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Original research article

Feasibility of using the Omaha System to represent Nurse Coaching practice

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BMI, body mass index

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NC, nurse coach

ABSTRACT

Objectives: Nurse coaching is an important strategy for improving the health of populations. Effective interventions for nurse coaching (NC) practice, fair value outcome measurements, and standardization of terms have yet to be determined. As healthcare systems adopt electronic medical records and as nurse coaching practice evolves, it is important to capture and identify NC interventions. The long-term goal is to improve patient-centered practice by using standardized interface terminology and to examine the feasibility of using the Omaha System to represent NC practice. The three aims were to evaluate content validity of NC case studies, test accuracy of NC graduates identifying Omaha System terms for NC interventions, and explore the feasibility of analyzing NC case study data.

Design: This survey research evaluated NC case studies that were developed for this study by the first author and mapped to Omaha System intervention terms.

Sample: Surveys were emailed to 400 graduates of two nurse coach education programs. Nurse Coaches self-reported little to no experience using standardized terminologies for documentation.

Measures: The Omaha System was used to describe the interventions found in the NC case studies.

Results: Across the three case studies, 95.7% of NCs agreed that the case studies were realistic, and 89.3% agreed that they would use similar interventions; NCs identified Omaha System interventions for the case studies accurately 84.3% of the time, and feasibility of analyzing NC practice data was demonstrated through use of case study data in aggregate.

Conclusion: The Omaha System has potential for use as a NC documentation tool and should be considered for development of a standardized, evidence-based guideline for NC practice.

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Introduction

According to the World Health Organization, chronic heart disease, respiratory diseases, diabetes, and other chronic diseases are by far the leading cause of mortality globally [1]. In the United States alone, over \$270 billion dollars a year are spent on disease management, and more than 70% of healthcare costs are due to preventable lifestyle related diseases [2]. Scholars argue that healthcare systems focus on rapid medical response to acute issues such as communicable diseases and epidemics are ineffective in caring for people who have long-term chronic illnesses [3]. Alternative chronic healthcare models are needed to improve such patients' outcomes at lower cost. Strategies exist to reduce the suffering and occurrence of chronic diseases in populations [3]. Globally, nurses are being called upon to fill expanding roles within the healthcare arena, mastering technological and information management systems while collaborating and coordinating care across teams of health professionals [3–11]. One such role is the nurse coach (NC) [8–11].

Nurse coaching is a more personalized, patient-centered approach to care coordination that negotiates a person's preferences to promote achievement of client goals. It is a skilled, purposeful, results-oriented and structured relationship-centered interaction with clients provided by registered nurses for the purpose of promoting achievement of client goals [8]. The scope and standards of NC practice describe the approach and related competencies [8]. Detailed definitions and intervention descriptions are needed, however, to assess the effectiveness of the approach in order to assess outcomes and associated costs. Providing the client with tools to identify barriers and additional perspectives for health can expand their sense of possibility and can encourage a pathway to action [8–11].

Given the recent emergence of NC literature and practice, there is a critical need and responsibility to define NC knowledge representation for documentation as a cornerstone of competent, efficient care across settings and populations [8–13]. In an effort to improve population health, there is also an imperative to generate outcome data to guide practice, evaluate process, and determine population health outcomes [13]. The use of a standardized terminology for NC documentation could improve decision support, outcomes reporting, improving performance, maintaining an accurate problem list, and reuse of information to discover disparities and evaluate quality, safety, and efficiency [12, 13]. As healthcare systems move forward leveraging health information technology, software application must capture and identify practice patterns and interventions. Once an improved infrastructure for collecting and analyzing data is in place, systematic assessment and projection of workforce requirements by role, skill mix, region and demographics will be needed to inform changes in nursing practice and education [14–16]. The need to describe, disseminate, and demonstrate NC practice effectiveness is becoming apparent as NC practice becomes more recognized [8–11].

The era of electronic health records offers new methods to describe, disseminate, and document NC practice, since standardized terminologies make it possible to embed evidence-based practice documentation within EHR [12–16]. However, a previous study showed that NCs did not understand nor use a standardized terminology to describe or document NC practice. However, the majority of respondents agreed the benefits for quality improvement practice documentation were evident [17].

