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Evidence-Based Nurse Case Management Practice in Community Health

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ABSTRACT

Purpose of Study: The purpose of this study was to investigate and compare the type of nurse case managers' (NCMs') practice on patients' quality outcomes in community settings.

Primary Practice Setting(s): Nurse case management (CM) practice with NCMs in community-based settings.

Methodology and Sample: The design of this study was an exploratory, descriptive secondary analysis of 4 types of service by 11 NCMs, delivered to selected Medicare beneficiaries in community settings. Descriptive statistics and ANOVA tests were calculated.

Results: The majority of CM services were delivered in home care services in the community. Most of the 4 types of services—home, telephone, clinic, and mixed care—positively changed patients' quality measure outcomes—self-care activities of daily life, quality of life, and well-being. However, there were no modes that were statistically significant in patients' quality measure outcomes at the $p < .05$ level in the 2-year time frame.

Implications for Case Management Practice: It is imperative to know the most effective and efficient types of CM services in community health for evidence-based NCMs practice. The results contribute to understanding how community health nurses may choose to select home care interventions for effectiveness. Thus, NCMs' practice needs to be capitalized on by practicing health administrators for health care management services within the current dynamic health policy environment.

Key words: *case management, community health, evidence-based practice, nurse case manager*

Case management (CM) is an important strategy and advanced practice in nursing because it seeks to coordinate care while also reducing health care costs and ensuring patients' quality of care (Huber, 2004). Under the Affordable Care Act, using registered nurses for population health management is increasing because of the complexity of care coordination (American Nurses Association, 2012). Ideally, all of the care that nurses provide should be based on "the conscientious, explicit, and judicious integration of current best evidence—obtained from systematic research—in making decisions about the care of individual patients" (Institute of Medicine, 2004, p. 112). Unfortunately, few empirical studies have compared modes of CM services with patient outcomes (Huber, Sarrazin, Vaughn, & Hall, 2003), and no study has compared the types of CM services offered to patient outcomes in community-based settings. To build up evidence for effective practice in CM, this study compared the type of CM practice to patient outcomes.

Case management ensures high-quality, patient-centered care (Wulff, Thygesen, Søndergaard, & Vedsted, 2008), and it has been shown to be effective in many aspects of chronic illness care (Freund, Kayling, Miksch, Szecsenyi, & Wensing, 2010; Norris et al., 2002). Within nursing, CM is identified as a Nursing Intervention Classifications intervention (Bulechek, Butcher, Dochterman, & Wagner, 2013). It delivers "client education, monitoring, surveillance, and care coordination" (Huber & Craig, 2007, p. 134) and is "one therapeutic nursing intervention in which nursing plays a major interdependent role that is also interdisciplinary in use" (Huber, Hall, & Vaughn, 2001, p. 120). Case management can be an effective and efficient practice strategy within an accountable care model for patient-centered care in multiple health care settings.

In community settings, nurse case managers (NCMs) play many roles: health educator, health counselor, referral agent, coordinator, support group

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leader and developer, mentor, team member, advocate, administrator/leader/manager, researcher, and evaluator (Fero, Herrick, & Hu, 2011). Nurse case managers who take on the role of a care coordinator meet with "patients in their home, complete comprehensive assessments, make diagnoses, identify barriers with the healthcare system, help patients recognize symptoms, and set long-term goals—thus coordinating a plan that, overall, reduces costly services" (Brokel, Cole, & Upmeyer, 2012, p. 139; see also Peikes, Chen, Shore, & Brown, 2009). The role of a NCM is neither solitary nor completely independent; NCMs collaborate with physiotherapists, social workers, dietitians, occupational therapists, and related interdisciplinary colleagues to maximize patient wellness (Prentice et al., 2011).

However, there is little empirical evidence about best practices in health care management (Institute of Medicine, 2004). Nurse case managers' practice is not well conceptualized and still lacks standardization as an intervention (Park & Huber, 2009), especially in community-based settings. Partly because nurses' CM activities vary by situation, it has been challenging to document their activities in health records. This compromises both comparative effectiveness evaluation and proper credit for achieving outcomes. In the community-based studies that have taken place, although CM interventions have been provided by NCMs, little is known about how soon NCMs contacted hospitals for follow-up after their patients were discharged home, how long NCMs typically followed patients, how often patients should be contacted after initial contact, and what specific interventions are most effective.

