Comparison of Outcomes of Discharge Planning and Post-Discharge Follow-up Care, provided by Advanced Practice, Expert-by-experience, and Novice Nurses, to Hospitalized Elders with Chronic Healthcare Conditions

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Abstract : The objectives of this mixed methods study were to: compare the outcomes of discharge planning and follow-up care, for elders with chronic healthcare conditions, among an advanced practice nurse (APN), expert-by-experience nurses, and novice nurses who delivered care through a "Continuity of Care Program;" and, describe the benefits of APN care services from key stakeholders' (i.e., healthcare colleagues and family caregivers) perspectives. The outcomes of care, compared among the three type of nurse groups, at two-months post-discharge, included: patient outcomes (functional ability, pressure sores, urinary tract infections, pneumonia, acute confusion, and falls); hospital outcomes (emergency room visits, hospital readmission, time between hospital discharge and the first readmission, and length of re-hospitalization stay); and, family caregivers' satisfaction with nursing care. One hundred elderly patients and their respective family caregivers were recruited from the medical wards of a major university hospital in Bangkok, Thailand. Quantitative and qualitative data were collected, over 12 months, by way of nursing and medical records, questionnaires, and interviews. Quantitative data were analyzed using descriptive statistics, chi-square, one-way ANOVA, and the post-hoc Tamhane test, whereas qualitative data were analyzed via content analysis. Even through the results revealed only family caregivers' satisfaction with nursing care was higher for the APN-directed care, compared to the care delivered by the novice and expert-by-experience nurses, benefits of APN practice were noted from the data obtained from key stakeholders.

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Introduction

In clinical nursing practice, nurses can be classified into three types (i.e., novice nurses, expert-by-experience nurses, and advanced practice nurses), by matching patient responses to health problems with the skill and knowledge levels of the nursing personnel.[1] As a result, the three types of nurses are noted for different levels of care delivery. For example,

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novice nurses are noted for the knowledge and skills they obtained from their formal educational programs and, thus, are prepared to deal with a narrow range of usual or average patient responses. As a result, their knowledge of the nature and extent of patient responses, as well as their nursing practice skills are limited. For this study, novice nurses were identified as nurses who graduated less than one year prior to implementation of the study.

Expert-by-experience nurses, compared to novice nurses, are known for a broader and deeper range of knowledge and skills and, thus, tend to have the capacity for skillfully sensing and managing the nature of patients' problematic issues. These nurses, generally, earn their reputations by having better and more rapid interventions skills compared to other nurses. For this study, expert-by-experience nurses were identified as nurses who had at least 5 years of clinical experience prior to implementation of the study.

Advanced practice nurses (APNs), when compared to the novice and expert-by-experience nurses, have a broader and more complex level of practice. According to the American Nurses Association,[2] the characteristics of advanced nursing practice include: 1) specialization in the provision of care for a specific population of patients with complex, unpredictable, and/or intensive health needs; 2) expansion in the acquisition of new knowledge and skills, including role autonomy extending beyond traditional scopes of nursing practice; and, 3) advancement in both specialization and expansion by requiring: a) integration of theoretical, research-based, and practical knowledge that occurs as part of graduate nursing education; b) synthesis and innovation of depth and breadth knowledge more than expertise developed through experience; and, c) high levels of critical thinking and analysis skills. It is the presence of these characteristics that differentiates APNs from other nurses and allows them the right to obtain national professional certification for the purpose of engaging in an advanced level of nursing practice in a specialty area.[3] The APN, for this study, was identified by way of her advanced practice education, specialization, and professional certification.

The development and introduction of the role of the APN, in Thailand, began, in 2002, with an increased number and distribution of APNs occurring, each year, in various healthcare settings.[4] The role of the APN, however, remains debatable, because data are not present to demonstrate the positive effect APN practice has on patient care. Therefore, APNs in any healthcare setting need a systematic data base to highlight the differences in outcomes they contribute, in regards to cost and quality of services rendered.

In 2008, an APN position was established in the ambulatory care unit of a major teaching hospital, in the greater Bangkok area, to provide, by way of a "Continuity of Care Program" (CCP), comprehensive discharge planning and follow-up care for hospitalized elders with chronic healthcare conditions. Since creation of the APN position, there has been doubt, among hospital administration, as to whether the APN outcomes (i.e., health of the elders, satisfaction of the elders family caregivers, and utilization of the health care services) are different compared to the service outcomes delivered by other nurses. Therefore, the purpose of this study was to compare the outcomes of care delivered, through a CCP, to elderly hospitalized patients with chronic healthcare conditions, by the APN, to the outcomes of care delivered by novice and expert-by-experience nurses.

Literature Review

Hospitalized elders, in need of post-discharge follow-up, tend to be persons who have complex healthcare needs that are characterized by the presence of multiple co-existing chronic conditions (comorbidities) and receipt of complex therapeutic regimens. If these chronic conditions are poorly

controlled, there may be an increase in the number of contacts required between a patient and his/her healthcare provider, as well as an increase in the rate of re-hospitalizations that involve the use of invasive interventions and complex medical devices/equipment.[5, 6] At the time of discharge, elders often need to continue using medical devices/equipment, in the home, as well as require a family member to meet their personal healthcare needs.[7] Thus, comprehensive discharge planning is necessary.

Unfortunately, it has been found that inadequate planning, to meet the care needs of patients after hospital discharge, occurs.[8] Prior studies have noted that hospitals often discharge patients who have been provided: poor instructions, inadequate information, no coordination among members of their healthcare team, and minimal communication between the hospital and community.[9, 10] These situations can contribute to patients developing an exacerbation of their healthcare problems which, in turn, can lead to unnecessary hospital re-admissions, higher healthcare costs, and poor patient outcomes.[11, 12]

To adequately address problems related to poor discharge planning, Brooten and colleagues[13] developed an APN-directed, discharge planning and home follow-up program. This program has been tested on high-risk childbearing women,[14] older adults,[15] and older post-surgical cancer patients[16] and found to be very effective. For example, the cost of the APN-directed care, when used with high-risk childbearing women, has been found to be 44% less expensive than standard care.[14] When the APN-directed program was implemented with older adults, there was a significant reduction in the number of hospital re-admissions.[15] Such findings suggested the presence of positive, post-discharge outcomes when an APN-directed discharge planning program was implemented.

