranged from 60-90 minutes. The conversations were tape recorded. A list of precise questions will be used for the interviews. However, the guidelines are derived from the literature reviews. One interview was conducted per subject by researcher. Additional questions were incorporated into the discussion to serve as prompts to elicit further comments or to clarify meaning. Conclusions drawn from the interview data are given to experts to review again. When no new information is identified, the interview is ended.

A core set questions served as a guide.

I would like to find out what your definition of TQM sustainability in patient unit is ?

Describe what TQM sustainability means to you.

What are your predominant attributes of TQM sustainability as an expert?

What are the principal barriers to sustain quality improvement in general practice?

Data analysis

Content analysis described by Waltz, Strickland, and Lenz (1991) is used to discover themes that identified TQM Sustainability issues. Content validity determined by three researchers. This produced a list of themes to be compared with those of the researchers. Those deemed inconsistent were discussed with the respondents, clarified, and resolved via phone conversation and email.

Of the expert interviewed 90 % validated the same structure. The experts referred to all of the preexisting categories, with sub-categories, and several categories with sub themes emerged during data analysis.

Table1 displays the list of categories from inductive analysis of the interview data. The preexisting categories and sub themes are discussed separately, following, and using examples from the interviews to illustrate how findings link to the conceptual framework.

Findings and Discussions

Meaning of TQM sustainability

The entire expert interviewed had some knowledge of the term TQM sustainability. Definitions ranged in complexity, indicating the varying extents of understanding of the concept. Some experts considered TQM sustainability to be basically processes, whilst others provided definitions of TQM sustainability which included static and dynamic.

Only two experts considered TQM sustainability concept to be a process.

….Something has happened and continuing, none stopped, not disappear, do continue (CEO HA)…

…Quality improvement by PDCA or ADR cycle which rooted in routine activities of work unit as natural, quality improvement culture (CEO hospital)…

Different experts have defined and addressed TQM sustainability concept in different ways.

…Activities based on quality improvement process continuously and better and better quality by participation of every level of staff team. Team or unit is awareness and want to improve work system for quality work and response to patient and client need. (Head ICU)…

…Quality is not something that we can effectively manage; a multi-disciplinary environment such as a hospital is need more conclusive to supporting and sustaining a philosophy of CQI. (HA consultant)…

…Practice continuity by understanding, giving important, interested in doing, maintaining, awareness, and feeling about it. (Senior staff)…

…Doing from mind or heart of staff/ team that know and understand in what they do, do little by little and continuing without administer pressure who is result based

management. Then they (all level) will awareness and want to improve their work and work units better continuously. (Director of Nursing Division)…

…Units have quality service improvement, solving services problems in organization structure and working. Evaluation system includes staff performance and services, good feed back system and improving quality continuously. More half staff understands principles, methods and sees the linkage and impact among sub-units, units. Personnel participate with vision. Facilitator system suggests and advises about quality improvement. Knowledge sharing system is continued. Benchmark make with other unit both internal and external… (Nurse educator)

…Developing and improving continuity all organization with mind ness of all staff who feel /awareness about important of quality and keep in mind that doing today is better than yesterday (Head nurse)…

The definition of the concept presented by experts were interviewed is similar to the existing definitions proposed in the literature review. TQM sustainability was first defined by Brinkerhoff & Goldsmith(1992 cited in La Fond, 1995:30)) as: not an end state but ongoing input/output processes, capture this movement overtime/capacity for continuity. Dale (1997) also emphasised that maintaining a process of continuous improvement, taken to be increasing the pace of improvement and, at the same time, holding the gains made. Voinov(2002) defined as keeping something at a certain level, of avoiding decline Øvretveit (2003) defined as continuing to use quality activities to maintain target results. Modernisation Agency(NHS, 2004) added that it's no going back, not reverting to the old ways, and ensuring that new practices are continued. Zairi & Liburd (2001) focused on the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance.

Components of TQM sustainability in patient unit

A total of 8 components of TQM sustainability were derived from the expert interviews using the procedure described above. Eight components are namely drivers, culture, communication/cooperation/interaction, reward and recognition, support, leadership, monitoring and results, and education.

1.Drivers

Drivers (need for TQM) describe how the organization leads and responds to internal and external forces. The driver can be interpreted as the TQM approach to quality that exemplifies characteristics that an organization needs to display to compete successfully in the market place. As a business imperative, it must re-establish itself to be quicker to market, customer-focused, innovative, and flexible and better able to cope with rapid change. A summary of the key drivers that were identified in the literature include - work process improvement, positive work experience, customer focus and satisfaction, supplier relationships and performance, support services and competitive advantage (Zairi, 2002). Expert interviews identified drivers as competitiveness, survival, accreditation, leader, policies, and performance review, celebrate successes, mission vision value driven, and develop a clear policy

and purposes, a journey, mindset on CQI and new pilot projects, and internal and external survey. These can be divided into external forces and internal forces.

…Competitiveness, survival and accreditation make continuous improvement ….TQM sustainability still depended on external drive from surveying or accreditation process… drive of organization gets from marketing and competitiveness will make TQM sustaining… (CEOHA)

In the bearings manufacturer its main competitors are known to employees, but there was a genuine interest in having more data about them. It was felt that this would stop some employees becoming complacent and alert others to the threat.

Six experts described internal drivers as Mission vision value driven, develop a policy , purposes goal policies guideline clearly, clear goals, objective & policies, QI plan of unit match policies, clear vision and continuous core policies:

… Change leader, change policies make quality improvement declined.(CEO HA)

….Policies and goals of organization related quality improvement are clear for excellence(Head ICU)…
….Interestingly hospital accreditation is based on the principles of CQI and hospitals will often develop a policy statement supporting CQI. In my opinion this is nothing more than words written on paper and used as marketing tools for hospitals to attempt to demonstrate commitment to CQI and eventually achieve accreditation.(HA consultant)…
….Leadership determines focus and clarifies policies that support and drive continuously…(TQM facilitator expert)

… Mission, vision and values are essential to supporting the philosophy of continuous improvement. Staff need to understand have continuous improvement supports the mission and vision. They need to appreciate it is a journey and not a destination. What a hospital values will drive the behaviors of its staff …..(HA consultant)

Brannan (1998) noted that recognizing and celebrating successes was an extremely important aspect of the implementation program if ongoing commitment was to be secured.
….An organization/ hospital must celebrate continuous quality improvement successes large and small. These celebrations must be visible to staff and involve them… (HA consultant)
….Leaders set or establishes the quality management center as multidisciplinary included physicians…. (Senior nurse)
….External survey is necessary, make change and she feel proud when passed accreditation
(senior nurse)
….All level are forced or driven by internal survey rather than external survey because we can do more often... (TQM facilitator)

2. Culture

Culture describes how the organization creates a work environment that reinforces behaviors. Essentially TQM sustainability is largely dependent on the following: the creation of a culture of continuous improvement, learning and innovation so as to have in place a sustainable climate of growth; (Zairi and

Liburd,2001) A positive culture is one where employees experience pride in their work, where everyone is involved and committed to continuous improvement, where people freely help each other to achieve goals and have fun during the process. In positive cultures people feel appreciated, their opinions are solicited, and action follows suggestions. A total quality culture is one where there is an attitude based on trust, teamwork, objective problem solving, and shared accountability.

….Culture is mature; if culture is not embedded when long time it will decrease or lower… (CEQ HA)

Managers at all levels and all staff must have a positive attitude towards quality to ensure that there is organization-wide commitment to the TQM philosophy and the tools and techniques of quality improvement. (A.S. Sohal, M. Terziovski, 2000)This implies that responsibility is not assigned only to a specialized quality department or person. Everyone in the organization must integrate the TQM philosophy into his/her day-to-day activities and decision making.

….Staffs have good attitude with CQI, awareness and give important, self-development continuously, accept other opinion… (Head ICU)
…..People do by understanding without order or command or authority…
…..Do as routine work, rooted in routine work… (TQM facilitator)

…….In orders to sustain CQI we need to have it embedded throughout our hospitals. Only when all staff in a hospital understand and truly buy-in to the fact that quality is everyone‘s responsibility will we actually achieve sustainability of CQI…. (HA consultant)

……The philosophy of continuous improvement must be understood and supported by all levels of staff in the in the hospital. The commitment to continuously improve what we do must come from the heart and mind. Not unlike an individual’s religious belief it must be upheld in our everyday work in the hospital…. (HA consultant)

……..Continuous improvement is not a “fast track” to pass Hospital Accreditation. It is changing our mindset on a daily basis to focus on how we can improve what we do. A change in our mental mindset that results in a focus on continuous improvement is what we need to achieve….. (HA consultant)

3. Interaction/cooperating/communication

TQM is often said to lead to high trust/high discretion roles and relationships through the use of teamwork in all its various forms within a process of continuous and company-wide improvement. Self-managing work groups, empowerment, increased participation and the involvement of employees in decision making are related factors. At the heart of TQM is the concept of intrinsic motivation-involvement in decision making. Employee involvement is a process of empowering organizational members to make decisions and to solve problems appropriate to their level. The logic is that the people closest to the problem or opportunity are in the best position to make decisions for improvement if they have ownership of the improvement process.

….There is Interaction among team work, people, and working. Each jobs or works are interaction….Good communication among personnel makes positive outcome, cooperation and good relationship…. (CEO HA)

…..Everyone participate with TQM activities, someone is a chair someone is a member. (Senior nurse)

……Cooperating and problem solving with other department…(Director of Nursing)

…….Information is distributed and communicated, especially that make staff wake up and feel challenge or enjoy working (Head nurse)

……Each factor interact together, person to person, team to team and policies and practices…..(TQM facilitator).

…..Create accepted other person as a culture… Good relationship among personnel and participants …. Extent community of practices… (Nurse educator)

……Patient care team & cross functional team have to participate with…(DON)

4. Reward and recognition

Quality- and customer-related performance indicators must be developed as part of the performance review system (reviewing both processes and individuals), at all levels of the organization. Appropriate rewards must also be provided and these should be aligned with the quality performance indicators. (A.S. Sohal, M. Terziovski, 2000) operation of the business. Zhang et al., (2000) state that recognition and reward activities should effectively stimulate employee commitment to quality improvement. To effective support organization's quality efforts, they need to implement an employee compensation system that strongly links quality and customer satisfaction with pay (Brown et al., 1994) Out of 10 experts interviewed in this study, 9 reported that lack of time and incentive deters staff all level from participating TQM activities.

……Reward not link quality activities…. (CEOHA)

……Lastly money is a motivator for most and consequently career advancement or promotions used and should be directly tied to an individual's demonstrated commitment to continuous improvement….. (HA consult)

…….Support personnel are moral and willpower or spirit clearly e.g. decrease workload, incentive for quality activities….. (Educator nurse)

……Positive reinforcements in working…..(Nurse Educator)

5. Support

Adequate resources to meet the business plans and quality improvement actions that have been developed are also needed as well as positive responses to

improvement team suggestions to implement the findings from their projects. The willingness of a business to finance new machinery and equipment, to invest in education and training, recruitment and to improve the fabric of buildings and the associated environment, can affect TQM in many ways.

The analysis of qualitative data indicated that administration support was considered a major component to extend their quality activities for continuous quality improvement. Supporting included un workload, resources: people, equipment , time expert and IT.