The Omaha System

The Omaha System is a standardized terminology that has been used in community care settings since 1992 [13]. It consists of three related components: the Problem Classification Scheme, the Intervention Scheme, and the Problem Rating Scale for Outcomes. Nurses and other healthcare leaders have used the Omaha System as a tool to address meaningful goals: monitor and enhance care quality, efficiency and value; engage patients and families; improve care coordination and promote population health [13]. Omaha System guidelines describing evidence-based practice including a strengths-based coaching approach are available in the public domain [14]. Guidelines consist of a menu of evidence-based interventions encoded using the Omaha System terms in four levels: the Problem (as defined in the Problem Classification Scheme); the Category or action term (Teaching, guidance, and counseling; Treatments and procedures; Case management; or Surveillance); the Target, one of 75 defined terms that further specifies the intervention; and the care description, a customizable term that provides further details [13, 14].

The use of the Problem Rating Scale for Outcomes to monitor the patient's *Knowledge, Behavior and Status* of symptoms related to each Omaha system problem gives practitioners a clear, objective measure of the baseline condition [13]. Rating these concepts again at varying intervals can enable comparisons of NC interventions to evaluate patient progress, cost/benefit analysis and effectiveness. Gaining benefits afforded by a standardized language can contribute to the breadth of NC interventions and value. However, there is no consistent understanding of NC practice and documentation across care settings that would enable evaluation of NC outcomes. Omaha System case studies have been used to describe the application of the Omaha System to diverse practices, settings, and populations [13, 18, 19]. This method enables feasibility evaluation of new use cases such as NC practice [19].

The purpose of this study was to assess the feasibility and validity of representing NC interventions using the Omaha System. The three aims were to evaluate content validity of NC case studies (Aim 1) test accuracy of NC graduates identifying Omaha System terms for NC interventions (Aim 2), and explore the feasibility of analyzing NC case study data (Aim 3).

Materials and methods

The feasibility survey was deemed exempt (Category 2) from review by the University of Minnesota Institutional

Review Board (IRB) and approval was received from the NC program directors to collect data.

Data collection

The target population was NCs who had completed a nationally recognized NC program. The NC program administrators forwarded a Survey Monkey questionnaire (described below) to a total of 400 NC graduates from two recognized integrative NC programs. A cover letter informed the NC graduates about the objectives of the study. Two reminders to complete the survey were sent.

Procedures

For Aim 1: To evaluate content validity of NC case studies, three fictitious NC case studies were developed by the first author based on experience of coaching patients with chronic health challenges. They described the information obtained during the first encounter/initial visit encounters. The fictitious case studies were reviewed by two NC experts who confirmed that the fictitious case studies were representative of NC practice. The fictitious case studies were then mapped to the Omaha System Intervention Scheme. Each intervention in the NC case studies was abstracted as free text and entered into a spreadsheet as a care description term. To each care description term, Problem, Category, and Target terms (one of each type) were added. For example, "The NC and JT explored his resistance and possible barriers that prevent him from making positive healthcare changes" mapped to *Health care supervision* (Problem) – *Teaching, Guidance and Counseling* (Category) – *Coping skills* (Target) – *explores barriers to achieve goals*. The mapping was reviewed by two Omaha System experts and differences resolved by consensus. These final answers were the key for the NC survey. The fictitious NC case studies and Omaha System interventions were incorporated within a *Survey Monkey* questionnaire for distribution to NCs.

For Aim 2: To test accuracy of NC graduates identifying Omaha System terms for NC interventions, respondents read the case studies and first determined if this patient was similar to patients seen in their NC practice. Based on the case study-specific NC interactions, they then identified the most appropriate intervention from a drop-down menu for each case study. *Survey Monkey* data were imported into Excel and percentages of agreement were calculated.

For Aim 3: To explore the feasibility of analyzing NC practice data, interventions from the case studies were aggregated and analyzed using descriptive statistics.