To date, even though a discharge planning and follow-up care program for hospitalized elders with chronic healthcare conditions, provided by an APN, currently exists in the ambulatory care unit of a major Bangkok teaching hospital, by way of a "Continuity of Care Program" (CCP), no data could be found reporting the outcomes of the care. Thus, this study was designed to describe the benefits of APN delivered care by testing the following hypotheses:

1. Hospitalized elders, with chronic conditions, who received hospital-discharge planning and follow-up care from the APN, compared to those who received hospital-discharge planning and follow-up care from novice and expert-by-experience nurses, will have, two months after hospital discharge: a) a higher level of improvement in their functional ability; b) fewer complications (i.e., pressure sores, urinary tract infection, pneumonia, acute confusion, and falls); c) fewer emergency room visits and hospital readmissions; d) a greater number of days between hospital discharge and the first readmission; and, e) a shorter length of a re-hospitalization stay.

2. Family caregivers of hospitalized elders with chronic conditions who received discharge planning and follow-up care from the APN, compared to those who received discharge planning and follow-up care from novice and expert-by-experience nurses, will express, two months after the elders' discharge, greater satisfaction with the nursing care received.

Method

Design: The study used a mixed methods design (i.e., both a quantitative and a qualitative approach).

Ethical Considerations: Approval to conduct the study was obtained from the primary investigator's (PI) academic institution, as well as from the administrator of the hospital-based, ambulatory care unit used as a study site. All potential participants were informed about: the purpose of the study; what their participation would involve; anonymity and confidentiality issues; and, the right to withdraw without repercussions. Each participant consenting to take part in the study was asked to sign a consent form.

Setting and Sample: The study was conducted within the ambulatory care unit of a university-based, tertiary care hospital, in Bangkok, Thailand, that provided discharge planning and follow-up care to patients with complicated healthcare needs or a high risk of poor post-discharge outcomes. The sample consisted of three types of subjects: elders with chronic conditions; family caregivers of the elders with chronic conditions; and, stakeholders who worked with the APN.

Criteria for inclusion of the patient subjects were: experiencing a chronic healthcare condition; being admitted to one of the medical wards of the selected hospital; receiving discharge planning and follow-up care, by either the APN, the expert-by-experience nurses, or the novice nurses, through the CCP of the ambulatory care unit; being at least 60 years of age; and, being willing to participate in the study.

It was estimated, using an effect size of 0.30, an alpha of .05, and a power of 0.77, for creation of three patient groups (APN nurse group, expert-by-experience nurse group, and novice nurse group), that 100 patients were needed.[17] Twenty patients were assigned to the APN, 40 to two novice nurses, and 40 to two expert-by-experience nurses. Patient placements to the three groups were carried out by the assignment protocols of the CCP. Rationale for the number of nurses used in the study, and the number of patients assigned per nurse, was based upon the fact that, in the research setting, there was one APN, but two expert-by-experience nurses and two novice nurses who were responsible for elderly patients' discharge care. The nurses worked as a team and made home visits together, thus, they were all included in the study. In addition, having five nurses in the study would help to assure access to an adequate patient sample size.

As noted in **Table 1**, the elders assigned to each of the three groups had similar characteristics, with the exception of their medical conditions before discharge and number of medical devices needed at home. Compared to the expert-by-experience nurse group and the novice nurse group, the level of the patients' disabilities (long-term extreme) was significantly higher in the APN group, as well as the number of medical devices needed at home.

One-hundred family caregivers (one for each of the patient subjects) were the second type of subject in the study. The criteria for their inclusion was that they would be the primary caregiver of the patient upon his/her discharge from the hospital. As noted in **Table 2**, the characteristics of the primary caregivers were similar among the three groups.

The third type of subject was the 26 stakeholders, including: the APN's supervisor, one physician, four staff nurses, and 20 family caregivers of the elders receiving care from the APN. The criterion for inclusion of the stakeholders was that they worked in collaboration with the APN. The stakeholders were used as informants regarding the care of the APN delivered to the elders.

Table 1 Elderly Patients' Demographic and Medical Characteristics

Characteristics of Patients	Patients cared for by: Advanced Practice Nurse (n = 20)	Expert-by-Experience Nurses (n = 40)	Novice Nurses (n = 40)	Total (n = 100)	Statistic	*p*
Age : Range (years)	61-99	60-93	60-93	60-99		
Mean	76.5	77.9	75.7	76.7		
SD	12.1	9.9	8.2	9.7	$F_{(2, 97)} = .533^{a}$	NS
Young-old (60-69)	7 (35%)	8 (20%)	8 (20.0%)	23 (23%)		
Middle-old (70-79)	4 (20%)	14 (35%)	17 (42.5%)	35 (35%)		
Old-old (80-89)	6 (30%)	12 (30%)	14 (35.0%)	32 (32%)		
Oldest-old (90^{+})	3 (15%)	6 (15%)	1 (2.5%)	10 (10%)		
Gender					$\chi^2 = 1.445$	NS
Female	9 (45%)	24 (60%)	20 (50%)	53 (53%)	df = 2	
Male	11 (55%)	16 (40%)	20 (50%)	47 (47%)		
Living Arrangements					$\chi^2 = 3.507$	NS
Living with spouse	11 (55%)	19 (47.5%)	23 (57.5%)	53 (53%)	df = 2	
Not living with spouse	9 (45%)	21 (52.5%)	17 (42.5%)	47 (47%)		
Religion					$\chi^2 = 1.515$	NS
Buddhist	20 (100%)	39 (97.5%)	40 (100%)	99 (99%)	df = 2	
Islam	0 (0%)	1 (2.5%)	0 (0%)	1 (1%)		
Educational Level					$\chi^2 = 17.506$	NS
None	2 (10%)	13 (32.5%)	6 (15.0%)	21 (21%)	df = 6	
Primary school	11 (55%)	19 (47.5%)	21 (52.5%)	51 (51%)		
Secondary/Vocational school	6 (30%)	6 (15.0%)	6 (15.0%)	18 (18%)		
Bachelor's degree or higher	1 (5%)	2 (5.0%)	7 (17.5%)	10 (10%)		
Monthly Household Income					$\chi^2 = 10.978$	NS
< 5,000 – 10,000 Baht	5 (25%)	12 (30%)	13 (32.5%)	20 (20%)	df = 6	
> 10,000 – 50,000 Baht	9 (45%)	22 (55%)	20 (50.0%)	51 (51%)		
> 50,000 – 100,000 Baht	5 (25%)	4 (10%)	6 (15.0%)	15 (15%)		
> 100,000 Baht	1 (5%)	2 (5%)	1 (2.5%)	4 (4%)		
Healthcare Payment Method					$\chi^2 = 8.645$	NS
Own payment	0 (0%)	2 (5.0%)	0 (0.0%)	2 (2%)	df = 4	
Reimbursement	14 (70%)	29 (72.5%)	31 (77.5%)	74 (74%)		
Insurance schemes	6 (30%)	9 (22.5%)	9 (22.5%)	24 (24%)		

