



รายงานวิจัยฉบับสมบูรณ์

โครงการ COMPREHENSIVE DISCHARGE PLANNING AND HOME FOLLOW UP OF THAI ELDERLY CORONARY ARTERY BYPASS GRAFT (CABG) PATIENTS

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สนับสนุนโดยสำนักงานกองทุนสนับสนุนการวิจัย

(ความเห็นในรายงานนี้เป็นของผู้วิจัย สกว.ไม่จำเป็นต้องเห็นด้วยเสมอไป)

กิตติกรรมประกาศ

งานวิจัยครั้งนี้สำเร็จได้ด้วยความกรุณาของ รศ. พันธุ์ศักดิ์ ลักษณะบุญส่ง Assoc.Prof. Dr. Kathleen McCauley ที่เป็นผู้ร่วมวิจัย และ Prof. Dr. Linda Brown ที่ปรึกษาในการวิจัย ถึงแม้ท่านจะป่วย และต้องหยุดทำงานเนื่องจากอุบัติเหตุ ทำให้ไม่สามารถช่วยงานได้มาก แต่ได้ให้แรงใจสนับสนุนมาโดยตลอด และได้ให้ Prof. Dr. Kathy Bowles ช่วยดำเนินงานต่อและให้คำแนะนำ ตลอดจน Prof.Dr. Mary Naylor ผู้ได้เป็นต้นแบบของการทำการวางแผนจำหน่ายอย่างเป็นรูปธรรมในกลุ่มผู้ป่วย ช่วยในการสนับสนุนเครื่องมือต่างๆ ที่ใช้ในการวิจัยครั้งนี้ ทำให้การดำเนินงานไปได้อย่างดี เก็บข้อมูลได้อย่างราบรื่น แต่ใช้เวลานาน เพราะเป็นกลุ่มผู้ป่วยสูงอายุที่ได้รับการผ่าตัดทำทางเบี่ยงหลอดเลือดหัวใจ และต้องเยี่ยมที่บ้าน

การวิจัยครั้งนี้ จะไม่สามารถสำเร็จลงได้ หากไม่ได้รับการสนับสนุนเงินทุนจากสำนักงานกองทุนสนับสนุนการวิจัย สกว. และ บิดา ในการให้การช่วยเหลือในการเดินทางไปเยี่ยมผู้ป่วย เพื่อให้ได้ดำเนินการวางแผนจำหน่ายอย่างเป็นรูปแบบ สามี และลูก ในการให้เวลาในการดำเนินการเก็บข้อมูล และนำประโยชน์มาให้ผู้ป่วย ทั้งในรูปแบบการวางแผนจำหน่าย และนวัตกรรมที่เป็นผลจากงานวิจัย ตำรา และ การได้รับการเชิญบรรยายในที่ต่างๆ

ผศ. ดร. อุษาวดี อัครวิเศษ

COMPREHENSIVE DISCHARGE PLANNING AND HOME FOLLOW UP OF THAI ELDERLY CORONARY ARTERY BYPASS GRAFT (CABG) PATIENTS

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Abstract: Current emphasis on cost containment has result in shortened hospital stays following surgery and earlier management of the recovery process by the patient and family. Without the effective discharge planning, poor outcomes after discharge such as readmissions, the burden of care on families, and health care costs may occur. Based on the investigator's earlier research, the results provide the basis comprehensive discharge planning and home follow-up from which culturally responsive and effective nursing care for Thai patients and their families recovering from CABG surgery.

The purpose of this study was to determine the effects of a comprehensive discharge planning and home follow-up protocol designed specially for Thai elderly CABG patients and implemented by nurse specialists on patient and caregiver outcomes and charges for care. The study design was a randomized clinical trial comparing patient and caregiver outcomes and cost of care between two groups of Thai elderly CABG patients. Eligible patients were Thai elderly patients who have had CABG surgery for the first time. The samples were recruited from a cardiac surgery department, at university hospital, Bangkok, Thailand. This major care center serves as a major area for cardiac disease patients, including CABG patients in Thailand. Patients and caregivers in the intervention group received the hospital's routine plan and a comprehensive, individualized discharge planning protocol developed specifically for Thai elderly CABG patients and implemented by nurse specialists. The protocol extended from hospital admission to 12 weeks after discharge. The main outcome measures were

post-discharge morbidity (rehospitalizations and acute care visits), functional status, subject health rating, and satisfaction with care.

