

Meeting the challenges of chronic illness: A nurse-led collaborative community care program in Thailand

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Summary

Background: Chronic illness is of concern to health care systems globally. Although a significant evidence base supports the concept of nurse-led interventions, less data is available to address unique features of health care systems in the developing world.

Aim: The purpose of this study aimed to undertake preliminary testing of an intervention of nurse-led community care program, the Network Collaborative Action Plan (N-CAP), to assess the impact on disease severity and patient satisfaction.

Method: A quasi-experimental study, using historical controls, evaluated a collaborative nurse-led intervention to promote coordination and continuity of care for patients with chronic illness. **Results:** Participants, diagnosed with chronic obstructive lung disease (COPD), coronary heart disease (CHD) and chronic heart failure (CHF) were recruited. Prospective consecutive patient meeting the study criteria ($n=47$) were assigned into the control group and following development and implementation of the intervention eligible consenting patients were enrolled in the experimental group ($n=44$). Participants in the experimental group had significantly lower scores on severity of disease measurements during the third week ($F=4.61$, $p=0.035$) and the eighth week hospital ($F=4.30$, $p=.041$) following hospital discharge than those in the control group. Participants in the experimental group expressed significantly higher scores on satisfaction with community care than those in the control group.

Conclusions: A nurse-led, collaboratively developed program has potential to improve satisfaction and decrease symptom development in people with chronic illnesses in Thailand.

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The burden of chronic illness

Chronic illnesses are of significant concern globally. A chronic illness is defined as a condition that lasts for longer than 3 months and is not self-limiting. Chronic ill-

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nesses have considerable social, economic, and behavioral consequences requiring ongoing personal and professional involvement. People living with chronic conditions are a major health concern of the 21st century. Chronic diseases, such as coronary heart disease (CHD), chronic heart failure (CHF), chronic obstructive pulmonary disease (COPD) and cancer are the leading cause of morbidity and mortality in Thailand (Ministry of Public Health, 2008). National Health Statistics have demonstrated that with the exception of, HIV/AIDS and accidents, chronic illnesses are the most common cause of death (Bureau of Policy and Strategy, Ministry of Public Health Thailand, 2008). The burden and costs associated with caring for chronic illnesses are an international concern. In countries, such as Thailand, where family care giving is common, the burden on the community is potentially greater. In addition, rurality and difficulty in accessing health care services is a concern (Fraser, Briggs, & Taytiwat, 2008).

The chronic illness trajectory

The chronic illness experience impacts upon patients and their families. Key aspects of the chronic illness trajectory: include the acute/critical phase and the chronic/stability phase. In the acute/critical phase, hospitalisation is often necessary because of access to therapeutic advances and need for life sustaining treatments. In the chronic/stability phases, patients still require continuing care to prevent them from relapsing back into an acute/critical phase. In particular, people recovering from an acute phase of illness require continuing professional care to promote recovery and optimal health. Service gaps between acute and community-based care, mean that a number of people with chronic illnesses are discharged from hospital, with complex pharmacological and non-pharmacological regimens, with minimal resources and strategies for transitioning to primary care. A failure to promote self-management and disease management mean that rehospitalisation and adverse outcomes are common.

A study of post-discharge patients with acute myocardial infarction at a university hospital found that after discharge 86.7% of 30 patients developed deteriorating physical health and 18.1% developed anginal symptoms in the first 3 weeks following discharge from the hospital (Sindhu & Sriprasong, 2001). Another study undertaken at a general hospital demonstrated that 16 of 20 chronic heart failure (CHF) patients developed worsening symptoms in the first 2 weeks following discharge and 7 patients were readmitted to the hospital within 2–3 months (Phonphet, 2001). These data reflect international trends illustrating the high risk of decompensation of the immediate post-discharge period and the need to promote self-care (Clark et al., 2010). It is also important that these models be appropriate and relevant to the target population and the needs of the health care system (Davidson et al., 2007).