a = One-way ANOVA; Kolmogorov-Smirnov Z = 0.656, $p = 0.783$; Levene's test = 2.647, $p = .076$

Table 1 Elderly Patients' Demographic and Medical Characteristics (Continued)

Characteristics of Patients	Patients cared for by: Advanced Practice Nurse (n = 20)	Expert-by Experience Nurses (n = 40)	Novice Nurses (n = 40)	Total (n = 100)	Statistic	*p*
Severity of Principle Diagnosis*					$\chi^2 = 5.46$	NS
Level 0: Asymptomatic	0 (0%)	0 (0%)	0 (0.0%)	0 (0%)	df = 6	
Level 1: Symptoms, well controlled	8 (40%)	12 (30%)	11 (27.5%)	31 (31%)		
Level 2: Symptoms, controlled with difficulty and needs ongoing monitor	8 (40%)	12 (30%)	10 (25.0%)	30 (30%)		
Level 3: Symptoms, poorly controlled and needs frequent adjustment	4 (20%)	16 (40%)	18 (45.0%)	38 (38%)		
Level 4: Symptoms, poorly controlled	0 (0%)	0 (0%)	1 (2.5%)	1 (1%)		
Number of Health-related Complications					$F_{(2, 97)} = 1.104^a$	NS
Range	0-8	0-6	0-6	0-8		
Mean (SD)	2.1 (2.1)	1.1 (1.6)	1.1 (1.5)	1.3 (1.7)		
Number of Comorbidities					$F_{(2, 97)} = .180^b$	NS
Range	2-12	0-13	2-13	0-13		
Mean (SD)	5.9 (2.8)	6.4 (3.0)	6.2 (2.9)	6.2 (2.9)		
Medical Condition before Discharge*					$\chi^2 = 20.76^c$	.008
1. Curable	0 (0%)	1 (2.5%)	0 (0.0%)	1 (1%)	df = 8	
2. Long-term chronic	1 (5%)	1 (2.5%)	1 (2.5%)	3 (3%)		
3. Long-term mild disabilities	3 (15%)	7 (17.5%)	23 (57.5%)	33 (33%)		
4. Long-term extreme disabilities	15 (75%)	26 (65.0%)	14 (35.0%)	55 (55%)		
5. Terminally ill with independent/ partial dependent	1 (5%)	5 (12.5%)	2 (5.0%)	8 (8%)		
6. Terminally ill with totally dependent	0 (0%)	0 (0.0%)	0 (0.0%)	0 (0%)		
Number of Home Medications					$F_{(2, 97)} = .044^d$	NS
Range	4-14	3-22	1-22	1-22		
Mean (SD)	10.1 (3.6)	9.9 (4.8)	9.7 (4.4)	9.8 (4.4)		
Number of Medical Devices Needed for Use at Home					$\chi^2_{kw} = 10.35^e$	.006
Range	2-7	0-6	1-7	0-7		.
Mean (SD)	4.3 (1.8)	3.0 (1.7)	2.7 (1.4)	3.1 (1.7)		
Mean Rank	68.3	48.3	43.8			
Length of Hospital Stay (LOS)					$F_{(2, 97)} = 1.72^f$	NS
Range	6-104	4-94	5-77	4-104		
Mean (SD)	34.8 (30.2)	28.6 (19.7)	22.9 (18.9)	27.6 (22.1)		
LOS = 1-30 days	10 (50%)	27 (67.5%)	32 (80%)	69 (69%)	$\chi^2 = 10.51$	NS
LOS > 30 days	10 (50%)	13 (32.5%)	8 (20%)	31 (31%)	df = 2	

a = Data was normal distribution after loge transformation; One-way ANOVA; Levene's test = .176, p = .839

b = Data was normal distribution after loge transformation; One-way ANOVA; Levene's test = .065, p = .937

c = χ^2-test; d = One-way ANOVA; Kolmogorov-Smirnov Z = 1.025, p = .245; Levene's test = .133, p = .875

e = Kruskal-Wallis test

f = LOS was normal distribution after loge transformation; Kolmogorov-Smirnov Z = 0.77, p = .593; One-way ANOVA; Levene's test = .065, p = .937