….Hospital accreditation is based on the principles of CQI and hospitals will often develop a policy statement supporting CQI… (Consultant HA)

…Workload and try to make difficult quality activities make TQM decreased….. (CEOHA)

…..Mechanisms that promote and support staff to participate continuously e.g. evaluate quality service….(Head ICU)

…..Facilitators cover all level for suggestion, monitor and propose new technique or tool related TQM …. (Senior nurse)

…Enough supports e.g. personnel, equipment, and information system….
Recognition, support their mind and moral with incentive or other ways, sharing best practice area…. (Director of Nursing Service)

6. Leadership

Senior management acts as a driver of TQM implementation, establishing values, goals, and systems to satisfy customers' needs and expectations and improve organizational performance. According to the Baldrige criteria, this category examines top management's leadership and involvement in creating and sustaining a customer focus, while maintaining clear and visible quality values. The experts interviewed concluded that senior executives must provide a vision of customer orientation, clear and visible quality values, and high performance expectations. They emphasized the importance of executive leadership while developing and sustaining the quality function, the quality mission, goals, and plans.

….There is a quality manager who is assigned and follows performance, incentive link the results…. (Head ICU)

….CQI must be accepted by the leadership of a hospital as a philosophy. Leadership commitment to the philosophy and principles of CQI is imperative to sustaining a culture committed to continuously improving system/ processes….(HA consultant)

….All levels of leadership must demonstrate through their daily actions support and commitment to continuous improvement…. (HA consultant)

….Leaders often comes to walk around and improve when staff suggestion…. (Senior nurse)

…..Leaders are really concern with TQM, give suggestions and follow the results continuously….(DON)

7. Monitoring and results

Continuous monitoring and evaluation of process and providing good feedbacks are most important factors in sustaining TQM. Self-assessment highlights strengths and improvement opportunities, and drives continuous improvement (Oakland, 2000). Thinking about this in a practical way it would follow that a hospital's performance review/ appraisal system should be directly connected to what it values in CQI.

…..The performance review of all staff should have a focus on continuous improvement. The forces should have two components organizational continuous improvement (what did the individual do to improve the service processes of the hospital and finally what did they do to improve their individual performance.)…(HA consultant)

….Monitoring outcomes of organization that are not congruence with policies.. (CEO HA)

….Organization or units have monitoring performance appraisal or evaluation system for teamwork clearly…. (Head ICU)

…..Quality assurance program of nursing care used data and have quality activities, benchmark with other units and outside….(Head ICU)

…..Client satisfaction and staff are happy from quality improvement work…(CEO hospital)

8. Education

Employees, from top to bottom of an organization, should be provided with the right level and standard of education and training to ensure that their general awareness and understanding of quality management concepts, skills, competencies, and attitudes are appropriate and suited to the continuous improvement philosophy; it also provides a common language throughout the business. The structure of the training program may incorporate some updating of basic educational skills in numeric and literacy, but it must promote continuing education and self development.

….Give knowledge to staffs e.g. communicates the results of services, review poor performance….. (Head ICU)

…..Organizational learning climate all time, knowledge sharing, participate learning, knowledge management or system….. (TQM facilitator)

….Refresh or continuity training to staff and team all time…(Director of Nursing Service)

….Training quality improvement activities to new generation and assigning TQM activities to them for practicing TQM continuity….Leadership development of org staff is at least 40 %....Educate the way to knowledge sharing continuously and create more community of practice…. Personnel study visits other unit in organization, outside, other countries….Level of understanding related system thinking in all level, units, inter-unit and hospital….(Nurse educator)

Implication for leader

This study has produced a total of 8 components of TQM sustainability from experts interviewed. The components are drivers, culture, communication/ cooperation /interaction, reward and recognition, support, leadership, and monitoring and results. In order to sustain TQM and enhance quality improvement, administrators should build organization wide consensus on components experts consider.

Categories	CEO HA √ all	Consultant	Director of NS	Facilitator	2 Nurse managers	Senior nurse	CEO Hosp	Head of ICU	Teaching expert
1 Drivers Int. & Ext. change Force structural Change	Competitiveness Survival accreditation Leader Policies	√ Performance review √Celebrate successes Mission vision value driven √Develop a policy √A journey √Mindset on CQI	New pilot projects √Purposes goal policies guideline clearly	√ Internal survey >external survey	√ TQM unit located in org structure √New QI projects √ Clear objective & policies	Determining key performance	External & internal drive Improvement for long time	Quality manager QA system √ used data and have quality activities √Clear policies and goals √ QI plan of unit match policies	Positive reinforcements √clear vision and √continuous core policies
2 Culture Embedded Commitments Tie CQI to core values	Mature Embedded Core value	√ Committed to CQI system/process √ Embedded in daily activities Staff understand √Everyone responsibility Value on CQI: heart & mind	√ Awareness & commitment of staff/team √ Understand the same √Dedicated of staff Commitment & participation	√Do by understanding √Routine work √Rooted in routine work by themselves	√Staff wake up & feel challenge √Continuous improving √Mind-ness in QI Knowledge & √understanding	embedded	QI integrated in routine work	√believed & awareness of √patient need good attitude with CQI give important √accept other opinion.	system thinking understanding TQM culture of accepting others
3 Interaction /cooperating Multidisciplinary team All participate communication	Team Work &job Communication	Multi-disciplinary	√PCT Cross √functional team √Cooperate with Other departments	√Person to person √Team to team √Policies & practices	Information distribute & communicated Teamwork & staff	Q Mgt center as multidisciplinary		Communicate to all staff Promote all to participate opinion	√Community of practice √Good relationship among staff, unit, team

Categories	CEO HA √ all	Consultant	Director of NS	Facilitator	2 Nurse managers	Senior nurse	CEO Hosp	Head of ICU	Teaching expert
Participation		Supported by all levels of staff	√All staff √All team			√Everyone-chair & member	team	Mechanism to promote staff to participate	√assigning TQM to new generation √participation in thinking and practicing
4 Reward & Recognition Tied to appraisal incentive Celebration / recognition	Linked to quality activities	√Appraisal system of individual improvement connected organizational value √Money/ career advancement be tied √commitment to CQI Staff achievements	√Support mind & morale Recognition incentive	√Without command	√Admiring √ Reward linked policies	√Recognition linked to √performance Reward and incentive		√incentive link the results	√incentive for quality activities Positive reinforcement
7 Monitoring Indication Benchmarks maintaining	Outcomes congruent with QI policies			√Outcome indicator	√Indicators related customer satisfaction, complaints, incident report , CQI projects	√Continuous monitoring Internal audit every 6 months passed accreditation	Evaluation system Results of working	√performance appraisal or evaluation system for teamwork Evaluate quality service √Benchmark with other units and outside.	
Results					Staff enjoy working		Client satisfaction Happy staff	Staff loyalty to organization Evaluate quality service communicate results	

Categories	CEO HA √ all	Consultant	Director of NS	Facilitator	2 Nurse managers	Senior nurse	CEO Hosp	Head of ICU	Teaching expert
6 Leadership Philosophy/model Communication Commitment Participation Assignment motivation		√Philosophy of CQI √Commitment √Daily actions support	√Concern TQM √Give suggestions √Follow results cont.	√Focus & clarifies policies supporting and drive cont. Do without command	√Commitment all level √Give important & understand √Support TQM activities	Part of dairy work Walk around Improve with staff suggestion	Give important	√ Model of CQI Communicate goals of quality management	√ all Commitment to TQM 40 % of staff Assign TQM a duties
5 Supporting Un workload Resources: people, equipment ,time expert ,IT Workload	Workload included QI	√CQI √Mission, vision	√Personnel, √equipment & √information system √Mind & moral	Knowledge management	√Facilitators for √suggestion & give knowledge √Make simplicity Goals related to TQM	Supported by policies IT	Resources & time	Give knowledge to staffs Policy & goals clear	√personnel's moral and willpower staff ability in using √technology √decrease workload
8 Education			√Refresh √Continuity training all time √Sharing best practice	√Learning climate √Knowledge sharing √Participate learning		√Staff awareness7 √understanding of TQM Continued train all levels		√Knowledge sharing among staff, units and cross units √self-development continuously	√Training CQI to new generation √Leadership development for staff √Ways to knowledge sharing √study visits System thinking system

Appendix B

Protection of Human Subjects

B.01 An IRB Approval Letter of the Director of Center for Health Care Research

B. 02 Two Approval Letters of the Director of Sample Hospitals

B. 03 A Cover Letter for the Surveys

SUB.EC 49/395-009

คณะแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์
ตำบลคอหงส์ อำเภอหาดใหญ่
จังหวัดสงขลา 90110

หนังสือรับรองนี้ให้ไว้เพื่อแสดงว่า

โครงการวิจัยเรื่อง : การพัฒนาและทดสอบรูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วยโรงพยาบาลที่ได้รับการรับรองคุณภาพ

หัวหน้าโครงการ : นางสมสมัย สุธีรศานต์

ภาควิชา/คณะ : ฝ่ายบริการพยาบาล คณะแพทยศาสตร์

ได้ผ่านการพิจารณาและได้รับความเห็นชอบจากคณะอนุกรรมการพิจารณาจริยธรรมการวิจัยในคนจากเวชระเบียนและสิ่งส่งตรวจจากร่างกายมนุษย์ ของคณะแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์ แล้ว

ให้ไว้ ณ วันที่ 2 สิงหาคม 2549

.....ประธานอนุกรรมการ	.....อนุกรรมการ
(ศาสตราจารย์นายแพทย์หเทิญ ถิ่นธารา)	(รองศาสตราจารย์แพทย์หญิงจิตเกษม สุวรรณรัฐ)
รองคณบดีฝ่ายวิจัยและนวัตกรรม	ภาควิชาสูติศาสตร์และนรีเวชวิทยา
.....อนุกรรมการ	.....อนุกรรมการ
(ผู้ช่วยศาสตราจารย์แพทย์หญิงกอบกุล ตั้งสินมั่นคง)	(ผู้ช่วยศาสตราจารย์แพทย์หญิงธิดา เอื้อกฤดาธิการ)
ภาควิชาพยาธิวิทยา	ภาควิชาวิสัญญีวิทยา
.....อนุกรรมการ	.....อนุกรรมการ
(ผู้ช่วยศาสตราจารย์นายแพทย์แมนสิงห์ รัตนสุคนธ์)	(นายแพทย์วรพงศ์ เชาวน์ชูเวชช)
ภาควิชาจักษุวิทยา	ภาควิชาศัลยศาสตร์

ที่ ศธ. 0521.1.0601(10)/ ๒๐๑๑

คณะแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์
ตำบลหาดใหญ่ อำเภอหาดใหญ่
จังหวัดสงขลา 90110

4 สิงหาคม 2549

เรื่อง แจ้งมติที่ประชุมคณะกรรมการพิจารณาจริยธรรมการวิจัยในคนจากเวชระเบียนและสิ่งส่งตรวจจากร่างกายมนุษย์

เรียน นางสมสมัย สุธีรศานต์

อ้างถึง หนังสือที่ ศธ.0512.11/ 1392 ลงวันที่ 27 มิถุนายน 2549

สิ่งที่ส่งมาด้วย หนังสือรับรองฯ 1 ฉบับ

ตามหนังสือที่อ้างถึง ท่านได้เสนอโครงการวิจัยเรื่อง "การพัฒนาและทดสอบรูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กรในหอผู้ป่วยโรงพยาบาลที่ได้รับการรับรองคุณภาพ" เพื่อเข้าพิจารณาด้านจริยธรรมการทำวิจัยในคน และขออนุญาตเข้าเก็บข้อมูลในโรงพยาบาลสงขลานครินทร์นั้น