In recognition of the increasing burden of chronic disease an environmental scan and scoping study was undertaken by the research team at a 300 bed-patient general hospital in Thailand. It was noted that COPD, CHF and CHD were the top three chronic illness reasons for hospitalisation. These data also showed that the transition phase to the primary

care setting was not optimally managed. On the basis of these findings it was considered that developing an intervention model to promote continuing care from hospital to home for patients with chronic illness was of critical importance. Based upon an emerging international literature it was apparent that multidisciplinary approaches to coordinating care have the potential to improve patient outcomes (Adams et al., 2007).

While the continuing care provided by a specialist health care team has been viewed as a foundation of chronic care management, it is questionable whether this approach will be sustainable in the context of increasing disease burden, economic constraints and health care reform (Grumbach, 2003; Yach, Hawkes, Gould, & Hofman, 2004). In addition, although a plethora of the chronic care management literature focuses on disease specific conditions, such as CHF, translating these models to rural and provincial communities, where specialist services are less available, is also problematic. This is particularly the case in emerging economies (Beaglehole et al., 2008). Wagner has suggested that as resources shrink and patient care demands grow, health care providers need to look for ways to deliver clinical care efficiently and without jeopardizing the quality (Wagner, 2000; Wagner et al., 2001).

The concept of a trans-disciplinary team, which maximizes communication and coordination across health providers, has the potential to strengthen team dynamics and efficiency and minimizes duplication in effort. In the Thai health care setting, nurses are largely responsible for providing care for individuals in the community in collaboration with community health care workers. Therefore through making this nurse the focal point, other team members can contribute skills and information through this identified primary care provider. Using these approach health care teams can effectively deliver care, regardless of discipline. The notion of trans-disciplinary teamwork involves a certain amount of boundary blurring between the disciplines and implies *cross-training* and flexibility in accomplishing tasks. Determining the range of capability of various team members is essential, and team member must be receptive and learn to cope within a broader scope of practice (Batorowicz & Shepherd, 2008).

Coordinated chronic care guidelines, measures, and resources across the entire system are the keys of caring the patients with chronic illness in the community (Fisher, Brownson, O'Toole, & Anwuri, 2007). On the basis of best practice recommendations, derived from a critical literature review and key informant consultation, the Network Collaborating Action Plan (N-CAP) was developed as a protocol for the primary care provider. Importantly, in order to ensure that the health delivery model was appropriate to the study setting, a collaborative method of intervention was used, using the principles of action-research to develop a shared understanding of problems and to mutually negotiate a solution (Lees, 2009; Paterson, Kralik, & Coates, 2010). Such an approach has a greater capacity for ensuring sustainability of an intervention (Wallerstein & Duran, 2010).

Care plans and clinical pathways for the N-CAP project provided specific advice and information relating to chronic conditions and were used to promote coordinated chronic care guidelines and facilitate the sharing of expertise between health care professional in the network. More-

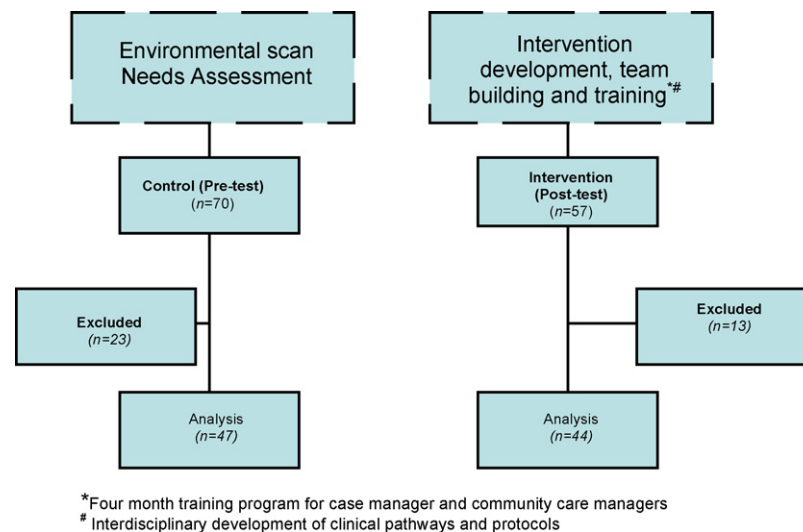


Figure 1 Study flow chart.

over, we considered that active communication between community-based service providers, physician, advance practice nurse, patients and families would promote care and give routine feedback from community nurse to health care experts. Key elements of this program included: (1) disseminating evidence based treatment recommendations through care pathways; (2) promoting a nurse-led model of care and skill sharing across disciplines; (3) facilitating communication and development of skills in community workers; and (4) empowering patients and their families to engage in self-management approaches.