A total of 219 patients (108 in the control group and 108 in the intervention group) were enrolled in the study. Mean age of sample was 64 years; 55% were male. The study results indicated that the CABG elders who received a comprehensive discharge planning and home follow-up intervention experienced significantly higher patient outcome level in subject health rating, satisfaction with care than the CABG elders who did not have this intervention. In addition, the cost of care outcome (for acute care visits) for the experimental group was less than the cost of care for the control group. There were no significance group differences in functional status or individual cost of care.

A comprehensive discharge planning and home follow-up protocol designed specifically for Thai elderly CABG patients and implemented by nurse specialists increased patient outcome level in subject health rating, satisfaction with care and decreased the cost of care outcome for acute care visits and rehospitalization.

Key words: comprehensive discharge planning, home follow-up, elders, Coronary artery bypass graft patients, functional status, rehospitalization, cost of care outcome, acute care visits

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การวางแผนจำหน่ายผู้ป่วยอย่างสมบูรณ์แบบและการติดตามเยี่ยมบ้านในผู้ป่วยสูงอายุไทยที่
รับการผ่าตัดทำทางเบี่ยงหลอดเลือดหัวใจ **COMPREHENSIVE DISCHARGE PLANNING AND
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บทคัดย่อ: วัตถุประสงค์การวิจัยครั้งนี้ เพื่อศึกษาผลของการวางแผนจำหน่ายผู้ป่วยอย่างสมบูรณ์แบบ
และการติดตามเยี่ยมบ้านในผู้ป่วยสูงอายุไทยที่ได้รับการผ่าตัดทำทางเบี่ยงหลอดเลือดหัวใจ โดย
การศึกษาเปรียบเทียบระหว่างกลุ่มที่ได้รับการวางแผนจำหน่ายอย่างสมบูรณ์แบบ และการติดตามเยี่ยม
บ้าน กับกลุ่มที่ได้รับการวางแผนจำหน่ายตามปกติ ตัวแปรที่ทำการศึกษาเปรียบเทียบระหว่างกลุ่ม
ผู้ป่วยทั้งสองกลุ่ม ได้แก่ ความสามารถในการปฏิบัติกิจกรรม การประเมินเกี่ยวกับภาวะสุขภาพของ
ตนเอง อัตราการเจ็บป่วยหลังจำหน่ายออกจากโรงพยาบาล (Post-Discharge Morbidity) ความพึงพอใจ
ในการดูแลที่ได้รับ และค่าใช้จ่าย จากการศึกษพบว่า กลุ่มที่ได้รับการวางแผนการจำหน่ายอย่าง
สมบูรณ์แบบและการติดตามเยี่ยมบ้าน มีคะแนน การประเมินเกี่ยวกับภาวะสุขภาพของตนเอง ความพึง
พอใจในการดูแลที่ได้รับ มากกว่ากลุ่มที่ได้รับการวางแผนจำหน่ายตามปกติอย่างมีนัยสำคัญทางสถิติที่
ระดับ 0.05 นอกจากนี้ กลุ่มทดลองมีการสูญเสียค่าใช้จ่ายน้อยกว่า กลุ่มที่ได้รับการวางแผนจำหน่าย
ตามปกติอย่างมีนัยสำคัญทางสถิติ เป็นผลจากค่าใช้จ่ายของการกลับเข้ารับการรักษาในโรงพยาบาล
หรือสถานบริการสาธารณสุขก่อนวันนัด และการหาแหล่งช่วยเหลือของกลุ่มทดลองน้อยกว่ากลุ่ม
ควบคุม

คำสำคัญ: การวางแผนจำหน่ายอย่างสมบูรณ์แบบ การติดตามเยี่ยมบ้าน ผู้ป่วยสูงอายุ การผ่าตัด
ทำทางเบี่ยงหลอดเลือดหัวใจ ความสามารถในการปฏิบัติกิจกรรม การประเมินเกี่ยวกับภาวะสุขภาพ
ของตนเอง การกลับเข้ารับการรักษาในโรงพยาบาลก่อนวันนัด ความพึงพอใจในการดูแลที่ได้รับ และ
ค่าใช้จ่ายในการรักษา

ได้รับเงินสนับสนุนการวิจัยจากสำนักงานกองทุนสนับสนุนการวิจัย สกว.