จากการประชุมคณะกรรมการพิจารณาจริยธรรมการวิจัยในคนจากเวชระเบียนและสิ่งส่งตรวจจากร่างกายมนุษย์ ครั้งที่ 8/2549 วันที่ 2 สิงหาคม 2549 คณะกรรมการพิจารณาแล้ว มีมติดังนี้

- อนุมัติ โดยไม่มีข้อแก้ไขและอนุญาตให้เข้าเก็บข้อมูลในโรงพยาบาลสงขลานครินทร์ได้
- ขอให้จัดส่งผลงานวิจัยให้โรงพยาบาลสงขลานครินทร์ จำนวน 1 ชุด เพื่อเป็นประโยชน์ในการพัฒนาโรงพยาบาลสงขลานครินทร์ต่อไป

ทั้งนี้ ได้แนบหนังสือรับรองด้านจริยธรรมการทำวิจัยในคนมาพร้อมกับหนังสือฉบับนี้แล้ว ตามสิ่งที่ส่งมาด้วย

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(ศาสตราจารย์นายแพทย์หทิญ ถิ่นธารา)
รองคณบดีฝ่ายวิจัยและนวัตกรรม ปฏิบัติราชการแทนคณบดี

หน่วยส่งเสริมและพัฒนาทางวิชาการ
โทร.074-451157
โทรสาร 074-212900,212903

เลขที่ใบรับรอง 037/2548

คณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์และการใช้สัตว์ทดลองในการวิจัย
กลุ่มวิทยาศาสตร์สุขภาพ จุฬาลงกรณ์มหาวิทยาลัย

โครงการวิจัย : การพัฒนารูปแบบการวัดการรับรู้ความยั่งยืนของการพัฒนาคุณภาพโดยรวมในหน่วยบริการผู้ป่วย โรงพยาบาลที่ผ่านการรับรองคุณภาพ
DEVELOMENT AND VALIDATION OF THE MEASUREMENT MODEL OF PERCEIVED TOTAL QUALITY MANAGEMENT (TQM) SUSTAINABILITY IN PATIENTS UNITS, ACCREDITED HOSPITALS

ผู้วิจัยหลัก : นางสมสมัย สุธีรศานต์

หน่วยงาน : คณะพยาบาลศาสตร์

คณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์และการใช้สัตว์ทดลองในการวิจัย กลุ่มวิทยาศาสตร์สุขภาพ จุฬาลงกรณ์มหาวิทยาลัย

☑ อนุมัติในแง่จริยธรรมให้ดำเนินการศึกษาวิจัยเรื่องข้างต้นได้

☐ อนุมัติ ภายใต้เงื่อนไข คือ.....

.....

.....

.....ประธาน
(รองศาสตราจารย์นายแพทย์ปรีดา ทัศนประดิษฐ์)

.....เลขานุการ
(ศาสตราจารย์นายแพทย์สุรศักดิ์ ฐานีพานิชสกุล)

รับรองวันที่ 3 สิงหาคม 2548

คณะพยาบาลศาสตร์
จุฬาลงกรณ์มหาวิทยาลัย
เขตปทุมวัน กรุงเทพฯ 10330

วันที่ มิถุนายน 2549

เรื่อง ขอความร่วมมือในการตอบแบบสอบถาม
เรียน พยาบาลผู้ตอบแบบสอบถาม

1. แบบสอบถามฉบับนี้ เป็นส่วนหนึ่งของงานวิจัยคุษฎีบัณฑิต สาขาพยาบาลศาสตร์ คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย เรื่อง การพัฒนาและทดสอบรูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กรในหอผู้ป่วย โรงพยาบาลที่ได้รับการรับรองคุณภาพ วัตถุประสงค์ในการศึกษาคือ การสร้างเครื่องมือวัดการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร พร้อมทั้งทดสอบความตรง ความเที่ยงของเครื่องมือดังกล่าว
2. ข้อมูลที่ได้จากท่านจะเป็นประโยชน์อย่างยิ่งต่อการวิจัย ซึ่งผลจากการวิจัยนี้มีคุณค่าต่อการนำไปใช้เป็นข้อมูลในการพัฒนาระบบบริการและบริหารคุณภาพการพยาบาล เพื่อให้บริการพยาบาลอย่างมีคุณภาพที่ยั่งยืน และจะเป็นประโยชน์ในการพัฒนาระบบ การจัดการด้านการพัฒนาคุณภาพของโรงพยาบาลต่อไป
3. แบบสอบถามนี้ ใช้สำหรับเก็บรวบรวมข้อมูลเพื่อการศึกษาวิจัยเท่านั้น ข้อมูลที่ได้จากการวิจัยนี้ **ถือเป็นความลับ** ไม่มีผลกระทบใดๆต่อผู้ตอบและโรงพยาบาล ผลการวิจัยจะนำเสนอในลักษณะภาพรวม จึงไม่เกิดผลกระทบต่อการปฏิบัติงานของท่านแต่ประการใด การตอบแบบสอบถามชุดนี้จะใช้เวลาประมาณ 30-40 นาที
4. ความร่วมมือของท่าน ขึ้นอยู่กับความสมัครใจ ท่านมีสิทธิที่จะถอนตัวจากการศึกษาได้ทุกเมื่อที่ท่านต้องการ รหัสบนแบบสอบถามมีไว้เพื่อความสะดวกในการติดตามแบบสอบถามเท่านั้น แบบสอบถามที่ได้รับคืนจากท่าน จะนำมาเปลี่ยนรหัสใหม่ก่อนวิเคราะห์ข้อมูลด้วยคอมพิวเตอร์

ขอขอบคุณเป็นอย่างยิ่งในความกรุณาตอบแบบสอบถามนี้

สมสมัย สุธีรศานต์
ผู้วิจัย โทร. 06-0686487

อาจารย์ที่ปรึกษา รองศาสตราจารย์ ร.ต.อ. หญิง ดร. ยุพิน อังสุโรจน์ โทร. 02-218-9801
อาจารย์ที่ปรึกษาร่วม ผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป โทร. 02-218-9803

Appendix C

A Letter to Directors of Hospitals Requiring Permission of Data Collection

ที่ ศธ 0512.11/ 1592

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารวิทยกิตติ์ ชั้น 12 ซอยจุฬา 64
เขตปทุมวัน กรุงเทพฯ 10330

23 มิถุนายน 2549

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลการวิจัย

เรียน ผู้อำนวยการโรงพยาบาลมหาราชนครราชสีมา

เนื่องด้วย นางสมสมัย สุธีรศานต์ นิสิตชั้นปริญญาดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการวิจัยเพื่อเสนอเป็นวิทยานิพนธ์ เรื่อง "การพัฒนาและทดสอบรูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่งทั้งองค์กรในหอผู้ป่วยโรงพยาบาลที่ได้รับการรับรองคุณภาพ" โดยมี รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ และผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ในการนี้ใคร่ขอความอนุเคราะห์ให้นิสิตดำเนินการเก็บรวบรวมข้อมูลการวิจัย จากกลุ่มตัวอย่างพยาบาลวิชาชีพที่ปฏิบัติงานในโรงพยาบาลที่ได้รับการรับรองคุณภาพ 40 หอผู้ป่วย จำนวน 200 คน โดยใช้แบบสอบถามข้อมูลส่วนบุคคลและข้อมูลโรงพยาบาล และแบบสอบถามการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กรในหอผู้ป่วยโรงพยาบาลที่ได้รับการรับรองคุณภาพ ทั้งนี้นิสิตจะประสานงาน เรื่อง วัน และเวลา ในการเก็บรวบรวมข้อมูลการวิจัยอีกครั้งหนึ่ง

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์ให้ นางสมสมัย สุธีรศานต์ ดำเนินการเก็บรวบรวมข้อมูลการวิจัยดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป)
รองคณบดีฝ่ายวิชาการ
ปฏิบัติราชการแทนคณบดีคณะพยาบาลศาสตร์

สำเนาเรียน	หัวหน้าฝ่ายการพยาบาล
งานบริการการศึกษา	โทร. 0-2218-9825 โทรสาร. 02-218-9808
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์ โทร. 02 -218-9801
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป โทร. 02 -218-9803
ชื่อนิสิต	นางสมสมัย สุธีรศานต์ โทร. 0-6068-6487

ที่ ศธ 0512.11/ 1372

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารวิทยกิตติ์ ชั้น 12 ซอยจุฬา 64
เขตปทุมวัน กรุงเทพฯ 10330

22 มิถุนายน 2549

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลการวิจัย

เรียน ผู้อำนวยการโรงพยาบาลเชียงรายประชานุเคราะห์

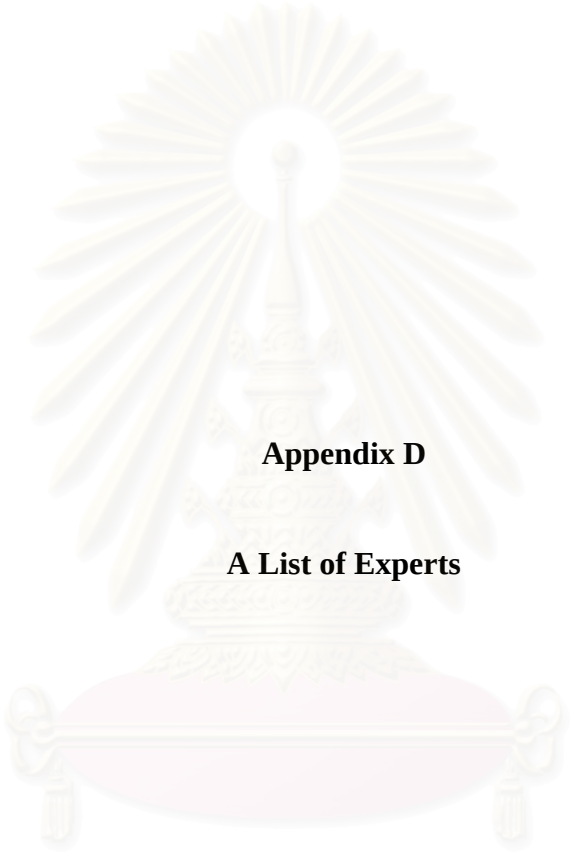
เนื่องด้วย นางสมสมัย สุธีรศานต์ นิสิตชั้นปริญญาคุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการวิจัยเพื่อเสนอเป็นวิทยานิพนธ์ เรื่อง "การพัฒนาและทดสอบรูปแบบการวัดการคงอยู่ของการบริหารคุณภาพทั่งทั้งองค์กรในหอผู้ป่วยโรงพยาบาลที่ได้รับการรับรองคุณภาพ" โดยมี รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ และผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ในการนี้ใคร่ขอความอนุเคราะห์ให้นิสิตดำเนินการเก็บรวบรวมข้อมูลการวิจัย จากกลุ่มตัวอย่างพยาบาลวิชาชีพที่ปฏิบัติงานในโรงพยาบาลที่ได้รับการรับรองคุณภาพ 34 หอผู้ป่วย จำนวน 170 คน โดยใช้แบบสอบถามข้อมูลส่วนบุคคลและข้อมูลโรงพยาบาล และแบบสอบถามการคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กรในหอผู้ป่วยโรงพยาบาลที่ได้รับการรับรองคุณภาพ ทั้งนี้นิสิตจะประสานงาน เรื่อง วัน และเวลา ในการเก็บรวบรวมข้อมูลการวิจัยอีกครั้งหนึ่ง