These problems illustrate the need to determine an accurate level of services and evaluate outcomes in CM practice. It is important to understand and know which specific interventions are critical and effective for patients (Jackson, Trygstad, DeWalt, & DuBard, 2013). It is also important to know that what kinds of CM services are delivered and what services positively influence patients' levels of satisfaction and quality of life. With more rigorous and precise documentation, NCMs can better understand a patient's health status and match it to required services, quality of care best practices, and cost indicators to choose the right level of intervention. To begin to accomplish these aims, this study investigated several types of community-based case management to prioritize evidence-based case management practice in community settings.

Conceptual Framework

This study used the Huber–Hall dosage model as a conceptual framework. Huber and colleagues sought to develop a dosage model for CM from several characteristics of CM interventions (Huber et al., 2001). From these characteristics, they identified four common dimensions: amount, frequency, duration, and breath (Huber et al., 2001). Huber et al. (2003, p. 277) defined the dimensions the following way:

- Amount—The quantity of the target activity in one episode
- Frequency—The rate of occurrence or repetition
- Duration—How long the activity is available over time
- Breadth—The number and type of possible intervention components or activities

Huber et al. (2003) evaluated the impact of CM dosage model with patient outcomes. They found that dose was significantly related to client outcomes. They noted that "research is needed to identify how much of which specific activities and with what timing need to be provided for different types of clients in order to have maximal cost-effective outcomes from case management interventions" (Huber et al., 2003, p. 287). Slaughter and Issel (2012) studied the relationship between prenatal CM dose and pregnancy outcome.

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The study used a modified Huber–Hall dosage model. They found that an adverse pregnancy outcome such as a low birth weight was less frequent among women who received a high dosage (Slaughter & Issel, 2012). The Huber–Hall model was able to generally fit to understand NCMs' activity. Therefore, this model used as a conceptual framework of this study.

Purpose

The specific aim of this study was to investigate and compare community-based NCM practices with patients' quality-of-life outcomes. There were two research questions for this study:

1. What are the characteristic modes of CM care services delivered in community health care?
2. How do patients' clinical qualitative outcomes (self-care activities of daily life [ADL], quality of life, and well-being) differ among the different modes of CM care services?

Methods

Design

This study was a descriptive exploratory secondary analysis of a precollected data set. The original data set was obtained from Brokel et al. (2012), which was a part of the Medicare Coordinated Care Demonstration Project by the Centers for Medicare & Medicaid Services (CMS). This study was approved by the institutional review board at the University of Iowa on July 19, 2012.

Sample and Procedure

In 2002, the CMS began a longitudinal study to evaluate the Medicare Coordinated Care Demonstration program. The CMS selected 15 programs nationwide to test the effectiveness of CM and care coordination services for patients with multiple chronic illnesses (Brown et al., 2007). This study's sample was extracted from one program's data set that was collected for the larger CMS study from 2002 to 2004.

In this data set, 11 NCMs managed a cohort of 252 Medicare beneficiaries, using four methods of care services and contact methods:

1. high home care services,
2. high clinic care services,
3. high telephone care services, and
4. mixed care services.

"High care" refers to intense and extended care. For example, "high home care services" were services delivered as more than 50% of direct care in a year. This means that the NCM provided more than 50% of care services via home care. "Mixed care services" were represented by care given in similar percentages at home, by telephone, and in clinic. Each NCM had been given latitude to care for patients over a period of 2 years using any of the four service modes. Case management services include comprehensive activities such as assessment, care, goal setting, and engagement by NCMs when patients were discharged from the hospital and follow-up care by NCMs in community settings. According to the original study, the NCMs reviewed referrals and identified patients with chronic illnesses, problems managing with health issues, and hospitalization and emergency room visits before initiating them into the study (Brokel et al., 2012). Discrete activities were aggregated to the mode of care services level.

Because this study was a secondary analysis and there were confidentiality restrictions in the original study, it was not possible to collect demographic profiles of the 11 NCMs and 252 Medicare beneficiaries. Instead, the original study's demographic profile was used as a proxy. The Medicare beneficiaries in the original study had multiple chronic diseases—coronary artery disease, cerebral vascular disease, respiratory failure, congestive heart failure, and/or chronic

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obstructive pulmonary disease—were 65 or more years of age, Caucasian, and lived in the Midwest region of the United States (Brokel et al., 2012).