Study aims

The aims of this study were to test in a quasi-experimental design, using an historical control, the effect of nurse-led community care model on perceived health status, length of stay, cost, satisfaction and readmission rates.

Methods

Setting and sample

This study was conducted in a general hospital in Southern Thailand, supported by a system of universal health care coverage. Following ethical approval from the university and clinical site, patients who discharged were recruited to this study over 2004. Patients were considered eligible for the study if they had a documented diagnosis of COPD, CHD or CHF. Initially, 124 patients met the study criteria and all given informed consent. As part of the pretest phase, eligible participants ($n = 70$) were consecutively assigned into the control group receiving usual care. Following development of the intervention a second cohort of eligible participants ($n = 57$) were assigned to the experimental group receiving the N-CAP at home interventions. Following a process of matching clinical and demographic characteristics such as diagnosis, age, severity of disease and gender, 47 remained in the control group and 44 in the experimental group. The study flow chart is summarised in Fig. 1.

Outcome assessment

Health care utilization and family description

This investigator developed survey consisted of two parts: part 1 retrieved clinical and demographic information from the medical records using standardized data extraction methods. Part 2 of the survey documented family history, location and environment of the patients' home from the family folder of primary care unit in the community.

Illness severity

The severity of heart disease was assessed using the New York Heart Association (NYHA) criteria (Myers et al., 2006) for patients with CHF and CHD. The scale ranges from 1 to 4 with NYHA 1 denoting lower severity. In addition severity for COPD measured was assessed using the Medical Research Council criteria (Bestall et al., 1999). The scale ranges from 0 to 4, with 4 denoting a higher score. The severity of disease was assessed on week 1, week 3 and week 8. These measures were chosen to provide an indicator of symptom severity.

Patient satisfaction

Patient satisfaction was measured using the Care Service Satisfaction scale (CSS), 5-point-Likert scale ranging from 1 to 5, created by Sindhu, Arjsalee, Puthapitakphol, and Konggumnerd (2003). The content validity index was accept to test for construct validity and internal consistency, the CSS was completed by 426 patients received care service at primary care units and community hospitals in Southern part of Thailand. The Cronbach's alpha of the scale was .91. The construct validity through the factor analysis yielded 20 items, measuring three part of satisfaction: patient-provider relationship, quality of services and outcome of care. A previous study of patients with hypertension in community hospitals demonstrated a Cronbach's alpha of 0.91 (Anurung, Sindhu, Wanitkun, & Sriyuktasuth, 2009).

Table 1 Baseline characteristics.