Introduction

Background

The incidence of coronary heart disease (CHD) remains significant in Thailand. Coronary artery bypass graft surgery (CABG) is one of the most frequently used surgical procedures for CHD. Although CABG may relieve the symptoms of CHD, postoperative sequelae such as pulmonary complications, prolonged weakness, and volume overload still occur. Postoperative sequelae may be prevented by effective health promotion. Following discharge, elderly CABG patients are expected to perform normal activities of daily living and live a healthy lifestyle. Patients' responses to surgery, their role in recovery, and their responses to complications and continuing limitations are influenced by several social and cultural factors.

Current emphasis on cost containment has result in shortened hospital stays following surgery and earlier management of the recovery process by the patient and family. Therefore, nurses and physicians have limited time to observe patients' recovery process and detect complications. Without the effective discharge planning, poor outcomes after discharge such as readmissions, the burden of care on families, and health care costs may occur. Several approaches to improve discharge planning for surgical patients have recently been tested. Based on the investigator's earlier research, the results provide the basis comprehensive discharge planning and home follow-up from which culturally responsive and effective nursing care for Thai patients and their families recovering from CABG surgery. This comprehensive discharge planning and home follow-up, as a health promotive and preventive intervention, has focused on enhancing the self-care abilities of CABG elderly patients and the dependent-care capabilities of families through the recovery process. The purpose of this study is to determine the effects of a comprehensive discharge planning and home follow-up protocol designed specially for Thai elderly CABG patients and implemented by nurse specialists on patient and caregiver outcomes and charges for care.

Review of the Literature

The overall pattern of diseases is changing from communicable to non-communicable in such developing countries as Thailand. The current 15% mortality from coronary heart disease (CHD) in developing countries is likely to escalate to 25% by the year 2000. Cardiovascular disease will be the leading cause of death in many developing countries (Inclen Multicentre Collaboration Group, 1993). Heart disease already is the number one cause of death in Thailand, accounting for 72.1% of all deaths (Bureau of Health Policy and Planning, 1997). CHD is the leading cause of morbidity and mortality in Thai patients with heart disease. The current rate of almost 12% represents a considerable increase over the past decade.

The exact cause of CHD remains unknown, but specific risk factors have been clearly identified, including age, gender, marital status, hypertension, hypercholesterolemia, cigarette smoking, and obesity (Chanrit, 1985; Kaplan & Keil, 1993; Marshall, 1991; Senior, 2000). Advances in technology and pharmacology have extended the life span of individuals with coronary artery disease, and surgical procedures, most commonly coronary artery bypass graft surgery (CABG), are performed with increasing frequency to alleviate the symptoms of CHD (Becker, Corrao, & Alpert, 1990, Chanrit, 1985; Siriraj Hospital, 1998). The rates of CABG surgery in university hospitals in Thailand, especially Siriraj Hospital, have increased during the past several years.

Although improvements in anginal symptoms and treadmill performance are demonstrated in patients following CABG, limitations in functional status may continue. In addition, postoperative sequelae do occur, including pulmonary complications, prolonged weakness, fatigue, volume overload, and anxiety.

Patients' responses to surgery, their role in recovery, and their responses to complications and continuing limitations are influenced by several social and cultural factors. Dependence while ill is well accepted and encouraged by others in Thai culture (Girling, 1981). Consequently, Thai CABG patients may perceive themselves as fragile persons and may be reluctant to take care of themselves. This reluctance, in turn, may exacerbate complications and functional limitations. Pongkeaw (1997) studied health behavior in Thai CABG women and found that exercise, emotional and social behaviors, and utilization of health care services need to be better promoted. Pringpurd (1995) found that Thai male and female CABG patients reported low to medium self-care behavior scores. Pringpurd's study findings also revealed that social support, educational level, and health perception were related to self-care behaviors. Nurse roles have long provided health promotion and disease prevention interventions as a major component of their services to individuals and families.

Current emphasis on cost containment has resulted in shortened hospital stays following surgery and earlier management of the recovery process by the patient and family. Therefore, nurses and physicians have limited time to observe patients' recovery process and detect complications. Without the effective discharge planning, poor outcomes after discharge such as readmissions, the burden of care on families, and health care costs may occur. Several approaches to improve discharge planning for surgical patients have recently been tested. Based on the investigator's earlier research (Asdornwised, 2000), the results provide the basis for comprehensive discharge planning and home follow-up from which culturally responsive and effective nursing care for Thai patients and their families recovering from CABG surgery. This comprehensive discharge planning and home follow-up, as a health promotive and preventive intervention, has focused on enhancing the self-care abilities of CABG elderly patients and the dependent-care capabilities of families through the recovery process. The purpose of our study is to determine the effects of a comprehensive discharge planning and home follow-up protocol designed specially for Thai elderly CABG patients and implemented by nurse specialists on patient and caregiver outcomes and charges for care.