* Criteria of Ambulatory Care Unit

Table 2 Primary Caregivers' Demographic Characteristics

Characteristics of Primary Caregivers	Patients cared for by: Advanced Practice Nurse (n = 20)	Expert-by-Experience Nurses (n = 40)	Novice Nurses (n = 40)	Total (n = 100)	Statistic	*p*
Gender					χ^2 = 5.945	NS
Female	20 (100%)	30 (75%)	31 (77.5%)	81 (81%)	df = 2	
Male	0 (0%)	10 (25%)	9 (22.5%)	19 (19%)		
Age (years)					$F_{(2, 97)}$ = .061	NS
Range	20-73	23-78	26-76	20-78		
Mean (SD)	47.9 (16.6)	46.6 (14.0)	46.9 (13.0)	50.0 (14.0)		
< 60	14 (70%)	31 (77.5%)	33 (82.5%)	78 (78%)		
≥ 60	6 (30%)	9 (22.5%)	7 (17.5%)	22 (22%)		
Patient Relationship					χ^2 = 15.333	NS
Daughter	10 (50%)	14 (35.0%)	19 (47.5%)	43 (43%)	df = 8	
Paid caregiver	3 (15%)	7 (17.5%)	4 (10.0%)	14 (14%)		
Wife	4 (20%)	5 (12.5%)	3 (7.5%)	12 (12%)		
Son	0 (0%)	6 (15.0%)	6 (15.0%)	12 (12%)		
Other	3 (15%)	8 (20.0%)	8 (20.0%)	19 (19%)		
Marital Status					χ^2 = 3.841	NS
Single	3 (15%)	14 (35%)	12 (30.0%)	29 (29%)	df = 4	
Married	15 (75%)	24 (60%)	23 (57.5%)	62 (62%)		
Widowed/Separated	2 (10%)	2 (5%)	5 (12.5%)	9 (9%)		
Religion					χ^2 = 1.515	NS
Buddhist	20 (100%)	39 (97.5%)	40 (100%)	99 (99%)	df =2	
Islam	0 (0%)	1 (2.5%)	0 (0%)	1 (1%)		
Education					χ^2 = 8.231	NS
None	0 (0%)	3 (7.5%)	1 (2.5%)	4 (4%)	df = 6	
Primary school	4 (20%)	6 (15.0%)	11 (27.5%)	21 (21%)		
Secondary/Vocational school	9 (45%)	15 (37.5%)	17 (42.5%)	41 (41%)		
Bachelor's degree or higher	7 (35%)	16 (40.0%)	11 (27.5%)	34 (34%)		
Occupation					χ^2 = 14.01	NS
None	9 (45%)	15 (37.5%)	15 (37.5%)	39 (39%)	df = 16	
Labor	7 (35%)	10 (25.0%)	8 (20.0%)	25 (25%)		
Merchant	2 (10%)	9 (22.5%)	10 (25.0%)	21 (21%)		
Other	2 (10%)	6 (15.0%)	7 (17.5%)	15 (15%)		

Table 2 Primary Caregivers' Demographic Characteristics (Continued)

Characteristics of Primary Caregivers	Patients cared for by: Advanced Practice Nurse (n = 20)	Expert-by-Experience Nurses (n = 40)	Novice Nurses (n = 40)	Total (n = 100)	Statistic	*p*
Monthly Income					χ^2 = 14.26	NS
< 5,000 – 10,000 Baht	14 (70%)	26 (65%)	29 (72.5%)	69 (69%)	df = 4	
> 10,000 – 50,000 Baht	6 (30%)	10 (25%)	11 (27.5%)	27 (27%)		
> 50,000 Baht	0 (0%)	4 (10%)	0 (0.0%)	4 (4%)		
Sufficiency of Income					χ^2 = 2.822	NS
Sufficient	14 (70%)	28 (70%)	25 (62.5%)	67 (67%)	df = 2	
Insufficient with debt	6 (30%)	12 (30%)	15 (37.5%)	33 (33%)		
Presence of Diseases					χ^2 = 26.97	NS
Yes	7 (35%)	14 (35%)	12 (30%)	33 (33%)	df = 2	
No	13 (65%)	26 (65%)	28 (70%)	67 (67%)		
Perceived Health					χ^2 = 2.922	NS
Poor	6 (30%)	11 (27.5%)	14 (35%)	31 (31%)	df = 4	
Good	8 (40%)	23 (57.5%)	18 (45%)	49 (49%)		
Excellent	6 (30%)	6 (15.0%)	8 (20%)	20 (20%)		
Perceived Burden of Caregiving					χ^2 = .551	NS
Yes	12 (60%)	21 (52.5%)	24 (60%)	57 (57%)	df = 2	
No	8 (40%)	19 (47.5%)	16 (40%)	43 (43%)		

Continuity of Care Program (CCP): The discharge planning and post-discharge follow-up care, provided to elders with chronic conditions, was offered through the hospital ambulatory care unit's CCP. The program consisted of care services aimed at maximizing the level of a patient's health and functionability by addressing existing problems and preventing potential problems. The delivery of services involved the use of three levels of practitioners (novice, expert-by-experience and advanced practice nurses) who functioned as primary home healthcare nurses. Their case loads were assigned as a unit-based practice. However, because of the education and extensive clinical experience of the APN, she was assigned to care for patients who had been admitted to the critical care units, while the novice nurses and expert-by-experience nurses were assigned to care for patients who had been admitted to the general hospital units. All three levels of nurses used the same standard of care, addressed in the CCP, to guide their nursing interventions.

Nursing interventions for discharge planning and post-discharge follow-up consisted of: preparing the patient and his/her family caregiver to be ready for the patient's discharge; coordinating all aspects of the discharge and post-discharge follow-up plan; conducting a series of home visits to assess and monitor the caregiving ability of the family caregiver, and

identify the presence of health-related complications and implement appropriate treatments; and, providing care management support to the family caregiver. These services began once a discharge consultation was requested by a physician and while the patient was still hospitalized.