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์ให้ นางสมสมัย สุธีรศานต์ ดำเนินการเก็บรวบรวมข้อมูลการวิจัยดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป)
รองคณบดีฝ่ายวิชาการ
ปฏิบัติราชการแทนคณบดีคณะพยาบาลศาสตร์

สำเนาเรียน หัวหน้าฝ่ายการพยาบาล
งานบริการการศึกษา โทร. 0-2218-9825 โทรสาร. 02-218-9808
อาจารย์ที่ปรึกษา รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์ โทร. 02 -218-9801
อาจารย์ที่ปรึกษาร่วม ผู้ช่วยศาสตราจารย์ ดร. สุกัญญา ประจุศิลป โทร. 02 -218-9803
ชื่อนิสิต นางสมสมัย สุธีรศานต์ โทร. 0-6068-6487



Appendix D

A List of Experts

รายนามผู้ทรงคุณวุฒิ

1. น.พ. อนุวัฒน์ ศุภชุติกุล	ผู้อำนวยการสถาบันพัฒนาและรับรองคุณภาพโรงพยาบาลประเทศไทย
2. รศ. น.พ. จิรุตม์ ศรีรัตนบัลล์	อาจารย์แพทย์ คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ผู้ประสานงานคุณภาพโรงพยาบาลจุฬาลงกรณ์ กรรมการพิจารณาทุนวิจัยเกี่ยวกับคุณภาพระบบสุขภาพ
3. รศ. ดร.วิภาดา คุณาวิกติกุล	คณบดีคณะพยาบาลศาสตร์ ภาควิชาบริหารการพยาบาล มหาวิทยาลัยเชียงใหม่
4. ผศ. ดร. วัลภา คชภักดี	อาจารย์พยาบาล รองอธิการฝ่ายประกันคุณภาพ มหาวิทยาลัยวลัยลักษณ์
5. อาจารย์ บุญเฉลา สุริยวรรณ	หัวหน้าพยาบาล รพ.มหาราชนครเชียงใหม่ ที่ปรึกษาและผู้ประเมินโรงพยาบาล พรพ.
6. อาจารย์ เพ็ญจันทร์ แสนประสาน	หัวหน้าฝ่ายการพยาบาลโรงพยาบาลเซ็นต์หลุยส์ วิทยากรและผู้ประเมินโรงพยาบาล พรพ.
7. ดร. ยุวดี เกตุสัมพันธ์	ผู้ช่วยหัวหน้าฝ่ายการพยาบาลด้านพัฒนาคุณภาพงาน ผู้ช่วยคณบดีฝ่ายคุณภาพ คณะแพทย์ศาสตร์ศิริราช
8. น.ส. ประกายแก้ว กำคำ	ผู้ช่วยหัวหน้าฝ่ายบริการพยาบาลและหัวหน้าศูนย์คุณภาพโรงพยาบาลเชียงรายประชานุเคราะห์ และผู้ประเมินโรงพยาบาล พรพ.
9. ร.อ. หญิง จิราพร สิมากร	เลขานุการ สำนักงานพัฒนาคุณภาพโรงพยาบาลพระมงกุฎเกล้า กรมแพทย์ทหารบก ที่ปรึกษาโรงพยาบาล พรพ.
10. น.ส. พิกุลรัตน์ วงศ์พานิช	หัวหน้าหออภิบาลผู้ป่วย รพ.สงขลานครินทร์ ผู้ช่วยหัวหน้าฝ่ายการพยาบาลด้านคุณภาพงาน และที่ปรึกษาโรงพยาบาล พรพ. ศูนย์ร่วมมือภาคใต้

เกณฑ์กำหนดผู้ทรงคุณวุฒิ เพื่อตรวจสอบความตรงตามเนื้อหา

ผู้บริหารระบบพัฒนาและรับรองคุณภาพโรงพยาบาล ระดับประเทศ	1	ท่าน
ผู้บริหารคุณภาพระดับโรงพยาบาล	1	ท่าน
ผู้บริหารคุณภาพการศึกษาทางการพยาบาล	2	ท่าน
ผู้บริหารทางการพยาบาลระดับหัวหน้าฝ่ายการที่มีประสบการณ์ ด้านคุณภาพงาน	2	ท่าน
ผู้ประสานงานคุณภาพระดับฝ่ายพยาบาล	2	ท่าน
ผู้ปฏิบัติงานด้านคุณภาพงาน	2	ท่าน

Appendix E

Research Instrument

- E. 01 The 100-item TQMSS: draft 1

- E. 02 The 79- item TQMSS: (Version 2)

- E. 03 The 76-item TQMSS: (Version 3)

Sutherasan TQM Sustainability Profile
Draft 1
(Organized by categories for editing purposes)

Please indicate the level to which you decide that each of the items is the TQM sustainability (compare with content in Table grid) and put a check in the appropriate column.

Weak ⟶ Strong

Ⅰ **Drivers**	1	2	3	4	5
1. External forces rather than internal forces drive TQM in health care organizations.					
2. When staff internalize the value of TQM, it is more likely that they will consistently perform TQM.					
3. In order for TQM to be sustained, the organization needs a director-level leader of TQM.					
4. A department in charge of quality, provides needed leadership for successful TQM.					
5. Continuing starting new TQM projects drives the organization to always improve.					
6. Organizations that always improve are more likely to survive than their competitors.					
7. In order for the organization to remain competitive, TQM is an essential element.					
8. Hospitals pass accreditation based on their continuing TQM.					
9. Accredited hospitals can better survive changing environments than those which are not accredited.					
10. Incorporating TQM requirements in performance reviews makes quality improvement more consistent.					
11. Staff find problems to improve from performance review.					
12. Public marketing of TQM successes increase client expectations for excellence.					
13. Celebration of TQM successes enhances sustainability of improvements.					
14. External surveys force the organization to improve quality.					
15. Internal surveys help the organization know weaknesses before accreditation surveys.					
16. TQM managers exert authority to force practice improvements.					
17. TQM managers use data for encouraging quality improvement.					
18. Core TQM policies continue even after leadership change					
19. Quality management policies and goals are clear.					

Ⅰ **Drivers**	1	2	3	4	5
Ⅱ Culture					
1. Commitment related to TQM is imbedded in the organization's culture.					
2. TQM is most effective when tied to the organization's core values.					
3. All levels of staff share awareness and commitment to quality improvement.					
4. Everyone values TQM when compared to their other work.					
5. TQM is embedded in daily activities of staff.					
6. All levels of staff understand the TQM process.					
7. TQM is everyone's responsibility.					
8. All levels of staff are dedicated to TQM.					
9. TQM is rooted and integrated in routine work.					
10. Staff are empowered to perform TQM by themselves.					
11. Staff wake up and feel challenged to perform TQM.					
12. Staff attempt to continuously improve their work.					
13. TQM is embedded in staff's minds.					
14. Staff make TQM a part of their daily work.					
15. All level of staff are constantly aware of patient needs.					
16. All level of staff have good attitudes related to TQM.					
17. All level of staff accept others' opinions related to quality improvement.					
18. Staff have loyalty to the organization					
Ⅲ Communication/cooperation/interaction					
1. Staff work as multidisciplinary teams, cross-functional teams and/or patient care teams to improve the quality of care.					
2. More than 90% of staff, regardless of discipline, participate in the TQM program.					
3. More than 90% of staff cooperate with other departments to improve the quality of care.					
4. Successful TQM requires linking from person to person or team to team.					
5. Successful organizations distribute information and communication about TQM to staff.					
6. Quality management leadership focuses its work at the multidisciplinary team level.					
7. Successful TQM empowers all staff to participate and offer their opinions to improve patient care.					
8. A community of practice is essential for successful TQM.					
9. Good relationships among staff, units and teams foster improved TQM.					

Ⅰ **Drivers**	1	2	3	4	5
Ⅳ **Reward and recognition**					
1. The rewards and incentives of your organization are linked to quality activities. 2. The appraisal system is tied to TQM and individual work improvement.					
3. Your organization supports the mind and morale of all staff.					
4. Incentives of your organization are linked to TQM results.					
5. Recognition and admiration are linked to quality activities of staff.					
6. Individual performance recognition is given for TQM activities.					
7. Career advancement is linked with commitment to TQM.					
8. Positive reinforcement for quality activities is offered frequently					
Ⅴ **Support**					
1. Your organization supports enough people, equipment, time, experts and information technology to achieve TQM goals.					
2. Your organization gives information and knowledge related to quality management.					
3. Your organization has TQM facilitators to offer suggestions and information to all staff.					
4. All staff can access information technology (IT) support for TQM.					
5. Staff have ability to use technology for TQM.					
6. Your organization tries to decrease staff workload in support of TQM.					
7. Staff workload includes quality activities.					
8. Staff demonstrate willpower and value for TQM.					
9. Staff make TQM simple.					

Ⅰ **Drivers**	1	2	3	4	5
Ⅵ Leadership					
1. All leaders in the organization are committed to TQM.					
2. Leaders communicate goals related quality management.					
3. Leaders participate in the TQM program.					
4. Leaders assign quality activities to staff.					
5. Leaders are good role models for TQM.					
6. Leaders walk around and make improvements from staff suggestions.					
7. Leaders motivate staff to include quality improvement their work.					
8. Leaders support daily actions of staff related to quality activities.					
9. Leaders give suggestions related to quality improvement.					
10. Leaders monitor TQM results continuously.					
11. Leaders monitor TQM work performance continuously.					
12. Leaders provide clear TQM policies.					
13. Leaders communicate the importance of quality activities.					
Ⅶ Monitoring and results					
1. Outcomes of TQM are congruent with organizational goals.					
2. There is continuous monitoring of outcome indicators in the organization.					
3. Leaders communicate outcome indicators and the results to all staff.					
4. There are outcome indicators related customer satisfaction, complaints, incident reports and TQM projects.					
5. An internal audit of TQM occurs every six months.					
6. The evaluation system for the organization and the staff includes results of current TQM processes.					

Ⅰ **Drivers**	1	2	3	4	5
7. The quality service and system evaluation includes teamwork performance.					
8. The organization compares their results with across units and outside of organization.					
9. Staff use the result data for work improvement.					
10. Most patients and clients are satisfied with services of your organization.					
11. Most staff enjoy working in the organization.					
12. Most staff have loyalty to organization.					
Ⅷ **Education**					
1. All level of staff have continuing training related TQM.					
2. Sharing of best practices occurs at regular intervals.					
3. There is a positive learning climate in my organization.					
4. Most staff participates with sharing and learning about TQM.					
5. All levels of staff understand TQM.					
6. Knowledge sharing among staff, units and teamwork related to TQM occurs frequently.					
7. New staff are trained in TQM.					
8. Most staff engage in continuous self-development.					
9. Some staff go to study and visit other places to improve the quality of care.					
10. There are many ways for knowledge sharing related to TQM.					
11. Staff use system thinking for problem solving.					
12. Staff have easy access to TQM resources.					