Measures

The variables of this study were the four modes of CM service and responses to three surveys measuring self-care ADL, quality of life, and personal well-being, respectively (see Table 1). These survey instruments are important for identifying patients' satisfaction and assessing the quality of their daily life. The self-care ADL, quality of life, and personal well-being scores measured patients' increases or decreases in health and quality of life while CM services were ongoing. The ADL instruments were used to assess patients' performance of 10 activities: eating, dressing, toileting, bathing, grooming, hygiene, oral hygiene, walking, wheelchair mobility, and transferring (Bulechek et al., 2013). The ADL scores range from 10 to 50 and were measured with Likert scales (1–5), with higher scores indicating greater levels of performance. The quality-of-life scores were measured by the Satisfaction with Life Scale, which contains six Likert scale items (1–5), with higher scores indicating higher satisfaction. Finally, the personal well-being scores were assessed by measuring levels of happiness and emotion (Brokel et al., 2012; Bulechek et al., 2013). For all three quality measures, the mean scores were used to represent items on the scale (range, 1–5).

Data Analysis

Using Statistical Package Social Sciences (SPSS Inc, Chicago, Illinois) 19 software, descriptive statistics, frequency analysis, and one-way ANOVA were computed to compare the mean differences between CM care delivery services. To determine the mean differences, an *F* test was computed. Differences between the four means in each year were used to answer whether a difference between modes of care existed. This analysis was used to describe which mode of delivery is more effective and beneficial to patients.

Findings

The results of this study are first a description of the four modes of CM services in each year, and then the differences in patients' clinical qualitative outcomes between the four categories of CM are presented. Because of missing data and secondary analysis techniques, this

TABLE 1
Variables and Instruments

Variable	Definition	Instrument/Reliability	Scale	Scale Rating
Four dominant modes of CM care services	Four types of dominant CM intervention: high home, high clinic, high telephone, and mixed care services by 11 NCMs	–	Interval	–
Self-care ADL	"personal care accomplished without technical assistance, such as eating, washing, dressing, using the telephone, and attending to one's own elimination, appearance, and hygiene" (Mosby, 1998, p. 1469)	Index of ADL (Katz Index of ADL)/Cronbach's α = .94 (Hamrin & Lindmark, 1988)	Interval	5 = not compromised 4 = mildly compromised 3 = moderately compromised 2 = substantially compromised 1 = severely compromised
Quality of life	"the degree of satisfaction an individual has regarding a particular style of life" (Harkreader, 2003, p. 1490)	Satisfaction with Life Scale/ Cronbach's α = .87 (Diener, Emmons, Larsen, & Griffin, 1985)	Interval	5 = completely satisfied 4 = very satisfied 3 = moderately satisfied 2 = somewhat satisfied 1 = not at all satisfied
Personal well-being	"the extent of positive perception of one's health status" (Harris, Nagy, Vardaxis, & Vardaxis, 2009, p. 1434)	Psychological General Well-Being Index/ Cronbach's α = .92 (Dupuy, 1984)	Interval	5 = completely satisfied 4 = very satisfied 3 = moderately satisfied 2 = somewhat satisfied 1 = not at all satisfied

Note. ADL = activities of daily living; CM = case management; NCM = nurse case manager.

study could not analyze the whole sample of participants ($N = 252$) each year. After excluding missing data, the first year's sample was 94 and the second year's sample was 85. Because of attrition, the samples for the first and second years were different. Subgroups also differed across the years. For these reasons and because the database did not have data that were identified and linked to specific individuals, it was not possible to explore movement of modes from Year 1 to Year 2.

Characteristics of Case Management Activities

The community-based CM program was delivered using four major modes of care (high home, high clinic, high telephone, and mixed modes). According to the original study, all 11 NCMs were practicing nurses, at least held bachelor of science degrees in nursing, and were registered nurses (Brokel et al., 2012). Each NCM had been given patients over a period of 2 years to follow, using home visits, clinic visits, and telephone consultation services.

All modes of care were provided by NCMs in community-based settings to participants who were Medicare beneficiaries with chronic illnesses. All NCMs provided all modes, but no two NCMs provided any of the modes of care in the same ratio. The modes were determined and categorized by the NCMs after some services were provided, during data analysis. After that, the 11 NCMs delivered care and services randomized by mode. There was a protocol, training manual, or both for each mode.

Table 2 illustrates the modes of CM services in Year 1 and Year 2. In Year 1 ($N = 94$), six NCMs delivered high home, three delivered mixed, and one NCM delivered high clinic and high telephone care services. Of patients, 56 (59.6%) had high home, 7 (7.4%) had high clinic, 8 (8.5%) had high telephone, and 23 (24.5%) had mixed care services. In Year 2 ($N = 85$), six NCMs delivered high home, one NCM delivered high clinic, and each of two NCMs delivered high telephone and mixed care services. Of patients, 50 patients (58.8%) had high home, six patients (7.1%) had high clinic, 13 patients (15.3%) had high telephone, and 16 patients (18.8%) had mixed care services. So, in the first 2 years, more than half of the NCMs provided high home care services and some of them delivered mixed care services. The result was unequal sample sizes within the four modes in both years.