The preparation of patient/caregiver's readiness for the patient's discharge focused on the: physical, emotional, and informational aspects of discharge; caretaking skills; medical devices and supplies needed at home; and, environment and supportive resources for convalescence at home. Regarding the coordination of all aspects of the discharge and post-discharge follow-up plan, the primary home healthcare nurses collaborated with, based upon the specific patient's needs, various physicians, hospital nursing staff, a nutritionist, a physiotherapist, and social services staff. In addition, the primary home healthcare nurses helped: identify which family member would serve, and be taught how to serve, as a caregiver; establish the patient's day for discharge; plan for medical follow-up visits; and, make referrals to community agencies, if needed. Conducting a series of home visits to assess and monitor the ability and knowledge of the patient's family caregiver included determining if the caregiver was providing correct and adequate care. The frequency of these visits depended upon the nurses' clinical judgment. Home visits also provided the nurse an opportunity for early detection of health-related complications and implementation of appropriate treatments. If the nurse was able to manage the patient's complications, in the home setting, the patient most likely would not have to be re-admitted to the hospital. However, if the complications required medical treatments, the patient would be referred to the hospital for treatment. Providing the family caregiver with management support involved: telephone contacts, as needed, to direct care; counseling and teaching the caregiver; and, assisting with access to community resources.

Instruments: Quantitative data were obtained, regarding the patient and family caregiver subjects, using three instruments. There were the: *Personal and Medical Information Questionnaire (PMIQ)*; *Satisfaction with Nursing Care Questionnaire - Modified* (SNCQ-M); and, *Outcomes Record Form (ORF).* Permission to use copyrighted instruments was obtained prior to their use. Qualitative data were obtained, from the 26 stakeholders, via semi-structured interviews, using a PI-developed interview guide.

The, PI-developed *PMIQ* was used for gathering demographic data related to each patient and primary caregiver subject. For each patient subject, the information obtained included: age; gender; living arrangements; religion; educational level; monthly household income; healthcare payment method; severity of principle diagnosis; number of health-related complications; number of comorbidities; medical condition before discharge; number of home medications; number of medical devices needed at home; and, length of hospital stay. For each caregiver subject, the information requested included: gender; age; patient relationship; marital status; religion; education; occupation; monthly income; sufficiency of income; presence of diseases; perceived health; and, perceived burden of caregiving.

The 15-item *SNCQ-M,* a modified version of the Satisfaction with Nursing Care Questionnaire (SNCQ),[18] was used to evaluate the family caregivers' satisfaction with the nursing care delivered to their respective elder. By permission of the developer of the SNCQ, the instrument's original wording was adjusted to address family caregivers instead of patients. The 15-items incorporated three dimensions: humanism and helpfulness (6 items; example: "The nurse understands the patient's existing problems very well."); professional competence (2 items; example: "The patient received care from a nurse who was an expert in clinical practice."); and, accessibility to care services (7 items; example: "The nurse was

always available to listen to a patient's problems, as well as a caregiver's problems."). Family caregiver participants were asked to rate their satisfaction (5 = "most strongly agree;" 4 = "strongly agree;" 3 = "moderately agree;" 2 = "somewhat agree;" and, to 1 = "disagree") regarding the care provided by the nurse working with their respective elder. A total score, which could range from 15 to 75, was obtained by summing the response scores across all items and then dividing by 15 to obtain an average score. Higher scores indicated greater satisfaction with nursing care. Construct validity of the instrument was established prior to use in this study.[18] Reliability analysis was performed on the *SNCQ-M* prior to its use, with 10 family caregivers who were similar to the caregivers used in the study, and found to be 0.94. For the actual study, the reliability was 0.86.

The, PI-developed *ORF* was used for gathering data related to the outcome variables (i.e., functional ability, health related complicates [pressure sores, urinary tract infection, pneumonia, acute confusion, and falls] emergency room visits, hospital readmissions, time between hospital discharge and first hospital readmission, and length of re-hospitalization stay). Functional ability addressed the elders' abilities regarding personal hygiene, bathing, dressing, feeding, bowel and bladder control, and walking. The score for each activity was assessed, using the activity of daily living scale of the ambulatory care unit, whereby: 1 = "independent;" 2 = "partial dependence with needed supervision/stimulation;" 3 = "partial dependence with needed assistance;" and, 4 = "totally dependence." A total score, which could range from 6 to 24, was obtained by summing the scores across all items. Higher scores referred to greater dependence. A change in functional ability scores, between discharge from the hospital and two months post-discharge, were categorized as either: 1= "improved;" 2 = "stable;" or 3 = "worse." The number of patients identified as falling within each of these functional ability categories was counted. Regarding health related complications, the number of patients who did or did not develop, between hospital discharge and two months later, pressure sores, urinary tract infections, pneumonia, acute confusion, and/or falls were counted. Regarding emergency room visits, the number of visits between hospital discharge and two month-post-discharge were counted. The time between hospital discharge and first readmission, and length of re-hospitalization were determined by the number of days counted.

A PI-developed interview guide, containing five open-ended questions, was used to obtain qualitative data from the 26 stakeholders. The questions focused on the APNs practice, as well as the benefits of having an APN as a member of the healthcare team in the CCP offered through the ambulatory care unit of the selected hospital. Examples of the questions were: "Please explain the care services offered by the APN;" "Please identify the differences in care services provided by the APN compared to the other registered nurses;" and, "Please identify the benefits of having the APN provide care for hospitalized elders with chronic conditions." Prior to their use, all questions were reviewed for content validity by five APN curriculum experts working on the research project, "Cost Effectiveness of Advanced Practice Nurses in the Thai Health Care System."[19] The experts found all of the questions to be valid and appropriate.