แบบสอบถามสำหรับผู้ทรงคุณวุฒิ

แบบสอบถาม การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย

(TQM Sustainability in Patient Unit)

<u>วัตถุประสงค์</u> เพื่อให้ผู้เชี่ยวชาญพิจารณาตรวจสอบความเหมาะสมและความครอบคลุมของนิยามความสอดคล้องระหว่างข้อคำถามกับคำนิยาม

<u>เรียนชี้แจง</u>

1. แบบสอบถามนี้มีวัตถุประสงค์ เพื่อสำรวจความคิดเห็นของพยาบาลเกี่ยวกับ การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย
2. แบบสอบถามนี้แบ่งออกเป็น 2 ส่วน
   ส่วนที่ 1 แบบสอบถามข้อมูลส่วนบุคคล
   ส่วนที่ 2 แบบสอบถาม การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย โรงพยาบาลที่ได้รับการรับรองคุณภาพ
3. การพิจารณาความตรงเชิงเนื้อหาโดยผู้ทรงคุณวุฒิ

ส่วนที่ 1 ข้อมูลส่วนบุคคล

<u>คำชี้แจง</u> โปรดเติมข้อความลงในช่องว่างที่กำหนดให้ หรือทำเครื่องหมาย □ลงในช่อง [ ] ที่กำหนดให้ ที่ตรงกับความเป็นจริงมากที่สุด

1. ปัจจุบันท่านมีอายุ.....ปี
2. วุฒิการศึกษาสูงสุดของท่าน.....
3. ประสบการณ์ในการทำงานพยาบาลของท่าน.....ปี .....เดือน
4. ตำแหน่งงานในปัจจุบัน
   ( ) หัวหน้าหอผู้ป่วย/เทียบเท่า
   ( ) พยาบาลประจำการ
   ( ) อื่นๆ โปรดระบุ

5. กลุ่มงานที่ท่านปฏิบัติงาน

( ) อายุรกรรม

( )ศัลยกรรมทั่วไป

( ) ศัลยกรรมอุบัติเหตุ

( ) ศัลยกรรมกระดูกและข้อ

( ) สูตินรีเวชกรรม

( ) กุมารเวชกรรม

( ) ผู้ป่วยวิกฤติ ICU CCU PICU NICU

( ) OR

( ) OPD ER

( ) อื่น ๆ ระบุ.....

6. ประสบการณ์ในการทำงานของท่านในกลุ่มงานที่ท่านปฏิบัติอยู่ในปัจจุบัน.....ปี..... เดือน
7. การได้รับการฝึกอบรมเพิ่มเติมเกี่ยวกับ TQM/HA/CQI/QA การพัฒนาคุณภาพงานหลังผ่าน HA

ระยะเวลา.....วัน.....ชั่วโมง

ข้อมูลโรงพยาบาล

1. โรงพยาบาลที่ท่านปฏิบัติงาน

( ) โรงพยาบาลมหาวิทยาลัย

( ) โรงพยาบาลศูนย์ กระทรวงสาธารณสุข

( ) โรงพยาบาลทั่วไป กระทรวงสาธารณสุข

( )โรงพยาบาลชุมชน กระทรวงสาธารณสุข

( ) โรงพยาบาลรัฐบาล เฉพาะโรค

( ) อื่นๆ(ระบุ).....

2. ลักษณะบริการ

จำนวนผู้ป่วยนอก ประมาณวันละ.....คน

จำนวนเตียงผู้ป่วยใน ที่เปิดให้บริการ.....เตียง

จำนวนเตียงผู้ป่วยใน ที่ให้บริการจริง..... เตียง

ลักษณะผู้ป่วยที่ให้การดูแล ตอบได้มากกว่า 1 ข้อ

( ) ผู้ป่วยทั่วไป

( ) ผู้ป่วยเฉพาะทาง

( ) ผู้ป่วยฟื้นฟูสภาพ

( ) ผู้ป่วยอื่นๆ

3. เริ่มดำเนินการจัดการคุณภาพเพื่อให้ได้รับการรับรองคุณภาพโรงพยาบาล (Hospital accreditation / HA) เดือน .....ปี พ.ศ.....
4. ได้รับการรับรอง HA เดือน.....ปี พ.ศ.....
5. ได้รับการ Reaccredidation เดือน .....ปี พ.ศ. .....

ส่วนที่ 2 แบบสอบถาม การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย (TQM Sustainability in Patient Unit)

<u>เรียนชี้แจง</u> แบบสอบถามนี้ใช้ในการศึกษาเรื่อง การพัฒนาและทดสอบรูปแบบการวัด การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย โรงพยาบาลที่ได้การรับรองคุณภาพ ประกอบด้วย ข้อคำถามจำนวน 79 ข้อ

โปรดกาเครื่องหมาย √ ในช่องความคิดเห็นแต่ละข้อคำถาม ซึ่งประกอบด้วยระดับความคิดเห็นของผู้ทรงคุณวุฒิ ดังนี้

1. หมายถึง ไม่สอดคล้องกับคำจำกัดความที่กำหนดไว้
2. หมายถึง สอดคล้องน้อยกับคำจำกัดความที่กำหนดไว้
3. หมายถึง ค่อนข้างสอดคล้องกับคำจำกัดความที่กำหนดไว้
4. หมายถึง สอดคล้องมากกับคำจำกัดความที่กำหนดไว้

กำหนดเกณฑ์การประเมินความตรงเชิงเนื้อหาเป็น 4 ระดับ คือ

1. หมายถึง คำถามไม่สอดคล้องกับคำนิยาม
2. หมายถึง คำถามจำเป็นต้องได้รับการพิจารณาทบทวนและการปรับปรุงอย่างมากจึงจะมีความสอดคล้องกับคำนิยาม
3. หมายถึง คำถามจำเป็นต้องได้รับการพิจารณาทบทวนและการปรับปรุงเล็กน้อยจึงจะมีความสอดคล้องกับคำนิยาม
4. หมายถึง คำถามสอดคล้องกับคำนิยาม

คำนิยาม

การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร (TQM sustainability) หมายถึง สภาวะที่องค์กรสามารถปรับตัวต่อการเปลี่ยนแปลงของสิ่งแวดล้อมเพื่อรักษาวิธีปฏิบัติที่เป็นเลิศ ที่จะบรรลุเป้าหมายองค์กรและรักษาระดับการแข่งขัน เป็นสภาวะที่มีวิธีปฏิบัติใหม่ในการทำงาน การปรับปรุงให้กลายเป็นปกติวิสัย ที่จะดำเนินต่อไป ไม่กลับคืนไปเป็นอย่างเดิม รักษาความต้องการและสิ่งที่ได้มาให้อยู่ในระดับที่คงที่ไม่ให้ลดระดับลง มีกระบวนการปรับปรุงบริหารกิจกรรมคุณภาพอย่างต่อเนื่อง เพื่อรักษาผลลัพธ์ตามเป้าหมาย เป็นการธำรงไว้ซึ่งการเปลี่ยนแปลงเพื่อบรรลุวัตถุประสงค์ที่ดีกว่า ด้วยความมุ่งมั่นที่จะปรับปรุงต่อไป ประกอบด้วย แรงขับเคลื่อน วัฒนธรรมการปรับปรุงคุณภาพอย่างต่อเนื่อง การปฏิสัมพันธ์ การสนับสนุนและการยอมรับ ภาวะผู้นำ การติดตามผลลัพธ์ การศึกษาและการฝึกอบรม ให้นิยามศัพท์องค์ประกอบ ดังนี้

1. **แรงขับเคลื่อน** (Drivers) หมายถึงสภาวการ กิจกรรม กระบวนการ และรูปแบบการปฏิบัติของบุคลากรที่กระทบต่อการบริหารคุณภาพทั่วทั้งองค์กร ซึ่งมีทั้งแรงขับเคลื่อนจากทั้งภายในและภายนอกองค์กร ประกอบด้วย นโยบายที่ชัดเจน คุณค่าหลักขององค์กร แผนกลยุทธขององค์กร ผู้ดำเนินการบริหารคุณภาพ การริเริ่มโครงการคุณภาพใหม่ๆอย่างต่อเนื่อง การได้รับการรับรองคุณภาพ การฉลองผลสำเร็จของการบริหารคุณภาพ การประเมินผลคุณภาพและการปรับปรุงการปฏิบัติงาน ความคาดหวังของผู้ใช้บริการ การส่งเสริมการบริการและการลงทุน การเทียบเคียงกับคู่แข่ง

2. **วัฒนธรรมการปรับปรุงคุณภาพอย่างต่อเนื่อง** (Culture of continuous improvement) หมายถึงการที่บุคลากร ทั้งผู้ปฏิบัติงาน และผู้บริหารมีการคิดค้น หาวิธีการ และนวัตกรรมใหม่ในการบริการ ที่จะนำไปสู่การปรับปรุงงานต่อเนื่อง เพื่อให้มีการบริการที่ดี มีคุณภาพและลดความผิดพลาด ประกอบด้วย ความมุ่งมั่นของบุคคลากรต่อการบริหารคุณภาพทั่วทั้งองค์กร ความเข้าใจและตระหนักเกี่ยวกับการพัฒนาคุณภาพ บุคคลากรมีความรับผิดชอบ มีทัศนะคติที่ดีต่อการบริหารคุณภาพทั่งทั้งองค์กร สามารถทำกิจกรรมคุณภาพด้วยตนเอง คุณภาพงานอยู่ในความรู้สึกนึกคิดของบุคคลากร การปรับปรุงคุณภาพเป็นสิ่งปกติที่ปฏิบัติเป็นงานประจำ

3. **การปฏิสัมพันธ์** (Interaction) หมายถึงการทำงานร่วมกันระหว่างวิชาชีพ เพื่อปรับปรุงคุณภาพของการดูแล บุคลากรมีส่วนร่วมในการบริหารคุณภาพทั่วทั้งองค์กร ให้ความร่วมมือกันระหว่างหน่วยงาน เป็นการเชื่อมต่อ ระหว่าง บุคคลต่อบุคคล ทีมต่อทีม รวมทั้งการสื่อสารและให้ข้อมูลเกี่ยวกับการบริหารคุณภาพแก่บุคคลากร บุคลากรมีสัมพันธภาพที่ดีต่อกันและเกิดชุมชนนักปฏิบัติเกี่ยวกับงาน

4. **การสนับสนุน และการยอมรับ** (Support and recognition) หมายถึงค่าตอบแทนและความก้าวหน้าที่สัมพันธ์กับกิจกรรมคุณภาพของบุคคลากร ประกอบด้วยระบบส่งเสริมขวัญและกำลังใจแก่บุคคลากร มีการสนับสนุนทรัพยากรอย่างเพียงพอ และมีข้อมูลเพียงพอสำหรับการบริหารคุณภาพ

5. **ภาวะผู้นำ** (Leadership) หมายถึงการที่ผู้บริหารมีความมุ่งมั่นต่อการบริหารคุณภาพ กำหนดเป้าหมายรวมทั้งนโยบายเกี่ยวกับคุณภาพ และสื่อสารแก่บุคคลากร การเป็นแบบอย่างที่ดีในการดำเนินงาน และมอบหมายกิจกรรมการปรับปรุบคุณภาพคุณภาพแก่บุคคลากร บุคลากรมีส่วนร่วมในการให้คำแนะนำเกี่ยวกับการปรับปรุงคุณภาพ กระตุ้นบุคคลากรให้ปรับปรุงคุณภาพ รวมทั้งติดตามผลลัพธ์ของการบริหารคุณภาพอย่างต่อเนื่อง