Case Management Activities and Patients' Qualitative Outcomes

Self-Care ADL Scores

Table 3 presents the four groups' self-care ADL mean scores, subtracted mean scores, and the results of a one-way ANOVA analysis in Year 1 and Year 2, respectively. When comparing the mean Year 1 scores with the scores when services began, the patients' ADL scores declined for all four modes, showing deterioration over time. Case management services are designed to increase stability and slow deterioration. Scores decreased for patients in high telephone, high clinic, high home, and mixed care services (−0.23, −0.22, −0.11, and −0.08, respectively; see Table 3). The ADL scores were diminished a little with the mixed care mode of services. Meanwhile, high clinic care services showed very high standard deviations ($SD = 0.68$), reflecting high variance within this group. It appears that the matching of clinic services to patients' needs might not have had the correct balance. Finally, the one-way ANOVA test revealed that there were no CM modes with statistically significant differences in self-care ADL at the $p < .05$ level. Therefore, although the mixed care services mode was associated with minimally reduced ADL ability in the first year of intervention, the reduction was not statistically significant ($p = .609$).

The ADL scores for the second year also decreased from baseline in all four modes of CM services, as shown in Table 3. High telephone care services decreased the most (−0.29), and mixed care services decreased the least (−0.04). However, the ANOVA test showed that the differences in the four modes of service within Year 2 were not significant ($p = .161$).

TABLE 2
Mode of CM Care Services by Patients and NCMs, Year 1 and Year 2

Modes of CM Care Services	Year 1		Year 2	
	Patients, *N* (%)	NCMs	Patients, *N* (%)	NCMs
High home	56 (59.6)	6	50 (58.8)	6
High clinic	07 (7.4)	1	6 (7.1)	1
High telephone	08 (8.5)	1	13 (15.3)	2
Mixed-care	23 (24.5)	3	16 (18.8)	2
Total	94 (100.0)	11	85(100.0)	11

Note. CM = case management; NCM = nurse case manager.

TABLE 3
Differences in Patients' Self-Care ADL Among Four Modes of CM Care in Year 1 (N = 94) and Year 2 (N = 85) From Baseline

Mode of Case Management	Year 1 (N = 94) Number	Mean ± SD Year 1	Baseline	Year 1–Baseline	F	p	Year 2 (N = 85) Number	Mean ± SD Year 2	Baseline	Year 2–Baseline	F	p
High home	56	4.67 ± 0.35	4.78 ± 0.28	−0.11 ± 0.36	0.613	0.609	50	4.63 ± 0.35	4.76 ± 0.25	0.13 ± 0.30	1.76	0.161
High clinic	7	4.29 ± 0.59	4.51 ± 0.21	−0.22 ± 0.68			6	4.43 ± 0.42	4.50 ± 0.22	0.07 ± 0.55		
High telephone	8	4.60 ± 0.26	4.84 ± 0.32	−0.23 ± 0.34			13	4.54 ± 0.23	4.83 ± 0.34	0.29 ± 0.27		
Mixed	23	490 ± 0.19	4.98 ± 0.07	−0.08 ± 0.18			16	4.90 ± 0.22	4.94 ± 0.11	−0.04 ± 0.25		

Note. ADL = activities of daily living; CM = case management.
*$p < 0.05$.

The self-care ADL scores decreased the least in mixed care services, but all four modes of CM had similar effectiveness with regard to patients' self-care ADL in Year 1 (p = .609) and in Year 2 (p = .161). The high clinic care services mode showed the largest SDs over the same time periods (SD = 0.68; SD = 0.55).

Quality-of-Life Scores

The means of four modes of CM services, the subtracted mean scores, and the results of the analysis are presented in Table 4 for Year 1 and Year 2, respectively. The modes of CM services resulted in various quality-of-life outcomes. Standard deviations for all modes and years were very high. Patients reported moderate to high satisfaction with their quality of life at baseline (see Table 4). After 1 year of CM intervention, the group who received high telephone care services by NCMs had the greatest increase in satisfaction (+0.48). The group with high clinic care services (−0.55) and the group with mixed care services (−0.11) showed decreases in satisfaction. Among the four modes, there was no statistically significant difference in patients' quality-of-life scores in Year 1 (p = .209).