Procedure: Once a subject consented to take part in the study, the PI completed the personal characteristics component of the *PMIQ*, via interview, of the patient and/or his/her respective family member, which took approximately 20 minutes. The patient's medical information was obtained, by the PI, from the patient's medical record. Two months after each patient was discharged, the PI collected his/her related outcome information, via use of the *ORF*, which took between 45 and 60 minutes to complete. The functional ability data and incidence of pressure sores, acute confusion, and falls were obtained from the care documentation of each patient's primary home healthcare nurse. The incidence of urinary tract

infections and pneumonia, as well as data related to emergency room visits, hospital readmissions, time between hospital discharge and the first hospital readmission, and length of re-hospitalization stay were obtained from each elder's medical record. Also, two months after each patient was discharged, the PI telephonically contacted his/her family caregiver and verbally administered the *SNCQ.* The verbal responses were recorded on each family member's respective copy of the *SNCQ.* This process took approximately 15 minutes. The interviews of the 26 stakeholders, which were tape-recorded with permission, were conducted throughout the entire data gathering process (over 12 months) and done at a time when the stakeholders were available. Each stakeholder was interviewed once, at his/her office or home, with each interview lasting 30 to 45 minutes. To assure accuracy, a summarization of the interview content was provided to each stakeholder at the end of his/her respective interview.

Data Analysis: Descriptive statistics were used to analyze the demographic and medical characteristics of the elderly patients, the demographic characteristics of the family caregivers, the patients' outcome data, and the family caregivers' responses to the *SNCQ.* Chi-square, one-way ANOVA, and the post-hoc Tamhane test were used to compare the differences in the variables among the three groups.

Results

As shown in **Tables 3 and 4**, there were no statistically significant group differences in post-discharge functional ability, health-related complications (i.e., pressure sores, urinary tract infections, pneumonia, acute confusion and falls), emergency room visits, hospital readmissions, time between hospital discharge and the first readmission, and length of re-hospitalization stays. Only family members' satisfaction with the nursing care their elder received was significantly different among the three groups. Although family caregivers in all three groups rated the quality of discharge planning and follow-up care as highly satisfactory, the post-hoc Tamhane test indicated the mean scores for satisfaction with the APN care were significantly higher than the mean scores for satisfaction with the expert-by-experience nurse and novice nurse care.

The qualitative data, addressing the benefits of having APN care services, indicated the APN was seen as a useful healthcare provider in a complex healthcare system. Three themes emerged from the data: a) *provision of comprehensive care for older patients with complex healthcare problems*; b) *professional interactions with patients and other members of the healthcare team*; and, c) *professional collaboration with the physician.*

Table 3 Comparison of the Three Groups Regarding Patient Outcomes

Variables	Patients cared for by: Advanced Practice Nurse (n = 20)	Expert-by-Experience Nurses (n = 40)	Novice Nurses (n = 40)	Total (n = 100)	Statistic	*p*
	Number of patients (% within group)					
Functional ability					χ^2 = 7.27	NS
Improved	6 (30)	25 (62.5)	21 (52.5)	52 (52)	df = 4	
Stable	14 (70)	15 (37.5)	18 (45.0)	47 (47)		
Worse	0 (0)	0 (0.0)	1 (2.5)	1 (1)		
Patients with complications*					χ^2 = 0.44	NS
Yes	5 (25)	11 (27.5)	13 (32.5)	29 (29)	df = 2	
No	15 (75)	29 (72.5)	27 (67.5)	71 (71)		
Pressure sores					χ^2 = 2.17	NS
Yes	0 (0)	4 (10)	4 (10)	8 (8)	df = 2	
No	20 (100)	36 (90)	36 (10)	92 (92)		
Urinary tract infection					χ^2 = 1.19	NS
Yes	2 (10)	4 (10)	7 (17.5)	13 (13)	df = 2	
No	18 (90)	36 (90)	33 (82.5)	87 (87)		
Pneumonia					χ^2 = 1.71	NS
Yes	3 (15)	2 (5)	4 (10)	9 (9)	df = 2	
No	17 (85)	38 (95)	36 (90)	91 (91)		
Acute confusion					χ^2 = 1.05	NS
Yes	1 (5)	1 (2.5)	3 (7.5)	5 (5)	df = 2	
No	19 (95)	39 (97.5)	37 (92.5)	95 (95)		
Falls					χ^2 = 1.20	NS
Yes	0 (0)	2 (5)	1 (2.5)	3 (3)	df = 2	
No	20 (100)	38 (95)	39 (97.5)	97 (97)		

*Patients may have more than 1 problem.

Table 4 Comparison of the Three Groups Regarding Hospital Outcomes and Family Caregivers' Satisfaction with Nursing Care

Variables	Patients cared for by: Advanced Practice Nurse (n = 20)	Expert-by-Experience Nurses (n = 40)	Novice Nurses (n = 40)	Total (n = 100)	Statistic	p
Emergency room visits					$\chi^2 = 0.16$, df = 2	NS
Number patients (% within group)						
Yes	10 (50)	18 (45)	18 (45)	46 (46)		
No	10 (50)	22 (55)	22 (55)	54 (54)		
Readmission						
Number patients (% within group)						
Within 28 days (yes)	3 (15)	5 (12.5)	8 (20)	16 (16)	$\chi^2 = 0.86$, df = 2	NS
Within 2 months (yes)	5 (25)	12 (30.0)	12 (30)	29 (30)	$\chi^2 = 0.19$, df = 2	NS
Time between discharge and the first readmission (days)					$F_{(2, 26)} = 0.19^a$	NS
Mean	25.80	31.92	29.25	29.76		
SD	23.00	18.51	18.55	18.72		
Length of re-hospitalization stay (days)					$F_{(2, 26)} = 1.18^b$	NS
All	94	151	351	596		
Range	13-30	2-31	2-133	2-133		
Per patient: Mean	18.80	12.58	29.25	20.55		
SD	6.94	9.66	36.85	25.24		
Family caregivers' satisfaction					$F_{(2, 97)} = 5.19^c$	.007
Mean (Total scores = 5)	4.92*	4.70*	4.71*	4.74		
SD	.10	.31	.29	.28		

a = One-way ANOVA; Kolmogorov-Smirnov Z = .852, p = .462; Levene's test = .399, p = .675

b = One-way ANOVA; Kolmogorov-Smirnov Z = .500, p = .964 (after $\log_e$ transformation); Levene's test = .399, p = .675

c = One-way ANOVA; Data were normal distribution after square transformation.