Research Aim

To examine the effectiveness of a specific comprehensive discharge planning and home follow-up intervention for Thai elderly CABG patients

Hypotheses

1. A comprehensive discharge planning and home follow-up intervention designed to enhance the ability of Thai CABG patients to manage recovery process and improve functional status will result in equivalent or superior patient outcomes for this CABG patient group.
2. A comprehensive discharge planning and home follow-up intervention designed to increase the ability of Thai CABG patients to manage recovery process and improve functional status will result in lower health service costs for this patient group.

Conceptual Framework

The framework for this study is a conceptualization of a balance between cost of care and quality of care in health services. This conceptual framework represents a modification of the three variable framework of quality of care, including outcome, patient satisfaction, and cost proposed by Doessel and Marshall (1985). The proposed project uses a two variable framework of cost and outcome, in which patient satisfaction is viewed as an outcome of the health service. The health service is a modification of the Quality-Cost Model of Clinical Specialist Transitional Care (Brooten, Brown, Munro, York, Cohen, Roncoli, & Hollingsworth, 1988). The model is being used for the proposed work since it incorporates: ongoing monitoring and management of recovery process; patient/caregiver education regarding symptoms, diet, medication, and activity with validation of patient/caregiver learning; a strong patient-provider relationship through continuity of care across health care settings; hospital and home visits and telephone contact; and collaboration and consultation with the patient's physician and a multi-disciplinary health care team.

Methods

The study design was a randomized clinical trial comparing patient and caregiver outcomes and cost of care between two groups of Thai elderly CABG patients.

Subjects/ Sampling

Eligible patients were Thai elderly patients who had CABG surgery for the first time. Persons with more than one CABG surgery may experience a different recovery process and have a high risk of postoperative complications and, therefore, were excluded from the study. Thus, patients will be recruited from a cardiac surgery department, at Siriraj Hospital, Bangkok, Thailand. This major care center serves as a major area for cardiac disease patients, including CABG patients in Thailand. In addition to, receiving physician-referred cases, the hospital serves as a primary cardiovascular care center for people from all four parts of Thailand who cannot afford the more prohibitive fee charged by private physicians or private hospitals. Thus, the university hospital serves high, middle, and low class patients from a broad geographical region.

Criteria for patients selection included Thai male and female adults who a) were admitted to Siriraj hospital for CABG surgery; b) were not limited in activities from physical disability, such as cerebrovascular accident or significant neurological or cognitive disorders that might interfere with self-care actions; c) were 60 and older; d) were able to be contacted by telephone after discharge and reside in Bangkok or countryside; and e) were willing to participate in the study and give informed consent.

Caregivers, persons identified by patients as those who assumed primary responsibility for their care after discharge, also enrolled. It was anticipated that these caregivers presented during home visit with patients.

The sample consisted of 216 subjects (108 subjects in both the control group and the intervention group). A total of 275 patients were admitted to the University Hospital for CABG surgery. 86% of these CABG surgery admissions met the study criteria, including geographical requirements. From this pool of 238 eligible patients, 216 were enrolled, but 8.48% for the intervention group, 8.33% for the control group withdrew or died before the completion of the study. The remaining 216 patients formed two groups. For the more complex analyses proposed, this size sample was sufficient to detect protocol differences, strata differences, and interactions ($f = 0.2$, $\alpha = .05$, $\text{power} \geq 0.8$).

Control Group

Patients in the control group received the hospital's routine discharge plan, which was used for CABG patients of all ages. Discharge planning services were provided in accordance with the medical plan of care.

Intervention Group

Patients and caregivers in the intervention group received the hospital's routine plan and a comprehensive, individualized discharge planning protocol developed specifically for Thai elderly CABG patients and implemented by nurse specialists (See Appendix). The protocol extended from hospital admission to 12 weeks after discharge. Compare with the hospital's routine procedure, the discharge planning protocol included the following features: 1) comprehensive initial and ongoing assessment of the discharge planning needs of the elderly CABG patient and his or her caregiver; 2) development of a discharge plan in collaboration with the patient, caregiver, physician, nurses, and other members of the health care team; 3) validation of patient and caregiver education; 4) coordination of the discharge plan throughout the patients' hospitalization and through 12 weeks after discharge; 5) interdisciplinary communication regarding discharge status; and 6) ongoing evaluation of the effectiveness of the discharge plan.