Case Study 1: a man with migraine headaches (JT)

JT lives in fear of his next migraine headache. He suffers from intense headaches on an average of 15 days a month. He has consulted his primary care physician and has tried numerous courses of pharmaceutical treatments with no success. He has also experienced the uncomfortable side effects of these drug therapies. The cost of medications has created a financial strain and has added to his stress level.

As a result of his headaches, JT has missed, on average, 2–3 days of work per month. His employer is aware of his migraine condition, but JT's absenteeism is a constant source of concern and impacts productivity.

Both JT and his wife are feeling frustrated with his condition and are feeling questioning why the root-cause of his migraine has not been addressed. As a guide on the treatment journey, the NC explores various triggers and alternative approaches including lifestyle, nutrition and stressors. Botanical and nutritional approaches have shown promise and JT has experienced fewer headaches. He has begun assuming a proactive, preventative approach rather than avoiding dozens of headache triggers. He is open to alternative treatment options and therapies that address depression, stress and other migraine symptoms to improve his quality of life.

The NC listened to his story and affirmed what he would like to do to address his current state of health and control his pain. She encouraged participation in activities to improve his physical activity and social interaction. She provided weekly e-mail check-ins and co-established short term goals for JT. The NC helped JT assess his stage of readiness for change and posed powerful questions to explore and expand his awareness of his own authority on his health and wellbeing. The NC tracks his issues and concerns and/or opportunities in a manner that leads to identification of his goals that are action-oriented, realistic and time-limited. His process of self-discovery is supported and allows for new goals to emerge.

Case Study 2: a woman (PL) with multiple sclerosis (MS)

PL, age 38, was diagnosed with MS two years ago and has continued with neurological deterioration characteristic of Primary Progressive MS. She has experienced a continuous worsening of the disease, with no distinct relapses or remissions of neurological deterioration. PL's main problems have been fatigue and body aches. She is not sure how to get more energy or what to do about work.

In order to manage her symptoms from the disease, PL has been taking days off from work sporadically. She is now considering a few months off or a leave of absence to try and rebuild her body and calm her mind through yoga, exercise and support groups. At this point, she will try anything if it will help.

PL enlists the help of a NC to help her deal with the depression, stress and decision making regarding her work. PL understands there is no specific cure for her illness, but wants to manage her symptoms better and lead a productive life as best she can. The NC explores with PL why coaching is being considered at this time and what she wants to address during the coaching sessions. She discusses the ethical guidelines and specific parameters of the NC partnership and co-creates an agreement for their work together. The NC clarifies PL's issues/concerns and opportunities for change based on whole person assessment data.

PL's main concern is her limited muscle strength and a gait disturbance. She has been somewhat resistant to using assistive devices so exploring the reasons for her reluctance

was a first step. The potential risk of fall or fracture is real and intellectually she knows this. Somatic awareness led her to the realization that she has been in denial about the progression of her illness. For her, using an assistive device would be “admitting or giving into the disease”.

As the disease progressed, PL experienced increased fatigue and difficulty coping. “I don’t want people to feel sorry for me.” Her own suffering and distress was becoming harder to keep to herself. “I get sad when I let myself think about the future.”

Exploring the potential causes of PL’s fatigue began by looking at her exercise routine, rest and sleep patterns. Conservation of energy (both physiological and psychological) requires setting realistic goals and recognizing energy-depleting and energy-restoring activities. PL did not have a consistent time to go to bed and averaged 5–6 h of sleep per night.

The NC had PL keep a log of symptoms and activities to see if there was any correlation. This was helpful for PL to increase her awareness, see limitations and set up more realistic goals. The NC role-played a discussion with PL’s boss regarding her work schedule hours. PL did not want to bring attention to the fact that her symptoms were progressing but needed to have a frank conversation about her difficulties. Her fear of having this conversation was relieved when he agreed to altering her hours so she could come in a little later and do some work from home.