Skewness = -1.044, Kurtosis = -.123, S.E. = 2.6; When using the values of Skewness or Kurtosis divided by it standard error, the score in range of $\pm$ 1.96, indicating data approached to normal distribution at .05 probability level[34]

*Means with different scores were significantly different at $p < .001$ by Tamhane test for unequal variances (Levene's test = 9.625, p = .000).

Provision of comprehensive care for older patients with complex healthcare problems was described in terms of the APN being an expert in delivering and directing care, teaching and consulting with caregivers, and advocating for caregivers. These skills were seen as means of empowering caregivers so that they gained confidence in delivering care to their elder family member. Examples of statements, made by the supervisor of the APN and family caregivers, supporting this theme were:

> *"Everyone is satisfied with and 100% confident in the APNs practice. She is admired for her expertise in the care of patients with complex care needs."* (APN's supervisor)

> *"At first, I (caregiver) completely lacked in confidence to care for my father when he was discharged to home. Before discharge, she (APN) made me more and more confident in my caregiving skills. She put effort into multiple teaching episodes and demonstrations on how to take care of my father at home. After hospital discharge, she visited us at home and helped me in care management, which I was so confused about. Everything became settled because of her help."*

> *"When I face problems with care, I always found the best solutions from her (APN) consultation."*

> *"Sometimes my father refused to receive care from me (caregiver). It was better when the nurse (APN) came to our home and talked to him. He was more willing to receive care from me. I (caregiver) became less emotionally burdened."*

Professional interactions with patients and other members of the healthcare team was another area of expertise identified by the stakeholders as an important characteristic of the APN. Other members of the healthcare team often praised the APN for her skills in dealing with others. This can be seen in the following statements:

> *"Since I (physician) started to work with her, I have never seen her become angry or moody with her patients. She always approaches them with care. I have never heard anything bad about her from patients or their families."*

> *"She is a very nice person. She helps me (a staff nurse) when I have some problems with my work. She never blames me, while she is helping me solve patient care problems. She inspires me to be a better nurse"*

Professional collaboration with the physician involved the APN enhancing the delivery of quality care by evaluating the progress of patients' responses to treatment after they were discharged from the hospital to home. This collaboration can be seen in the following statements:

> *"In the past, I (physician) never knew which patients still had a nurse visiting them at home, because the nurses never kept me informed. When the APN works with me, she lets me know about the progress of my patients. I think our patients and organization need to have more professional nurse experts like her. She demonstrates a high level of expertise in assessing, diagnosing, and treating complex health responses of patients."*

> *"During home visits, the APN serves as my (physician) eyes for assessing patient problems and the patients' adherence to treatments. Because of the APN, I know about the health status of my patients, whether they are still at home or have been readmitted to the hospital, how they are responding to treatments, and if they have any health-related complications."*

Discussion

No significant differences were found in the outcomes of care of hospitalized elderly patients with chronic conditions receiving discharge planning and follow-up care by either the novice nurses, expert-by-experience nurses or advanced practice nurse. Only the functional status finding was found to be consistent with prior studies (i.e., no statistically significant difference between intervention and control groups).[15, 20, 21] Similar to those studies, patients in this study were more vulnerable in terms of a higher risk for poorer functional status, over time. Possibly, functional status was not a sensitive enough outcome indicator for older adults, in this study, especially those who were exceptionally frail.

There are four possible reasons for the lack of significant findings. Firstly, the patients cared for by the APN had more complicated health-related conditions than those being cared for by the novice or expert-by-experience nurses. As a result of the complexity of their healthcare needs, patients in the APN group were discharged to home with a greater number of medical devices (i.e., suction machine, nasogastric tube, urinary catheter, tracheostomy tube, respirator, and nebulizer) than were patients in either the novice nurse group or the expert-by-experience group. The fact patients being cared for by the APN required more complex care was not surprising, especially since patients having complex care needs tend to be assigned to nurses who have advanced practice knowledge and skills.[22, 23] Since patients cared for by the APN were less likely, due to their complex health-related needs, to produce favorable outcomes may explain why no differences in outcomes of care were found among the three groups.

Secondly, family caregivers could have influenced the outcomes of the study. Since all patient subjects required care from their respective family caregivers, the quality of care they delivered could have produced either favorable or unfavorable outcomes. If family caregivers were not adhering to the correct implementation of prescribed therapies, the outcomes of those therapies may have been affected.

Thirdly, since the advanced practice, expert-by-experience, and novice nurses worked as a team, it is possible the patients received the same level of care. This, in turn, would have influenced the lack of a difference in patient care outcomes. In other words, the outcomes solely attributed to the APN were not easily identifiable. Although various essential activities of the APN (i.e., teaching, consulting, and collaboration) could be identified, they may not have had a sufficient effect on short term patient outcomes. In an attempt to illuminate invisible benefits of APN practice, as recommended by Jennings,[24] qualitative data were obtained from stakeholders who had worked with, or received care from, the APN.

Fourthly, the APN, in addition to practicing at an advanced level, was required to spend time in a non-advanced practice role (i.e., senior nurse). This could have limited the intensity and amount of care (i.e., dose effect) delivered to patients requiring complex nursing interventions. According to Brooten and colleagues,[25] dose effect is important to the outcome of nursing care. The greater the number and time spent in contact with an APN can contribute to the quality of care and potential cost savings. Finally, as reflected in prior research,[26] the APN in this study was faced with a role development problem (i.e., presence of work assignments that were not reflective of an advanced level of nursing practice). This work assignment characteristic would not help to promote empirical usefulness of APN practice.

The fact the stakeholders were more satisfied with the nursing care delivered by the APN compared to the nursing care delivered by the other nurses was not surprising. Prior studies have shown patients' high level of satisfaction with the care received from APNs compared to care received from other healthcare providers,[21, 27-29] especially care received from physicians.[30-33]

Limitations and Recommendations

Like all studies, this study had limitations that need to be taken into consideration when applying the findings. Firstly, patient assignments to the different groups (novice nurse group, expert-by-experience nurse group, and APN group) could not randomly be accomplished. There would have been an ethical issue raised if patient subjects were assigned to a nurse group for which they were not suited. For example, it would not have been acceptable to assign a novice nurse to a patient who required a complex level of care. As a result, the APN was more likely to have patients with complex healthcare needs compared to the other two types of nurses. Secondly, the study was carried out in only one setting. Therefore, the findings are applicable only to settings similar to the one used in the study.