6. **การติดตามผลลัพธ์** (Monitoring the results) หมายถึง การกำกับการประเมินผลการบริการที่มุ่งเน้นผู้ใช้บริการและการตลาด ที่สอดคล้องกับเป้าหมายขององค์กร การเปรียบเทียบผลลัพธ์ระหว่างหน่วยงาน ทั้งภายในและภายนอกองค์กร การใช้ข้อมูลหลักฐานทางสถิติของผลลัพธ์มาปรับปรุงงานขององค์กรให้สอดคล้องกับสถานการณ์หรือสิ่งแวดล้อม เพื่อให้เกิดความพึงพอใจแก่ผู้ใช้บริการ และบุคลากรมีความสุขในการทำงานซึ่งจะทำให้เกิดความภักดีต่อองค์กร

7. การศึกษาและการฝึกอบรม (Education and training) หมายถึง การพัฒนาบุคลากรเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร มีการให้ความรู้และอบรมเชิงปฏิบัติเกี่ยวกับการบริหารคุณภาพอย่างต่อเนื่อง มีการแลกเปลี่ยนเรียนรู้ทั้งในองค์กรและนอกองค์กรเพื่อนำความรู้มาปรับใช้ในหน่วยงาน บุคคลากรมีส่วนร่วมในการแลกเปลี่ยนเรียนรู้ มีบรรยากาศการเรียนรู้ในองค์กร มีสื่อการเรียนรู้เรื่องคุณภาพหลายวิธีและบุคลากรสามารถเข้าถึงแหล่งเรียนรู้ได้สะดวก บุคคลากรเข้าใจการบริหารคุณภาพโดยรวมมีความคิดเป็นระบบในการแก้ปัญหา และการจัดการความรู้

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
Ⅰ แรงขับเคลื่อน (Drivers) 11 items 1. มีสภาวการทั้งภายนอก และ ภายในองค์กร ผลักดันต่อ การบริหารคุณภาพทั่วทั้งองค์กรในบริการสุขภาพ ข้อเสนอแนะ.....				
2. เมื่อบุคคลากรรู้ซึ้งถึงคุณค่าการบริหารคุณภาพทั่วทั้งองค์กร เขาจะปฏิบัติกิจกรรมพัฒนา คุณภาพอย่างสม่ำเสมอ ข้อเสนอแนะ.....				
3. เพื่อให้เกิดความยั่งยืนของการบริหารคุณภาพทั้วทั้งองค์กร องค์กรต้องมี ผู้นำการบริหารคุณภาพระดับนโยบาย ข้อเสนอแนะ.....				
4. การเริ่มโครงการพัฒนาคุณภาพใหม่ อย่างต่อเนื่องทำให้องค์กรปรับปรุงคุณภาพอย่างสม่ำเสมอ ข้อเสนอแนะ.....				
5.องค์กรที่มีการปรับปรุงอย่างสม่ำเสมอ ดูเหมือนว่าจะ อยู่รอดมากกว่าองค์กรอื่น ข้อเสนอแนะ.....				
6. โรงพยาบาลผ่านการรับรองคุณภาพได้จากการมีการบริหารคุณภาพทั่วทั้งองค์กรอย่างต่อเนื่อง ข้อเสนอแนะ.....				
7.การประสานการบริหารคุณภาพทั่วทั้งองค์กรเข้าในการทบทวนผลการปฏิบัติงาน ทำให้การปรับปรุงคุณภาพสม่ำเสมอมากขึ้น ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
8. การประสบผลสำเร็จในการบริหารคุณภาพทั่วทั้งองค์กร จะส่งเสริมการคงอยู่ของการปรับปรุงคุณภาพ ข้อเสนอแนะ.....				
9. ผู้บริหารคุณภาพทั่วทั้งองค์กร ใช้ข้อมูล สำหรับกระตุ้นการปรับปรุงคุณภาพ ข้อเสนอแนะ.....				
10. นโยบายหลักของการบริหารคุณภาพทั่วทั้งองค์กรเกิดขึ้นเมื่อภาวะผู้นำมีการเปลี่ยนแปลง ข้อเสนอแนะ.....				
11. นโยบายและเป้าหมายการบริหารคุณภาพ มีความชัดเจน ข้อเสนอแนะ.....				
Ⅱ วัฒนธรรมคุณภาพ (Culture of continuous improvement) 13 items 1.ความมุ่งมั่นที่เกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร ถูกฝังรากในวัฒนธรรมขององค์กร ข้อเสนอแนะ.....				
2. การบริหารคุณภาพทั่วทั้งองค์กรมีประสิทธิผลสูงสุดเมื่อผูกอยู่ใน คุณค่าหลักขององค์กร ข้อเสนอแนะ.....				
3. ทุกคนให้คุณค่าการบริหารคุณภาพทั่วทั้งองค์กรเมื่อเทียบกับงานอื่น ข้อเสนอแนะ.....				
4. บุคคลากรทุกระดับ เข้าใจใน กระบวนการการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
5. การบริหารคุณภาพทั่วทั้งองค์กรเป็นความรับผิดชอบของทุกคน ข้อเสนอแนะ.....				
6. การบริหารคุณภาพทั่วทั้งองค์กรถูกฝังรากและผสมผสานในงานประจำ ข้อเสนอแนะ.....				
7. บุคคลากรได้รับการส่งเสริมอำนาจในการทำกิจกรรมคุณภาพด้วยตนเอง ข้อเสนอแนะ.....				
8. บุคคลากรตื่นตัวและรู้สึกว่าเป็นโอกาสในการปฏิบัติการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
9. การบริหารคุณภาพทั่วทั้งองค์กรเกาะติดอยู่ในจิตใจของบุคลากร ข้อเสนอแนะ.....				
10. บุคคลากรทำให้การบริหารคุณภาพทั่วทั้งองค์กรเป็นส่วนหนึ่งในการทำงานประจำวัน ข้อเสนอแนะ.....				
11. บุคคลากรทุกระดับตระหนักต่อความต้องการของผู้ป่วยอยู่เสมอ ข้อเสนอแนะ.....				
12. บุคคลากรทุกระดับมีทัศนคติที่ดีต่อการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
13. บุคคลากรทุกระดับยอมรับความคิดเห็นผู้อื่นที่เกี่ยวกับการปรับปรุงคุณภาพ ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
Ⅲ การปฏิสัมพันธ์ (Interaction) 9 items 1.บุคคลากรทำงานเป็นทีมระหว่างวิชาชีพ ทีมระหว่างสายงาน หรือทีมการดูแลผู้ป่วย เพื่อปรับปรุงคุณภาพของการดูแล ข้อเสนอแนะ.....				
2. บุคคลากรทุกวิชาชีพส่วนใหญ่ มีส่วนร่วมในโครงการการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
3. บุคคลากรส่วนใหญ่ ให้ความร่วมมือกับหน่วยงานอื่น เพื่อปรับปรุงคุณภาพของการดูแล ข้อเสนอแนะ.....				
4. การบริหารคุณภาพทั่วทั้งองค์กรที่ประสบผลสำเร็จต้องการการเชื่อมต่อ ระหว่าง บุคคลกับบุคคล หรือทีมกับทีม ข้อเสนอแนะ.....				
5. องค์กรที่ประสบผลสำเร็จ กระจายและสื่อสารข้อมูลเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กรแก่บุคคลากร ข้อเสนอแนะ.....				
6. ทีมนำการบริหารคุณภาพเน้นการทำงานที่ระดับทีมระหว่างวิชาชีพ ข้อเสนอแนะ.....				
7. การบริหารคุณภาพที่ประสบผลสำเร็จจะให้อำนาจแก่บุคคลากรให้มีส่วนร่วม ในการแสดงความคิดเห็นต่อการปรับปรุงการดูแลผู้ป่วย ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
8. ชุมชนนักปฏิบัติมีความจำเป็นต่อความสำเร็จของการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
9. สัมพันธภาพที่ดีระหว่างบุคลากร หน่วยงาน และระหว่างทีม ผลักดัน ให้ปรับปรุงคุณภาพ ข้อเสนอแนะ.....				
Ⅳ การสนับสนุนและการยอมรับ(Support and recognition) **11 items** 1. การให้รางวัลและค่าตอบแทนขององค์กร สัมพันธ์กับ กิจกรรมคุณภาพของบุคคลากร ข้อเสนอแนะ.....				
2. ระบบการประเมินผลงาน เกี่ยวข้องกับ การบริหารคุณภาพทั่วทั้งองค์กร และ การปรับปรุงคุณภาพงานของแต่ละบุคคล ข้อเสนอแนะ.....				
3. องค์กรสนับสนุนขวัญและกำลังใจของบุคคลากรทั้งหมด ข้อเสนอแนะ.....				
4. มีการเสริมแรงเชิงบวก สำหรับกิจกรรมคุณภาพอย่างสม่ำเสมอ ข้อเสนอแนะ.....				
5. องค์กรของท่านให้การสนับสนุนเพียงพอในด้าน บุคลากร อุปกรณ์ เวลา ผู้เชี่ยวชาญ และเทคโนโลยี่ข่าวสาร เพื่อบรรลุผลตามเป้าหมายของการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
6. บุคลากรทุกคนสามารถเข้าถึงเทคโนโลยี่เพื่อสืบค้นข้อมูลที่ใช้สำหรับการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
7.บุคลากรมีความสามารถในการใช้เทคโนโลยี่สำหรับการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
8. องค์กรของท่านพยายามลดภาระงาน เพื่อสนับสนุนการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
9. ภาระงานของบุคลากร รวมถึง กิจกรรมคุณภาพด้วย ข้อเสนอแนะ.....				
10. บุคคลากร แสดงถึง ความตั้งใจและให้คุณค่าต่อการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
11. บุคคลากรสามารถทำกิจกรรมคุณภาพให้ง่ายไม่ซับซ้อน ข้อเสนอแนะ.....				
V **ภาวะผู้นำ (Leadership) 12 items** 1. ผู้บริหารทุกคนในองค์กรมีความมุ่งมั่นต่อการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
2. ผู้บริหารสื่อสารเป้าหมายที่เกี่ยวข้องกับการบริหารคุณภาพ ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
4. ผู้บริหารมอบหมายกิจกรรมคุณภาพแก่บุคลากร ข้อเสนอแนะ.....				
5. ผู้บริหารเป็นตัวแบบที่ดีสำหรับการบริหารคุณภาพ ข้อเสนอแนะ.....				
6. ผู้บริหารเดินตรวจและดำเนินการปรับปรุงตามคำแนะนำของบุคลากร ข้อเสนอแนะ.....				
7. ผู้บริหารกระตุ้นบุคลากรให้รวมการปรับปรุงคุณภาพในการทำงาน ข้อเสนอแนะ.....				
8. ผู้บริหารสนับสนุนกิจกรรมที่ปฏิบัติเป็นกิจวัตรประจำวันของบุคคลากร ข้อเสนอแนะ.....				
9. ผู้บริหารให้คำแนะนำเกี่ยวกับการปรับปรุงคุณภาพ ข้อเสนอแนะ.....				
10. ผู้บริหารติดตามผลลัพธ์ของการบริหารคุณภาพทั่วทั้งองค์กรอย่างต่อเนื่อง ข้อเสนอแนะ.....				
11. ผู้บริหารติดตามผลการปฏิบัติงานด้านการบริหารคุณภาพอย่างต่อเนื่อง ข้อเสนอแนะ.....				
12. ผู้บริหารมีนโยบายที่ชัดเจนเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
VI การติดตามผลลัพธ์ (Monitoring the results) 12 items 1. ผลลัพธ์ของการบริหารคุณภาพทั่วทั้งองค์กรสอดคล้องกับเป้าหมายขององค์กร ข้อเสนอแนะ.....				
2. มีการติดตามตัวชี้วัดด้านผลลัพธ์ในองค์องค์กรอย่างต่อเนื่อง ข้อเสนอแนะ.....				
3. ผู้บริหารสื่อสารตัวชี้วัดและ ผลลัพธ์ขององค์กร อย่างต่อเนื่อง ข้อเสนอแนะ.....				
4. มีตัวชี้วัดผลลัพธ์ ที่เกี่ยวกับ ความพึงพอใจของผู้ใช้บริการ ข้อร้องเรียนรายงานอุบัติการณ์และโครงการการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
5. มีการตรวจประเมินภายในองค์กรของการบริหารคุณภาพโดยทั่วทั้งองค์กร ทุก 6 เดือน ข้อเสนอแนะ.....				
6. ระบบประเมินผลขององค์กรและบุคลากร รวมถึง ผลลัพธ์ของกระบวนการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
7. การประเมินคุณภาพบริการและระบบ รวมถึงการปฏิบัติการทำงานเป็นทีม ข้อเสนอแนะ.....				
8. องค์กรมีการเปรียบเทียบ ผลลัพธ์ ระหว่างหน่วยงาน ทั้งภายในและนอกองค์กร ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
9. บุคลากรใช้ข้อมูลของผลลัพธ์ในการปรับปรุงงาน ข้อเสนอแนะ.....				
10. ผู้ใช้บริการและผู้ป่วยส่วนใหญ่ พึงพอใจในการบริการขององค์กร ข้อเสนอแนะ.....				
11.บุคลากรส่วนใหญ่ พอใจกับการทำงานในองค์กร ข้อเสนอแนะ.....				
12. บุคลากรส่วนใหญ่ภักดีต่อองค์กร ข้อเสนอแนะ.....				
Ⅶ การศึกษาและฝึกอบรม (Education and training)11 items 1. บุคลากรทุกระดับได้รับการฝึกอบรมอย่างต่อเนื่องเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
2. การแลกเปลี่ยน ความเป็นเลิศ เกิดขึ้นเป็นประจำ สำเสมอ ข้อเสนอแนะ.....				
3. มีบรรยากาศการเรียนรู้ที่ดีในองค์กร ข้อเสนอแนะ.....				
4. บุคลากรส่วนใหญ่มีส่วนร่วมในการแลกเปลี่ยน เรียนรู้ เกี่ยวกับการบริหารคุณภาพ ข้อเสนอแนะ.....				
5.บุคลากรทุกระดับเข้าใจการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				
6. บุคลากรใหม่ได้รับการฝึกอบรมเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร ข้อเสนอแนะ.....				