One nurse specialist with master's degree in nursing and a minimum of 2 years of practice in cardiology clinic or ward was hired to implement the comprehensive discharge planning protocol for patients in the intervention group. Within 24 to 48 hours of hospital admission, the nurse specialist would visit the patient and contact the caregiver to complete the initial patient and caregiver assessment and to document the preliminary discharge plan.

The nurse specialist visited the patient every 48 hours thereafter to implement the plan through patient and caregiver education, consultation with health care team members, and counseling. Within 24 hours of discharge, summaries of the discharge plan were distributed to the patient. After discharge, nurse specialist would visit patient and caregiver at home at least 3 times (1 within 2 weeks after discharge, a second 6 weeks after discharge, and a third 12 weeks after discharge). In addition to personal visits, the nurse specialists was available 7 days a week by telephone (8 a.m. to 10 p.m. on weekdays; 8 a.m. to 12 p.m. on weekends) for 12 weeks for any questions or concerns from the patient and caregiver that were relevant to the discharge plan. The nurse specialist would initiate at least weekly telephone contact with patient or caregiver to monitor the patient's progress and intervene when necessary.

Data Collection

Table 1 identifies the outcome variables that were measured and data collection points. The variables selected and measurement points were based on prior studies with this patient population and consultants' recommendations. Data were collected by research assistants (master's students in nursing). Strategies to maintain blinding such as rotation of data collectors were used.

Table 1.**Study Variables and Data Collection Points**

Study Variables	Data Points			
	Hospital Admission	2 week	Post-Discharge 6 weeks	12 weeks
Patient Outcomes				
1. Post-Discharge Morbidity				
a. Rehospitalizations		X	X	X
b. Acute Care Visits		X	X	X
2. Functional Status	X	X	X	X
3. Subjective Health Rating	X	X	X	X
4. Satisfaction with care		X	X	X
Cost of Care Outcomes				
1. Hospitalization Cost	X			
2. Rehospitalizations		X	X	X
3. Acute Care Visits		X	X	X
4. Home Follow-up Services (Intervention Group Only)			X	X

There were 4 data collection points in the proposed study (hospital admission baseline and 2, 6, and 12 weeks post-discharge). Patient outcomes assessed included: post-discharge morbidity (rehospitalizations and acute care visits), functional status, subject health rating, and satisfaction with care. Baseline data on the subject's functional status and subjective health rating were collected via face-to-face interviews with subjects as close to within 24 hours of hospital admission as possible.

Baseline data collection required approximately 20 minutes for subjects to complete. Follow-up data on functional status, subjective health rating was collected by research assistants at 2, 6, 12 weeks interviews of approximately 40 minutes. Collection of data on satisfaction with care extended through 12 weeks.

Instruments that were effective in measuring patient outcomes variables were used in this study: functional status (Enforced Social Dependency Scale); satisfaction with care (The Patient Satisfaction with Care Questionnaire) and subjective health rating.

1. **Post-Discharge Morbidity-** The numbers and reasons for rehospitalization and acute care visits after the index hospital discharge visits were used to measure the post-discharge morbidity. Data on rehospitalizations and acute care (non-routine) visits to emergency room or clinical visits were collected on standardized data forms which include subject identification number. Data on rehospitalizations and acute care visits were validated by physicians or nurses and abstracted from charts.

2. **Functional Status-** The subjects' functional status was measured using the Enforced Social Dependency Scale (ESDS) by C. Moinpour, R. McCorkle, and J. Saunders (1981). Enforced Social Dependency is defined as needing help or assistance from other people to perform activities or roles that under normal circumstances adults can do by themselves. The original scale, developed in 1978, has been revised and tested with a variety of patient groups, including several samples of elderly. This instrument was selected because it measures social as well as personal competence. McCorkle and Benoliel reported a 0.8 reliability coefficient for the total scale with cardiac patients and a test-retest reliability for the revised scale was 0.62. Cronbach's alpha has been reported at 0.92 by Fink (1985) who also reported a high correlation between ESDS and the Sickness Impact Profile. The reliability and validity data currently available suggest that this instrument is an objective measure of the two dimensions of functional status (physical and social competence) that are of interest in this study. The ESDS takes 10 minutes to administer.
3. **Satisfaction with Care-** The Patient Satisfaction with Care Questionnaire was developed by Naylor (1994) to examine satisfaction with discharge planning. This instrument was modified to assess patients' satisfaction with preparation they received to manage disease/recovery process and improve health behaviors. The questionnaire consists of 9 items that are answered on a 4 point Likert scale and one open-ended semi-structured item. Test-retest reliability for the scale was 0.78; internal consistency (Cronbach's alpha) was 0.81. The questionnaire takes 5 minutes to administer.
4. **Subjective Health Rating-** Subjective health rating is the individual's perception and overall evaluation of his or her overall health. It will be measured using a single item question, "How would you rate your overall health at the present time?" with responses reported on a four-point scale: excellent, good, fair or poor. Maddox reported highly significant relationships between self-reports and physicians' ratings. Maddox and Douglass (1973) further reported that these relationships remain stable over time.