In this study, control of the quality of care delivered by the family caregivers was not possible, the nursing care delivered through the CCP was administered via a team method, and the APN's role included both advanced and non-advanced practice activities. Therefore, future research needs to consider the following issues when examining the effectiveness of APN practice.

1. The quality of family caregiving to patients, caregivers' strain/burden, and caregivers' physical and emotional health need to be taken into consideration in the study design.

2. Examination of patient care outcomes needs to take place in settings where care is not delivered as a team approach (i.e., care delivered solely by an individual level of nursing practice).

3. APNs that have roles that are solely focused on advanced practice and do not include non-advanced practice responsibilities need to be used as study subjects.

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เปรียบเทียบผลลัพธ์ของการจัดการโปรแกรมการวางแผนจำหน่ายและติดตามดูแลอย่างต่อเนื่องในกลุ่มผู้สูงอายุที่เจ็บป่วยเรื้อรัง ระหว่างผู้ปฏิบัติการพยาบาลขั้นสูง พยาบาลผู้มีประสบการณ์ และพยาบาลจบใหม่

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บทคัดย่อ : การวิจัยแบบผสมผสานนี้มีวัตถุประสงค์เพื่อเปรียบเทียบผลลัพธ์ของการจัดการโปรแกรมการวางแผนจำหน่ายและติดตามดูแลอย่างต่อเนื่องในกลุ่มผู้สูงอายุที่เจ็บป่วยเรื้อรัง ระหว่างผู้ปฏิบัติการพยาบาลขั้นสูง พยาบาลผู้มีประสบการณ์ และพยาบาลจบใหม่ และศึกษาความคิดเห็นของผู้เกี่ยวข้อง (ได้แก่ บุคลากรผู้ร่วมงาน และญาติผู้ป่วยสูงอายุ) ต่อประโยชน์ของการปฏิบัติงานของผู้ปฏิบัติการพยาบาลขั้นสูง ผลลัพธ์จากการเปรียบเทียบการปฏิบัติงานของพยาบาลทั้ง 3 กลุ่มหลังจำหน่ายจากโรงพยาบาล 2 เดือน ประกอบด้วย ผลลัพธ์ด้านสุขภาพของผู้ป่วย (ได้แก่ ความสามารถในการทำหน้าที่ การเกิดแผลกดทับ การติดเชื้อระบบทางเดินปัสสาวะ ภาวะปอดอักเสบจากการติดเชื้อ ภาวะสับสนเฉียบพลัน และการพลัดตกหกล้ม) ผลลัพธ์การกลับเข้าใช้บริการในโรงพยาบาล (ได้แก่ การใช้บริการห้องฉุกเฉิน ระยะเวลาที่กลับเข้าพักรักษาซ้ำในโรงพยาบาลนับจากวันที่จำหน่าย การกลับเข้าพักรักษาซ้ำในโรงพยาบาล และจำนวนวันนอนโรงพยาบาลที่กลับเข้าพักรักษาซ้ำ) และความพึงพอใจของญาติผู้ดูแลต่อการบริการพยาบาลที่ได้รับ กลุ่มตัวอย่างประกอบด้วยผู้สูงอายุจำนวน 100 รายและญาติผู้ดูแลหลัก ซึ่งได้รับการคัดเลือกจากหอผู้ป่วยอายุรกรรมของโรงพยาบาลมหาวิทยาลัยแห่งหนึ่งในกรุงเทพ ประเทศไทย รวบรวมข้อมูลเป็นเวลา 12 เดือนโดยเก็บข้อมูลเชิงปริมาณจากบันทึกทางการพยาบาล บันทึกทางการแพทย์ และแบบสอบถามความพึงพอใจต่อบริการที่ได้รับ ส่วนข้อมูลเชิงคุณภาพใช้แบบสัมภาษณ์กึ่งโครงสร้าง ข้อมูลเชิงปริมาณวิเคราะห์ด้วยสถิติบรรยาย ไคสแควร์ ความแปรปรวนแบบจำแนกทางเดียว (one-way ANOVA) และ post-hoc Tamhane test สำหรับข้อมูลเชิงคุณภาพใช้วิธีการวิเคราะห์เนื้อหา

ผลการศึกษาพบว่าผลลัพธ์ของโปรแกรมการวางแผนจำหน่ายและติดตามดูแลอย่างต่อเนื่องในกลุ่มผู้สูงอายุเจ็บป่วยเรื้อรังที่ได้รับการดูแลจากผู้ปฏิบัติการพยาบาลขั้นสูง พยาบาลผู้มีประสบการณ์ และพยาบาลจบใหม่ไม่มีความแตกต่างกันในเรื่องผลลัพธ์ทางด้านสุขภาพ และการกลับเข้าใช้บริการในโรงพยาบาล ยกเว้นด้านความพึงพอใจต่อบริการที่ได้รับ โดยพบว่าญาติผู้ดูแลในกลุ่มที่มีผู้ปฏิบัติการพยาบาลขั้นสูงมีความพึงพอใจต่อบริการที่ได้รับมากกว่ากลุ่มพยาบาลผู้มีประสบการณ์ และพยาบาลจบใหม่ อย่างไรก็ตาม จากการสัมภาษณ์ผู้ที่เกี่ยวข้องกับผู้ปฏิบัติการพยาบาลขั้นสูงทั้งแพทย์ ผู้บริหารการพยาบาล พยาบาลผู้ร่วมงาน ผู้ป่วยและญาติผู้ดูแล ได้ให้การยอมรับและเห็นประโยชน์ของการมีผู้ปฏิบัติการพยาบาลขั้นสูง

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