ข้อคำถาม	ระดับความสอดคล้อง			
	สอดคล้องมาก (4)	ค่อนข้างสอดคล้อง (3)	สอดคล้องน้อย (2)	ไม่สอดคล้อง (1)
7. บุคคลากรส่วนใหญ่มีการพัฒนาตนเองอย่างต่อเนื่อง ข้อเสนอแนะ.....				
8. บุคลากรบางส่วนได้ไปศึกษา ดูงานจากที่อื่น เพื่อนำมาปรับปรุงคุณภาพการดูแล ข้อเสนอแนะ.....				
9. มีการแลกเปลี่ยน ความรู้ เกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร หลายวิธี ข้อเสนอแนะ.....				
10. บุคลากรใช้การคิดอย่างเป็นระบบในการแก้ไขปัญหา ข้อเสนอแนะ.....				
11. บุคลากรเข้าถึงทรัพยากรเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กรได้สะดวก ข้อเสนอแนะ.....				

แบบสอบถาม การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย โรงพยาบาลที่ได้รับการรับรองคุณภาพ (TQM Sustainability in Patient Units, Accredited Hospitals)

<u>คำชี้แจง</u>

1. แบบสอบถามนี้มีวัตถุประสงค์ เพื่อสำรวจความคิดเห็นของพยาบาลเกี่ยวกับ การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย โรงพยาบาลที่ผ่านการรับรองคุณภาพ
2. แบบสอบถามนี้แบ่งออกเป็น 2 ส่วน ได้แก่
   ส่วนที่ 1 แบบสอบถามข้อมูลส่วนบุคคล และข้อมูลโรงพยาบาล
   ส่วนที่ 2 แบบสอบถาม การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย โรงพยาบาลที่ได้รับการรับรองคุณภาพ
3. กรุณาตอบแบบสอบถามทุกข้อคำถาม เพื่อให้ได้ข้อมูลที่สมบูรณ์สำหรับการวิเคราะห์

ส่วนที่ 1 ข้อมูลส่วนบุคคลและข้อมูลโรงพยาบาล

ข้อมูลส่วนบุคคล

<u>คำชี้แจง</u> โปรดเติมข้อความลงในช่องว่างที่กำหนดให้ หรือทำเครื่องหมาย √ ลงในช่อง ( ) ที่กำหนดให้ ที่ตรงกับความเป็นจริงมากที่สุด

1. ปัจจุบันท่านมีอายุ.....ปี
2. วุฒิการศึกษาสูงสุดของท่าน.....
3. ประสบการณ์ในการทำงานพยาบาลของท่าน.....ปี .....เดือน
4. ตำแหน่งงานในปัจจุบัน
   ( ) หัวหน้าหอผู้ป่วย/เทียบเท่า
   ( ) พยาบาลประจำการ
   ( ) อื่น ๆ (ระบุ).....
5. กลุ่มงานหรือแผนกที่ท่านปฏิบัติงาน
   ( ) อายุรกรรม
   ( ) ศัลยกรรมทั่วไป
   ( ) ศัลยกรรมอุบัติเหตุ
   ( ) ศัลยกรรมกระดูกและข้อ
   ( ) สูตินรีเวชกรรม
   ( ) กุมารเวชกรรม
   ( ) ผู้ป่วยวิกฤติ (ICU, CCU, PICU, NICU, Sub-ICU, Sub-CCU, RCU, Intermediate ICU)
   ( ) OR
   ( ) OPD, ER
   ( ) อื่น ๆ (ระบุ).....
6. ประสบการณ์ในการทำงานในกลุ่มงาน/แผนกที่ท่านปฏิบัติอยู่ในปัจจุบัน
   .....ปี.....เดือน

7. ท่านได้รับการฝึกอบรมเพิ่มเติมเกี่ยวกับการพัฒนาคุณภาพงาน เช่น TQM/HA/CQI/QA หลังผ่านการรับรองคุณภาพโรงพยาบาล(HA) ระยะเวลา.....วัน.....ชั่วโมง

ข้อมูลโรงพยาบาล

9. โรงพยาบาลที่ท่านปฏิบัติงาน

( ) โรงพยาบาลมหาวิทยาลัย

( ) โรงพยาบาลศูนย์ กระทรวงสาธารณสุข

( ) โรงพยาบาลทั่วไป กระทรวงสาธารณสุข

10. ลักษณะบริการ

จำนวนผู้ป่วยนอก ประมาณวันละ.....คน

จำนวนเตียงผู้ป่วยใน ที่เปิดให้บริการ.....เตียง

จำนวนเตียงผู้ป่วยใน ที่ให้บริการจริง.....เตียง

ลักษณะผู้ป่วยที่ให้การดูแล ตอบได้มากกว่า 1 ข้อ

( ) ผู้ป่วยทั่วไป

( ) ผู้ป่วยเฉพาะทาง

( ) ผู้ป่วยฟื้นฟูสภาพ

( ) อื่น ๆ (ระบุ).....

11. เริ่มดำเนินการจัดการคุณภาพเพื่อให้ได้รับการรับรองคุณภาพโรงพยาบาล (Hospital accreditation / HA) เดือน .....ปี พ.ศ.....

12. ได้รับการรับรอง HA เดือน..... ปี พ.ศ.....

ส่วนที่ 2 แบบสอบถาม การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย

<u>คำชี้แจง</u>

แบบสอบถามนี้ใช้ในการศึกษาเรื่อง การพัฒนาและทดสอบรูปแบบการวัด การคงอยู่ของการบริหารคุณภาพทั่วทั้งองค์กร ในหอผู้ป่วย โรงพยาบาลที่ได้การรับรองคุณภาพ ประกอบด้วย ข้อคำถามจำนวน 76 ข้อ

กรุณาขีดเครื่องหมาย √ ลงใน ( ) ตามความคิดเห็นของท่านมากที่สุด โดยมีเกณฑ์การตอบดังนี้

5 หมายถึง ท่านเห็นว่าข้อความนั้นเป็นจริงมากที่สุด หรือเห็นด้วยมากที่สุด

4 หมายถึง ท่านเห็นว่าข้อความนั้นเป็นจริงมาก หรือเห็นด้วยมาก

3 หมายถึง ท่านเห็นว่าข้อความนั้นเป็นจริงปานกลาง หรือเห็นด้วยปานกลาง

2 หมายถึง ท่านเห็นว่าข้อความนั้นเป็นจริงน้อย หรือเห็นด้วยน้อย

1 หมายถึง ท่านเห็นว่าข้อความนั้นเป็นจริงน้อยที่สุด หรือเห็นด้วยน้อยที่สุด

กรุณาพลิก ↳↳↳

ข้อคำถาม	ระดับความคิดเห็น				
	5	4	3	2	1
1. มีสภาวการณ์จากภายนอกองค์กร ผลักดันต่อการบริหารคุณภาพทั่วทั้งองค์กร					
2. มีสภาวการณ์จากภายในองค์กร ผลักดันต่อการบริหารคุณภาพทั่วทั้งองค์กร					
3. เพื่อให้เกิดความยั่งยืนของการบริหารคุณภาพทั่วทั้งองค์กร องค์กรต้องมีผู้นำการบริหารคุณภาพระดับนโยบาย					
4. การริเริ่มโครงการพัฒนาคุณภาพงานใหม่ๆอย่างต่อเนื่อง ทำให้องค์กรปรับปรุงคุณภาพอย่างสม่ำเสมอ					
5. องค์กรที่มีการปรับปรุงอย่างสม่ำเสมอ มีโอกาสอยู่รอดมากกว่าองค์กรอื่น					
6. โรงพยาบาลผ่านการรับรองคุณภาพได้จากความร่วมมือของทุกฝ่ายอย่างต่อเนื่องในการบริหารคุณภาพทั่วทั้งองค์กร					
7. การบูรณาการกิจกรรมการบริหารคุณภาพทั่วทั้งองค์กรเข้าในการทบทวนผลการปฏิบัติงาน ทำให้การปรับปรุงคุณภาพมีความสม่ำเสมอมากขึ้น					