	CHD		COPD		CHF		Total	
	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%	<i>n</i>	%
Diagnosis	27	30	39	44	25	26	91	100
Age								
≤40	1	3.7	11	28.2	5	20	17	18.7
41–60	10	37.0	13	33.3	8	32	31	34.1
61–70	12	44.8	16	38.5	11	44	39	42.9
>70	4	14.8	—	—	—	—	4	4.4
Sex								
Male	15	55.6	37	94.9	6	24	58	63.7
Female	12	44.4	2	51.1	19	76	33	36.3
Religious affiliation								
Buddhists	26	96.3	38	97.4	23	95.8	87	95.6
Muslim	1	3.7	1	2.6	1	4.2	3	3.3
Marital status								
Single	2	7.4	2	5.4	—	—	4	4.8
Married	20	74.1	27	73	17	73.9	64	76.2
Widowed	4	14.8	6	16.2	6	26.1	16	19.0
Education (years)								
0	—	—	—	—	1	4.2	1	1.3
1–4	18	81.8	27	75	21	70.8	66	86.8
6–12	3	13.7	4	25	2	8.4	9	11.8
Income per month (Bhat)								
≤2000	4	16	9	34.6	3	15.8	16	22.9
2001–5000	12	48	13	50	10	52.6	35	50.0
5001–10000	4	16	3	11.6	5	26.3	12	17.1
>10000	5	20	1	3.8	1	5.3	7	10.0
Routinely health service usage								
Primary care unit	9	34.6	6	15.8	3	12.5	18	20.7
Community hospital	1	38.5	—	—	5	20.8	6	6.9
Provincial hospital	16	61.5	29	76.3	14	58.3	59	67.8
Private clinic	—	—	1	2.36	2	8.4	3	3.4
Others	—	—	1	2.6	—	—	1	1.1
Distance from health services (kilometer)								
≤10	12	44.4	29	74.4	12	48	53	58.2
10–20	7	25.9	10	25.6	9	36	26	28.6
>20	8	29.2	0	0	4	16	12	13.2
Total	27	100	39	100	25	100	91	100

CHD, coronary heart disease; COPD, chronic obstructive pulmonary disease; CHF, chronic heart failure.

Data analysis

Statistical analyses were undertaken with SPSS for Windows software package Version 11.5. Student's *t*-test and χ^2 analyses were used to examine the differences in demographic data, severity of disease at the discharged date and patient satisfaction. Analysis of Covariance (ANCOVA) was used to examine the mean differences of the severity of disease between the participants in the experimental and control group at week 1, 3 and 8 following discharge from the hospital.

Results

Demographic characteristics

Baseline characteristics are shown in Table 1. Forty-four per cent of the sample ($n=40$) had a diagnosis of COPD. While 30% ($n=27$) and 26% ($n=24$) were diagnosed as having CHD and CHF, respectively. The age of the participants ranged from 26 to 88 years (mean 66.10 ± 11.72). The mean of age in patients with CHD was 60.56 ± 11.58 , while the mean of age in patients with COPD and CHF was 67.46 ± 10.10 and

Table 2 Illness severity.

Illness severity	Control <i>n</i> = 47		Experiment <i>n</i> = 44		<i>F</i>	<i>p</i>
	Mean	SD	Mean	SD		
Week 1 post-discharge	3.34	1.07	2.95	0.83	0.016	.90
Week 3 post-discharge	3.23	1.11	2.41	0.87	4.61*	.035
Week 8 post-discharge	3.13	1.23	2.30	1.83	4.30*	.041

* *p* < .001.

69.96 ± 12.46, respectively. The majority of the participants had primary school education and their income per month was less than 5,000 Thai-Baht (less than Australia \$ 170). Over half of the participants (64.84%) regularly went to the provincial hospital for health services while the remaining 20% and 7% went to primary health care units and community hospitals, respectively.

There were no significant differences between diagnosis and sex of the samples in the control and experimental group as shown in Table 2. In addition, age of the samples in two groups have no significant differences ($t = 0.56$, $p = .58$). However, there were significantly different between severity of disease on discharged date between the patient in the experimental and control group ($t = 3.99$, $p = .000$).

Severity of illness

The severity of analysis was assessed after discharged from the hospital of the sample in the control and experimental group. ANCOVA was used to compare severity of disease on week 1, 3 and 8 following discharge for two reasons. Firstly, because subjects in this study were not randomly assigned, it was important to compare groups on important variables before the analyses were conducted. ANCOVA was used to measure and control for the baseline difference in disease severity (Munro, 2004).

After removal the effects of severity of disease on discharged date as an covariate, there were no significant difference in the severity of disease at week between the experimental and control group ($F = 0.016$, $p = .90$). In contrast, the severity of disease in the experimental group was significantly lower than those in the control group at week 3 and 8 ($F = 4.61$, $p = .035$; $F = 4.30$, $p = .041$).