After 2 years of CM, all four groups were very satisfied prior to intervention (see Table 4), but the mixed care groups' perception decreased from baseline (−0.04). The results of one-way ANOVA analysis showed that no modes of care had different outcomes in quality of life (p = .582). There were improved outcomes, but not for all modes, and the improvements were not significant from baseline.

Personal Well-Being Scores

Patients' average personal well-being scores increased in all four modes of CM services. After Year 1 (see Table 5), the patients reported that they were very satisfied with their care. The high telephone care group (+0.43) and the mixed care group (+0.42) improved most. Despite this improvement, there were no groups with a statistically significant difference in patients' personal well-being scores in the first year (p = .375). In Year 2 (see Table 5), the test results showed that the four modes of CM services had no statistically significant impact on patients' personal well-being scores (p = .576). The high clinic care group's mean scores had the largest increase.

TABLE 4
Differences in Patients' Quality of Life Among Four Modes of CM Care in Year 1 (N = 94) and Year 2 (N = 85) From Baseline

Mode of Case Management	Year 1 (N = 94) Number	Mean ± SD Year 1	Baseline	Year 1–Baseline	F	p	Year 2 (N = 85) Number	Mean ± SD Year 2	Baseline	Year 2–Baseline	F	p
High home	56	3.90 ± 0.63	3.87 ± 0.66	0.03 ± 0.96	1.543	0.209	50	4.03 ± 0.71	3.86 ± 0.69	0.17 ± 0.65	0.655	0.582
High clinic	7	3.55 ± 1.13	4.10 ± 0.53	−0.55 ± 1.10			6	4.42 ± 0.39	4.28 ± 0.42	0.14 ± 0.68		
High telephone	8	3.88 ± 0.69	3.39 ± 0.90	0.48 ± 1.07			13	4.10 ± 0.67	3.85 ± 0.89	0.26 ± 0.67		
Mixed	23	3.90 ± 0.57	4.01 ± 0.65	−0.11 ± 0.89			16	4.00 ± 0.57	4.04 ± 0.47	−0.04 ± 0.42		

Note. CM = case management.
*$p < 0.05$.

Discussion and Practice Implications

This study was a secondary analysis of a preexisting data set from the Medicare Coordinated Care Demonstration Project by the CMS and Brokel et al. (2012). Its purpose was to describe modes of CM services in community-based settings and their effectiveness on patients' qualitative outcomes. Eleven NCMs delivered CM care services to the selected Medicare beneficiaries from 2002 to 2004.

The results of this study showed that most of the NCMs provided high home care and mixed care services to their patients. The NCMs' selection of service mode was based on expert judgment and assessment of patients' needs. Although some services can be delivered without a home visit, these patients were judged to need the personal interaction with the NCM in the home.

The data analyses for the second research question showed that there were no statistically significant differences in patients' clinical qualitative outcomes between the four modes of CM services. From this it can be concluded that either the four modes of care delivery provided similar effectiveness to patients or the NCMs were skilled at matching services to patients' needs such that no difference was detected over time. However, the measurements were not at the discrete enough level that would allow for clear evidence of which conclusion to draw. It is possible that the mode of service level is not discrete enough for dosage to reveal significant differences.

The study showed that mixed care services positively affected patients by increasing patients' satisfaction and positively influenced patients' activities of daily living. However, it is not determined yet which type of CM services was most effective to improve patients' outcomes.

Nurse case managers should possess particular knowledge, attitudes, and skills for their activities (Park, Huber, & Tahan, 2009). Much has been published about the roles and functions of case managers (Park et al., 2009; Tahan, Huber, & Downey, 2006), and the Case Management Society of America has developed and periodically updated standards of practice for CM (Fero et al., 2011). The practice, activities, and roles of NCMs are continuously evolving (Park et al., 2009). Therefore, CM workforce studies should be continued and replicated to expand the evidence base for case manager deployment in NCMs' practice (Park et al., 2009).