กรุณาพลิก ↳↳↳

ข้อคำถาม	ระดับความคิดเห็น				
	5	4	3	2	1
8. การชื่นชมผลสำเร็จของการบริหารคุณภาพทั่วทั้งองค์กร จะส่งเสริมการคงอยู่ของการปรับปรุงคุณภาพ					
9. ผู้บริหารคุณภาพทั่วทั้งองค์กรได้ใช้ข้อมูลผลลัพธ์สำหรับกระตุ้นการปรับปรุงคุณภาพ					
10. นโยบายหลักของการบริหารคุณภาพทั่วทั้งองค์กรมีความต่อเนื่อง แม้มีการเปลี่ยนผู้นำ					
11. นโยบายและเป้าหมายการบริหารคุณภาพมีความชัดเจน					
12. ความมุ่งมั่นของบุคลากรที่เกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กรถูกฝังรากในวัฒนธรรมองค์กร					
13. การบริหารคุณภาพทั่วทั้งองค์กรมีประสิทธิผลมากที่สุดเมื่อบรรจุอยู่ในคุณค่าหลักขององค์กร					
14. ทุกคนให้คุณค่าต่อการบริหารคุณภาพทั่วทั้งองค์กรเมื่อเทียบกับงานอื่น					
15. บุคลากรทุกระดับเข้าใจกระบวนการการบริหารคุณภาพทั่วทั้งองค์กร					
16. การบริหารคุณภาพทั่วทั้งองค์กรคือความรับผิดชอบของทุกคน					
17. บุคลากรได้รับการส่งเสริมให้ทำกิจกรรมคุณภาพด้วยตนเองสม่ำเสมอ					
18. บุคลากรตื่นตัวและรู้สึกเป็นโอกาสต่อการปฏิบัติการบริหารคุณภาพทั่วทั้งองค์กร					
19. การบริหารคุณภาพทั่วทั้งองค์กรอยู่ในจิตใจของบุคลากร					
20. บุคคลากรทำให้การบริหารคุณภาพทั่วทั้งองค์กรเป็นส่วนหนึ่งในการทำงานประจำวัน					
21. บุคลากรทุกระดับตระหนักต่อความต้องการของผู้ป่วยอยู่เสมอ					
22. บุคลากรทุกระดับมีทัศนะคติที่ดีต่อการบริหารคุณภาพทั่วทั้งองค์กร					

กรุณาพลิก ↳↳↳

ข้อคำถาม	ระดับความคิดเห็น				
	5	4	3	2	1
23. บุคคลากรทุกระดับยอมรับความคิดเห็นของผู้อื่นที่เกี่ยวกับการปรับปรุงคุณภาพ					
24. บุคลากรทำงานเป็นทีมระหว่างวิชาชีพ ทีมระหว่างสายงานเพื่อปรับปรุงคุณภาพของการดูแลผู้ป่วย					
25. บุคลากรทุกวิชาชีพส่วนใหญ่ มีส่วนร่วมในโครงการการบริหารคุณภาพทั่วทั้งองค์กร					
26. บุคลากรส่วนใหญ่ ให้ความร่วมมือกับหน่วยงานอื่น เพื่อปรับปรุงคุณภาพของการดูแลผู้ป่วย					
27. การบริหารคุณภาพทั่วทั้งองค์กรที่ประสบผลสำเร็จ ต้องมีการเชื่อมต่อระหว่างบุคคลกับบุคคล หรือทีมกับทีม					
28. ทีมนำการบริหารคุณภาพเน้นการทำงานที่ระดับทีมระหว่างวิชาชีพ					
29. การบริหารคุณภาพที่ประสบผลสำเร็จจะสนับสนุนให้บุคลากรมีส่วนร่วมในการแสดงความคิดเห็นต่อการปรับปรุงการดูแลผู้ป่วย					
30. ชุมชนนักปฏิบัติจำเป็นต่อความสำเร็จของการบริหารคุณภาพแบบทั่วทั้งองค์กร					
31. การมีสัมพันธภาพที่ดีระหว่างบุคลากร หรือระหว่างหน่วยงาน ผลักดันให้มีการปรับปรุงคุณภาพ					
32. มีการนำผลงานที่เกี่ยวกับการบริหารคุณภาพทั่วทั่งองค์กรมาประเมินผลรายบุคคล					
33. องค์กรสนับสนุนขวัญและกำลังใจในการพัฒนางานของบุคลากรทั้งหมด					
34. มีการเสริมแรงเชิงบวกอย่างสม่ำเสมอ สำหรับการปฏิบัติกิจกรรมคุณภาพ					
35. องค์กรของท่านให้การสนับสนุนเพียงพอในด้านบุคลากร อุปกรณ์ เวลา ผู้เชี่ยวชาญ ข่าวสาร เพื่อให้บรรลุผลตามเป้าหมายของการบริหารทั่วทั้งองค์กร					

กรุณาพลิก ↳↳↳

ข้อคำถาม	ระดับความคิดเห็น				
	5	4	3	2	1
36. การที่บุคลากรส่วนใหญ่สามารถเข้าถึงข้อมูลที่ใช้สำหรับการบริหารคุณภาพทั่วทั้งองค์กร ทำให้เกิดการพัฒนาคุณภาพต่อเนื่อง					
37. บคคลากรมีความสามารถในการใช้เทคโนโลยีสำหรับการบริหารคุณภาพทั่วทั้งองค์กร					
38. องค์กรของท่านพยายามที่จะลดภาระงานประจำ เพื่อสนับสนุนการบริหารคุณภาพทั่วทั้งองค์กร					
39. ภาระงานของบุคคลากรในองค์กร รวมถึงกิจกรรมคุณภาพด้วย					
40. บุคลากรแสดงถึงความตั้งใจ และให้คุณค่าต่อการบริหารคุณภาพทั่วทั้งองค์กร					
41. บุคลากรสามารถทำกิจกรรมคุณภาพได้โดยง่าย ไม่ซับซ้อน					
42. ผู้บริหารทุกคนในองค์กรมีความมุ่งมั่นต่อการบริหารคุณภาพทั่วทั้งองค์กร					
43. ผู้บริหารสื่อสารเป้าหมายอย่างชัดเจนเกี่ยวกับการบริหารคุณภาพแก่บุคลากรทุกฝ่ายทราบ					
44. ผู้บริหารทุกระดับมีส่วนร่วมในโครงการการบริหารคุณภาพทั่วทั้งองค์กร					
45. ผู้บริหารมีการมอบหมายกิจกรรมคุณภาพแก่ทีมและบุคคลากร					
46. ผู้บริหารเป็นตัวแบบที่ดีสำหรับการบริหารคุณภาพ					
47. ผู้บริหารติดตามตรวจเยี่ยมและปรับปรุงตามคำแนะนำของบุคคลากร					
48. ผู้บริหารกระตุ้นบุคคลากรให้รวมการปรับปรุงคุณภาพในงานไว้ในงานประจำ					
49. ผู้บริหารสนับสนุนกิจกรรมการพัฒนาคุณภาพงานให้ปฏิบัติเป็นกิจวัตรประจำวันของบุคคลากร					
50. ผู้บริหารให้คำปรึกษาและสนับสนุนเกี่ยวกับการปรับปรุงคุณภาพ					

กรุณาพลิก ↳↳↳

ข้อคำถาม	ระดับความคิดเห็น				
	5	4	3	2	1
51. ผู้บริหารติดตามผลลัพธ์ของการบริหารคุณภาพทั่วทั้งองค์กรอย่างต่อเนื่อง					
52. ผู้บริหารติดตามผลการปฏิบัติงานด้านการบริหารคุณภาพอย่างต่อเนื่อง					
53. ผู้บริหารมีนโยบายที่ชัดเจนเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร					
54. ผลลัพธ์ของการบริหารคุณภาพทั่วทั้งองค์กรสอดคล้องกับเป้าหมายขององค์กร					
55. มีการติดตามตัวชี้วัดด้านผลลัพธ์ในองค์กรอย่างต่อเนื่อง					
56. ผู้บริหารสื่อสารตัวชี้วัดและผลลัพธ์ขององค์กรแก่บุคลากรอย่างต่อเนื่อง					
57. มีตัวชี้วัดผลลัพธ์ความพึงพอใจของผู้ใช้บริการ ข้อร้องเรียน รายงานอุบัติการณ์ และโครงการการบริหารคุณภาพทั่วทั้งองค์กร					
58. มีการตรวจประเมินการบริหารคุณภาพภายในองค์กรอย่างสม่ำเสมอ ทุก 6 เดือน					
59. มีระบบประเมินผลลัพธ์ของกระบวนการบริหารคุณภาพทั่วทั้งองค์กร					
60. มีการประเมินคุณภาพการปฏิบัติการทำงานเป็นทีม					
61. องค์กรมีการเปรียบเทียบผลลัพธ์ระหว่างหน่วยงาน ทั้งภายในและนอกองค์กร					
62. บุคลากรใช้ข้อมูลจากการประเมินผลลัพธ์มาปรับปรุงงาน					
63. ผู้ใช้บริการและผู้ป่วยส่วนใหญ่พึงพอใจในการบริการขององค์กร					
64. บุคลากรส่วนใหญ่ พอใจกับการทำงานในองค์กร					
65. บุคลากรส่วนใหญ่ภักดีต่อองค์กร					
66. บุคลากรทุกระดับได้รับการฝึกอบรมอย่างต่อเนื่องเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร					

กรุณาพลิก ↳↳↳

ข้อคำถาม	ระดับความคิดเห็น				
	5	4	3	2	1
67. การแลกเปลี่ยนความเป็นเลิศเกิดขึ้นเป็นประจำ สม่ำเสมอ					
68. มีบรรยากาศการเรียนรู้ที่ดีในองค์กร					
69. บุคลากรส่วนใหญ่มีส่วนร่วมในการแลกเปลี่ยนเรียนรู้เกี่ยวกับการบริหารคุณภาพ					
70. บุคลากรทุกระดับเข้าใจการบริหารคุณภาพทั่วทั้งองค์กร					
71. บุคลากรใหม่ได้รับการฝึกอบรมเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร					
72. บุคลากรส่วนใหญ่มีการพัฒนาตนเองอย่างต่อเนื่อง					
73. บุคลากรบางส่วนได้ไปศึกษาดูงานจากที่อื่น เพื่อนำมาปรับปรุงคุณภาพการดูแล					
74. มีการแลกเปลี่ยนเรียนรู้หลายวิธีเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กร					
75. บุคลากรใช้การคิดอย่างเป็นระบบในการแก้ปัญหา					
76. บุคลากรเข้าถึงทัพยากรเกี่ยวกับการบริหารคุณภาพทั่วทั้งองค์กรได้สะดวก					

ข้อคิดเห็นใดๆที่จะเป็นประโยชน์ต่องานวิจัยนี้ ผู้วิจัยขอรับไว้ด้วยความขอบคุณยิ่ง

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สมสมัย สุธีรศานต์

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BIOGRAPHY

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Date of Birth: 1 July 1953
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Bsc. (Nursing) 1975, Ramathibodi Nursing School, Mahidol University
M.Ed (Nursing Administration) 1991, Chulalongkorn University
NNP (Neonatal Nurse Practitioner) 1980, Ramathibodi University Hospital

Work Experience:

1975-1980	Staff Nurse in Neonatal Unit, Ramathibodi University Hospital, Thailand
1980-1981	Assistant to Nurse Manager at Hatyai Hospital
1982-1984	Nurse Manager, Songklanagarind University Hospital, Prince of Songkla University (PSU)
1985-2001	Supervisor of Nursing Service Department
1991-2001	Assistant Director of Nursing Service Department
2004-present	Director of Nursing Service Department, Songklanagarind University Hospital, Thailand

Published articles:

Self awareness development by sensitivity training: research
Empathy training for psychosocial care abilities of nurses: research
Job satisfaction of nurses: research
Psychosocial care quality as patients' perception: research
Organizational climate of health personnel in Department of Nursing: research
Empathic nursing
Facilitator experience
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Nursing standard and quality
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