Statistical Analysis

Preliminary Analyses-Univariate. The two study groups were not expected to differ because of random assignment; however, this assumption checked by appropriate statistical tests with regard to sociodemographic and health status variables. At each data point, frequency distributions were tabulated and summary statistics computed for all study variables. Normality was assessed in relevant continuous distributions, and normalizing transformations considered where appropriate. Representative univariate statistics (mean, median, standard deviation and standard error) was computed for all quantitative variables after inspection of frequency distribution; count and percentages, along with the standard error was computed for all dichotomous variables.

Preliminary Analyses-Bivariate. Correlations/associations between all variables will be examined for potential redundancy or multicollinearity (for subsequent regression analyses) and for potential control in later analyses. The specific correlational/associational approach will vary depending on the nature of the variables (categorical or quantitative) and

the shape of frequency distributions. If there are relationships between variables and outcomes which might affect interpretations of data, then these variables were considered for potential adjustment in subsequent analyses by stratification, as covariates, or by forced entry in regression equations.

To statistically assess intervention effects, at each time point, without capitalizing on chance, the initial analyses were t-tests, Mann-Whitney tests, chi-squares or Fisher's Exact tests depending on the shape of the frequency distribution for the outcome variable and the nature of that variable.

Testing for Intervention Effects Across Time. The patient outcome analysis was based on an intent-to treat principle, with all subjects who were enrolled in the study (i.e. meet eligibility criteria, provide informed consent and are randomized into the trial) included in the analysis. In testing for differences by the intervention variable over time, the statistical approach must consider the issue of repeated measures of outcomes. To statistically assess intervention effects across time in quantitative outcome variables, repeated measures analyses of variance (using MANOVA) were conducted (Munro & Page, 1993). In general, the analysis was 2 X 4 MANOVAs (the study group factor had two levels and the repeated measures factor has at most 4 time points). The main effects of the study group and time were examined, but the focus of these analyses was the interaction between study group and time on the outcome. With complete data from all 108 subjects in each group at each time point, the sample size was sufficient to detect interactions ($f = 0.2$, $\alpha = 0.05$, $\text{power} \geq 0.8$). The specific number of time points may vary, however, according to the variables being measured, the amount of missing data for the most distant data points, and the possible need to combine data points. In addition, 95% Bonferroni-adjusted paired sample comparisons and confidence intervals were reported.

For dichotomous variables such as rehospitalization (yes/no) or acute care visits (yes/no), some patients had readmissions at several time points leading to non-independence of observations over time. First, the total number of rehospitalizations over time could be compared between groups. The distributions could be expected to be extremely skewed necessitating a Mann-Whitney test. Second, each patient can be classified with regard to readmissions over 12 weeks as none or at least one. A logistic regression analysis then test for differences between groups. If appropriate, the outcome of rehospitalization at cumulative time points could be classified as none, one, or more than one. A polytomous logistic regression could then test for differences between group. Third, "cumulative" could be defined in different ways rather than as 12 weeks. It would be informative to classify patients as suggested previously after 2 weeks, 6 weeks, and 12 weeks. -

Results

A total of 216 patients (108 in the control group and 108 in the intervention group) were enrolled in the study. Mean age of sample was 64 years; 55% were male. The attrition rate from the intervention group (including deaths) was 8.48% (10/118) compared with 8.33% (10/120) for the control group ($p=.35$). Most of the deaths occurred during the hospitalization or in the 5-6 weeks after discharge.