Patient satisfaction with community care

Patient satisfaction data are summarised in Table 3. The patients in the experimental group expressed higher score

on satisfaction for community care than those in the control group who received usual care in the total score ($t = 3.93$, $p = .000$) and each subscale include client provider relationship subscale ($t = 4.43$, $p = 0.000$), quality of care ($t = 4.52$, $p = .000$) and quality of care subscale ($t = 3.13$, $p = .001$).

Discussion

Globally, there is an epidemic of chronic illness and health care systems struggle to develop and implement sustainable solutions (Epping-Jordan, Pruitt, Bengoa, & Wagner, 2004). Ensuring that models of care are acceptable, cost effective and appropriate are important considerations (Coleman, Austin, Brach, & Wagner, 2009). Learning from international models is useful but determining local approaches is also necessary (Epping-Jordan, Bengoa, Kavar, & Sabate, 2001; Klainin & Uonnapirok, 2010). The purpose of this study was to undertake preliminary evaluation of a nurse-led community care model, tailored to the local Thai environment in people with chronic disease. Importantly, this intervention included care pathways appropriate to the study setting. Other investigators have shown pathways in the acute care setting to be efficacious and extending this approach into the community setting has been shown to be acceptable and appropriate (Juntawises et al., 2010). Specifically, the study sought to determine the severity of illness during the first 8 weeks after discharge from the hospital and their satisfaction with community-based care. These data have provided useful information for developing chronic illness interventions in Thailand, particularly those remote from tertiary referral hospitals. These preliminary data have also provided the basis for further development and evaluation of the N-CAP program.

This intervention had several novel components. Firstly, it has developed a culturally appropriate model for chronic care management in Thailand, secondly it has used a specially trained community nurse to coordinate care rather

Table 3 Mean comparison of patient satisfaction for community care program.

Items	Control <i>n</i> = 47		Experimental <i>n</i> = 44		<i>t</i>	<i>p</i>
	Mean	SD	Mean	SD		
Client provider relationship	26.34	5.51	31.00	3.17	4.43***	.000
Quality of care	23.80	7.27	29.86	3.45	4.52***	.000
Outcome of care	21.81	5.55	25.24	2.84	3.13**	.001
Total patient satisfaction for care management	73.13	17.06	86.45	8.93	3.93***	.000

** *p* < .01.
*** *p* < .001.

than using a specialist model and thirdly it has used a generic focus to chronic disease management rather than a disease specific approach. This study reinforces the findings of numerous other researchers that underscore the importance of coordination of care (Wagner, 2000). On the basis of the findings to date the N-CAP model demonstrates potential to improve the outcomes for people with chronic conditions. The focus on a community-based model facilitating trans-disciplinary care has significant potential to provide culturally competent care to a range of conditions globally.

We acknowledge several limitations of this study. Firstly, the sampling method may have inferred bias in the findings, although attempts were made to control for differences between groups. Secondly, the capacity to apply the study findings beyond the study setting is also acknowledged due to non-probability sampling. Thirdly, the measures of illness severity were brief and may not have allowed sufficient discrimination between groups. In spite of these limitations the study has several strengths. It has demonstrated the feasibility of a generic approach to chronic care with access to a specialist network. The heterogeneity of the study population is both a strength and a weakness of this study. This study has also developed and evaluated a model that is culturally appropriate to meet the needs of Thai people in provincial Thailand, where services are provided on the basis of need rather than specific clinical diagnosis. Further it has demonstrated the utility of a collaborative method to harness enthusiasm and collective collaboration of health care professionals to develop and evaluate innovative model of care. Further research is necessary to assess the impact of the intervention on specific health related outcomes such as hospitalisation and assess the impact of a more generic approach to chronic care in urban settings and among other cultural groups.

Conclusion

The burden of chronic disease in Thailand is increasing, underscoring the development of innovative and collaborative solutions. On the basis of the evaluation of the N-CAP model to date a nurse-led, collaboratively developed program has the potential to improve satisfaction and decrease symptom development in people with chronic illnesses in Thailand. Based upon these data, further testing of the N-CAP model in other study settings is warranted.

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