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There remain challenges to more precisely identifying CM activities, calculating dosage, and then matching this to staffing and program planning. Because of the increasing number of patients with chronic illnesses and their complications, the need for coordinated and continuous care with timely access to care is increasing (Butcher, 2012). High-quality care services and referrals are also needed to meet the Institute of Medicine's (2001) aims of safe, effective, efficient, timely, equitable, and patient- and family-centered care. To meet needs such as these, the role of the NCM as a care coordinator has been growing in both hospitals and communities. In this study, NCMs provided timely assessment, transitional and referral services from hospital to community, home care services, monitoring with telephone follow-up services, social

TABLE 5
Differences in Patients' Personal Well-Being Among Four Modes of CM Care in Year 1 (N = 94) and Year 2 (N = 85) From Baseline

	Year 1 (N = 94)						Year 2 (N = 85)					
		Mean ± SD						Mean ± SD				
Mode of Case Management	Number	Year 1	Baseline	Year 1–Baseline	F	p	Number	Year 2	Baseline	Year 2–Baseline	F	p
High home	56	4.14 ± 0.56	4.05 ± 0.53	0.09 ± 0.78	1.048	0.375	50	4.14 ± 0.64	4.07 ± 0.65	0.06 ± 0.99	0.665	0.576
High clinic	7	4.43 ± 0.55	4.16 ± 0.72	0.26 ± 0.76			6	4.69 ± 0.38	4.10 ± 0.62	0.60 ± 0.75		
High telephone	8	4.18 ± 0.72	3.75 ± 0.81	0.43 ± 0.85			13	4.20 ± 0.63	3.98 ± 0.56	0.22 ± 0.77		
Mixed	23	4.20 ± 0.60	3.78 ± 0.68	0.42 ± 0.95			16	4.15 ± 0.53	4.12 ± 0.62	0.04 ± 0.95		

Note. CM = case management.
*$p < 0.05$.

support, and psychological support in a selected population (Brokel et al., 2012). As NCM roles expand, it becomes more difficult to itemize NCM activities and interpret when NCMs are most effective.

Hence, to accept CM practice as an effective intervention for health care administrators, it is recommended that a more rigorous method for measuring CM interventions and then calculating dosage to determine efficiency and effectiveness is needed. Various activities have been performed under the name of CM practices, but only a few studies have examined CM interventions in detail (Park et al., 2009). Case management interventions need to characterize "the activities actually delivered as a unique combination of discrete provider actions, at a level of intensity (amount and frequency), over a duration of time" (Huber et al., 2001; p. 122). This concept is the dosage of CM intervention. According to Huber et al. (2003), "the importance of measuring dosage lies in the ability to provide the correct amount of an intervention to ensure that identified outcomes result" (p. 276). Case management should be documented and evaluated using the correct and most precise measure for quality care and cost-effectiveness improvements (Huber & Craig, 2007). Moreover, accurate dosage documentation empowers NCMs' concrete and concise activities and makes it possible to adopt CM as a major service by health care leaders and policymakers (Huber & Craig, 2007). In future studies, it is recommended that the dosage of CM be measured as the amount of time, frequency, duration, and breadth/mode of CM services provided by NCMs in community-based settings, as was used here. If the dosage of CM is linked to various CM outcomes, researchers may find that the evidence of the effectiveness of CM is stronger and thus more compelling for practice changes.

Although further studies are needed, CM is able to be used as a major care coordination strategy for leadership under health care reform. Because NCM provides a vital service that offers patient-centered care and coordinated care (Hunter, Nelson, & Birmingham, 2013), the Affordable Care Act represents a good opportunity for CM. Thus, empowering NCMs' practice would be valuable, not only for evidence-based nursing practice but also for health administrators.

Limitations of the Study

This study could not rigorously divide the four modes of intervention because the original study's data set was not collected to accommodate this secondary analysis. Therefore, the division of the four modes of services was not well defined. Someone who received "high home care services" may also have received clinic care services and telephone care services. This compromises comparisons of effectiveness by mode. In addition, there are generalizability limitations due to geographic location (Midwest, one state only, and population age of Medicare eligibility). However, the trends are important and reveal clues for further research into community health practice effectiveness.

This study gives evidence that NCMs' practice in community-based settings provides coordinated care services while achieving patients' positive qualitative outcomes. This evidence can be translated into health care practice by incorporating the service mode trends into effective community-based CM practice and by using the results in ongoing outcomes measurement and monitoring.

Conclusions

Nurse case managers form a major health care professional group that has an important role in bridging between successful care coordinators and community health care providers as health care reconfigures. This study gives evidence that NCMs' practice in community-based settings provides coordinated care services while achieving patients' positive qualitative outcomes. This evidence can be translated into health care practice by incorporating the service mode trends into effective community-based CM practice and by using the results in ongoing outcomes measurement and monitoring. Using evidence to guide practice strengthens both quality of care and patient satisfaction over time.

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