Post-discharge morbidity

Rehospitalizations: The number of CABG elders in the control group who received the hospital's routine discharge plan were more than the number of CABG elders in the intervention group who received comprehensive discharge planning to be rehospitalized at least one time; 23.15% vs 13.89%; $p < .01$; at more than 2 times; 13.89% vs 4.63%; $p < .01$. The reduction in hospitalizations was significant comparing between the intervention and control group during both 5-6 weeks and 11-12 weeks after discharge.

Acute care visits: The number of patients in the control group who visit emergency room or clinical visits was more than the number of patients in the intervention group. Data on acute care visits were validated by physicians or nurses and/or abstracted from charts.

Functional status: The functional status scores between control group and intervention were not different. The result was supported from other discharge planning and home follow-up studies in recent years such as the studies by Nalor et al., Townsend et al.'s and Brooten et al.

Subjective health rating and Satisfaction with care : The study results indicated that the CABG elders who received a comprehensive discharge planning and home follow-up intervention experienced significantly higher patient outcome level in subject health rating, satisfaction with care than the CABG elders who did not have this intervention.

Cost of care outcome: The cost of care outcome (for acute care visits) for the experimental group was less than the cost of care for the control group. There were no significance group differences in individual cost of care.

Discussion

This intervention group received much more benefit than the control group including the patient outcome (rehospitalization, satisfaction of care, subjective health rating) and cost of care outcome (acute care visits) excepting functional status and individual cost of care. This intervention group was implemented by the nurses specialist who was master's prepared specialists in nursing. She also had the expertise in communicating, collaborating, and coordination care with physicians and other health care professionals. The nurse specialist would initiate at least weekly telephone contact with patient or caregiver to monitor the patient's progress and intervene when necessary. The findings gave support to the roles of APN nurses. In addition, the intervention protocol generated cost reduction for cost of acute care visits excepting individual cost of care because the number of acute care visit uses such as polyclinics, herbal cost in the intervention group less than the number of acute care visits in the control group approximately \$ 100.

After hospital discharge, 20 % of the control group had been rehospitalized compared with 15% of the intervention group. This study included rehospitalization rate other than study hospitals. The functional status scores between control group and intervention were not different. The result was supported from other discharge planning and home follow-up studies in recent years such as the studies by Nalor et al., Townsend et al.'s and Brooten et al. The CABG patients in both groups did not change their activities much because they were elders and most of them had family members to take care at home. They usually did not get support from their family members to do daily activities by themselves.

In conclusion, a comprehensive discharge planning and home follow-up protocol designed specifically for Thai elderly CABG patients and implemented by nurse specialists increased patient outcome level in subject health rating, satisfaction with care and decreased the cost of care outcome for acute care visits and rehospitalization.

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Appendix

Comprehensive Discharge Planning and Home Follow-up Protocol

The comprehensive discharge planning and home follow-up protocol involves both the patient and his or her caregiver. The nurse specialists will complete the following protocol for patients in the intervention group.

Initial hospital visit: The nurse specialist visits all CABG patients and contacts all caregivers in the intervention group within 24-48 hours after admission to assess their discharge planning needs and expectations.

Subsequent visits: The nurse specialist visits the patients at least every 48 hours until discharge to complete the comprehensive patient assessment patients' and caregivers' knowledge of CABG surgery and recovery process, and availability and adequacy of family support.

The nurse specialist will collaborate with the multidisciplinary team and attending physician in individualizing the discharge and home follow-up plan of care and with hospital staff (e.g. primary nurse, physical therapist) in implementing the plan.

Discharge visit: Home Care Component of Intervention. The nurse specialist visits the patients at home 2 weeks, 6 weeks, and 12 weeks after discharge to emphasize increasing the effectiveness of the individualized plan, increasing the subjects' ability to manage the recovery process, and improving their health behaviors. A targeted physical assessment and environment assessment will be completed by the nurse specialist to detect the presence of worsening symptoms and treats during recovery period. If needed, additional adjustments in the individualized plan will be made by the nurse specialist in consultation with their physician and team. A targeted physical assessment and environment assessment will be completed by the nurse specialist to detect the presence of worsening symptoms and treats during recovery period.

Telephone outreach after discharge: The nurse specialist initiates initiate at least weekly telephone contact with patient or caregiver. The purpose of these calls is to follow-up on the patients' functional status and to monitor the patient's efforts to manage recovery process and change health behaviors.

Telephone Availability: The nurse specialists is available 7 days a week by telephone (8 a.m. to 10 p.m. on weekdays; 8 a.m. to 12 p.m. on weekends) for 12 weeks for any questions or concerns from the patient and caregiver that are relevant to the discharge plan.