Case Study 3: a woman with Chronic Obstructive Pulmonary Disease (COPD), diabetes mellitus type 2, and hypertension (SB)

SB, age 58, has a history of COPD, diabetes mellitus and hypertension. She is overweight with a body mass index (BMI) of 29. She has had numerous acute exacerbations of her COPD with four in-patient admissions in 2008, and four in-patient admissions in 2009. She is oxygen dependent and has been non-adherent to her medication regimen and plan of care.

In consultation with a pulmonologist, SB was told her lung function was so poor that, in his opinion, she would not live to see her 60th birthday. SB was upset by this prognosis, but is spiritually focused and lived with faith that her health could improve or at least stabilize.

In early 2010, she began coaching sessions. SB discussed the limitations that her health challenges have imposed on her life and the difficulty in staying motivated and adherent to a treatment plan. The NC reviewed her health history along with barriers relevant to her current situation.

SB was on a limited income and lived in a subsidized high rise apartment building. She had limited family support but as an ordained minister she did have extended support through her church affiliation. Her constant companion was her dog, Coco. Recently her mother moved from Florida into an apartment in the same building as SB. At age 87, her mother had early stage dementia and needed periodic supervision. Having her mother live across the hall allowed SB to check on her frequently and for them to have meals together each evening. Unfortunately, this

also added to SB’s stress level and worry about impending placement for continuous care for her mother. The NC and SB began a dialog regarding possible options for day care and respite.

SB called the NC numerous times a day for reassurance and guidance. She needed a connection with someone who would listen to her and care. The NC set respectful boundaries and showed support and concern. Recognizing self-care practices were not always a priority for SB, the NC and SB explored specific goals for change. The winter months posed the most challenges in terms of her respiratory status. Since SB was at risk of respiratory issues in the winter cold, they discussed the importance of infection precautions and when to notify her primary care provider.

Since attending church services was very important to her, SB often pushed herself to go in spite of not feeling well or in inclement weather. Negotiating with her about the importance of self-care was an important milestone in working with her coach.

In discussing her medications and symptoms, the NC and SB identified the fact that the theophylline she was taking was the cause of her nausea. The NC suggested she keep a log of symptoms and after three days on the medication, the same side effect symptoms would reoccur. In addition, her daily dose of diuretic was found to be high. She found this dose very disruptive to her day and therefore was inconsistent in taking the correct prescribed dose. The NC had a discussion with SB’s primary physician that allowed medication adjustment and a more manageable side effect profile.

Knowing SB’s history and triggers for acute exacerbations, the NC and SB identified potential risks in a proactive manner through a process of mutual discovery. SB was concerned about renovations in her apartment complex and how the disruption in air quality might impact her respiratory status. One possible solution they discussed was a filter to improve air quality and limit allergens. SB was excited to problem-solve and think of creative solutions rather than be a victim to her illness. She had had so many respiratory infections in the past and had always waited to see “how I would feel tomorrow”. Modifying triggers was the beginning of a proactive journey in light of her serious health issues.

Results

There were a total of 66 NC graduate respondents; a response rate of 16.5%. About half of the respondents ($N = 35$) identified a practice setting, with the majority working in primary care (71%). The majority of respondents had been practicing in the NC role for more than three years ($N = 56.89\%$). Most respondents were not aware of the Omaha System prior to this study ($N = 49.75\%$).