Output จากโครงการวิจัยที่ได้รับทุนจาก สกว.

1. นำเสนอในการประชุมวิชาการนานาชาติ International Council of Nurses (ICN) 2007 (แนบ Abstract และ หนังสือแสดงวันเวลา การนำเสนอ และสถานที่)
2. ผลงานตีพิมพ์ในวารสารวิชาการนานาชาติ (เตรียมตรวจในเรื่องภาษา และนำเสนอในวารสาร International Journal of Nursing Studies ตามคำแนะนำของอาจารย์ที่ปรึกษา)
3. การนำผลงานวิจัยไปใช้ประโยชน์
 - เชิงสาธารณะ มีเครือข่ายความร่วมมือ และให้ความสนใจในการจัดการอบรม ในหัวข้อ การวางแผนจำหน่ายแบบสมบูรณ์แบบ ซึ่งเป็นองค์ประกอบในการประเมิน Hospital Accreditation ในหลายโรงพยาบาลทั้งส่วนกลาง และส่วนภูมิภาค ตลอดจนได้รับทุน Postdoctoral Training จาก International Doctoral Education of Nurses (INDEN) ในหัวข้องานวิจัย Comprehensive discharge planning for valvular surgery patients ในปี 2007 ไปอบรมที่ School of Nursing, University of Pennsylvania, USA และร่วมในทีม Center of Transitional Health ของ School of Nursing, University of Pennsylvania, Philadelphia, USA (หนังสือตอบให้ทุนไปทำ Postdoctoral training 4 เดือน จาก School of Nursing, University of Pennsylvania)
 - เชิงวิชาการ (มีการพัฒนาการเรียนการสอน/สร้างนักวิจัยใหม่) มีการสอนในหัวข้อ Discharge Planning และ Continuing care ในระดับ ปริญญาตรี โท และได้มีนักศึกษาปริญญาโท ได้สำเร็จการศึกษาในหัวข้อ ผลของการใช้ Comprehensive discharge planning ทั้งในกลุ่มผู้ป่วยที่ได้รับการผ่าตัดเต้านม 1 คน (แนบหน้าแรก วิทยานิพนธ์) และกลุ่มผู้ป่วยโรคหัวใจล้มเหลว 1 คน (แนบหน้าแรกวิทยานิพนธ์) ตลอดจนได้รับเชิญสอนทั้งในและนอกมหาวิทยาลัย เช่น คณะพยาบาลศาสตร์ มหาวิทยาลัยธรรมศาสตร์ และมหาวิทยาลัยบูรพา และจากแผนกอายุรศาสตร์ ศัลยศาสตร์ กุมารเวชศาสตร์ โรงพยาบาลศิริราช โรงพยาบาลราชวิถี โรงพยาบาลพระพุทธชินราช โรงพยาบาลราชบุรี โรงพยาบาลอุดรธานี โรงพยาบาลอุบลราชธานี และเครือข่ายพยาบาลภาคเหนือตอนล่าง ชมรมโรงพยาบาลภาคเอกชน และอื่นๆ ในช่วงระยะเวลาที่ผ่านมา ทำให้ได้พัฒนาทั้งในด้านเครือข่ายการวิจัย และการเรียนการสอน ตลอดจนได้กระจายไปยังกลุ่มผู้ป่วยที่ได้รับการผ่าตัดอื่นๆ
4. อื่นๆ ได้ทำการเขียนตำรา การวางแผนจำหน่าย ได้ทำการพิมพ์ ครั้งที่ 1 จำนวน 2000 เล่ม โดยได้รับแรงบันดาลใจจากงานวิจัย และได้ทำการปรับปรุง และพิมพ์เป็นฉบับปรับปรุง อีกเป็นฉบับที่ 2 จำนวน 2000 เล่ม พิมพ์ 2 ครั้ง รวม 4000 เล่ม ได้พิมพ์จำหน่าย ได้รับความนิยม ตลอดจนได้พิมพ์เนื้อหา การวางแผนจำหน่ายในตำรา ประเด็นและแนวโน้มในการ

พยาบาลผ่าตัด พิมพ์ 2 ครั้ง จำนวน 2000 เล่ม โดยเป็นบรรณาธิการทั้งสองเล่ม เพื่อให้
คนในวงการได้เข้าใจเนื้อหามากขึ้น (แนบตำรา)