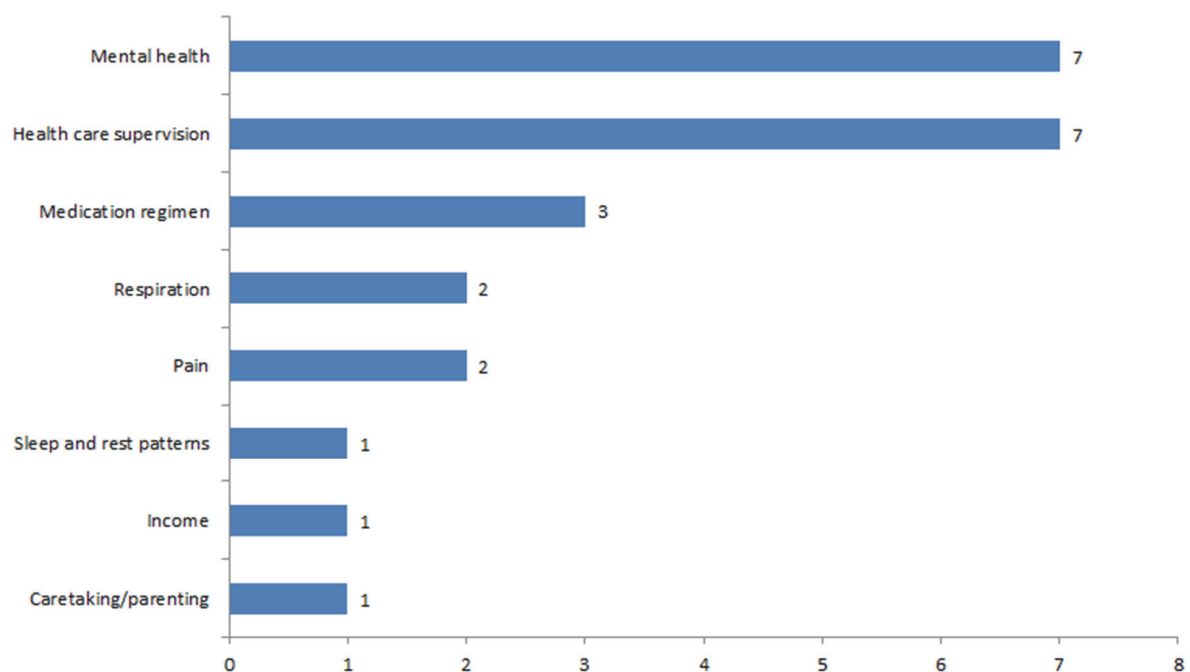
For Aim 1, evaluation of content validity of NC case studies showed that 95.7% of NCs agreed that the case studies were realistic, and 89.3% agreed that they would use similar interventions (Table 1).

Table 1 – Evaluation of content validity of NC case studies

Case study	Realistic case	Would use similar interventions	Accuracy in selecting Omaha System terms
All (N = 66)	95.7%	89.3%	84.3 %
Migraine/headache (N = 28)	93.2%	82.7%	88.0%
Multiple sclerosis (N = 26)	97.0%	91.2%	82.0%
COPD (N = 26)	97.0%	94.1%	86.4%

For Aim 2, evaluation of the accuracy of NC identification of Omaha System terms showed that overall, NCs identified Omaha System interventions for the three case studies accurately 84.3% of the time (Table 1).

For Aim 3, feasibility of analyzing NC practice data was examined through use of case study data in aggregate. This enabled descriptive analysis of the problems and interventions across the three case studies. Results of this analysis are presented by frequency of problem (Chart 1), category (Chart 2) and target (Chart 3). Implications of this analysis are further explicated in the discussion.

**Chart 1 – Number of interventions by problem**

Discussion

This study examined the feasibility of using the Omaha System to represent NC practice using case studies and survey methods. The three aims were supported, demonstrating feasibility of the Omaha System to represent NC practice. The results of this study may be useful for NC education, documentation, outcome evaluation, and quality improvement.

The finding that nearly all NCs agreed that the case studies were realistic and agreed that they would use similar interventions supports the unified approach of NC practice across settings and populations. This agreement supports extending the development of NC case studies as a means of studying and disseminating NC practice and aligns with

the literature regarding use of case studies to demonstrate the application of the Omaha System to diverse practices, settings, and populations [13, 18, 19]. Further research is needed to describe and evaluate additional patient case studies across these settings.

The finding that NCs, most of whom were unfamiliar with the Omaha System, were able to accurately identify Omaha System interventions for these case studies demonstrates the ease of use of the Omaha System and its fit with NC practice. This aligns with the stated purpose and goals of the Omaha System as a simple and comprehensive terminology and classification [13, 14]. The case study method was useful in providing examples using Omaha System terminology as a conceptual bridge between practice content and standardized documentation. There may be potential to use the Omaha System to create care

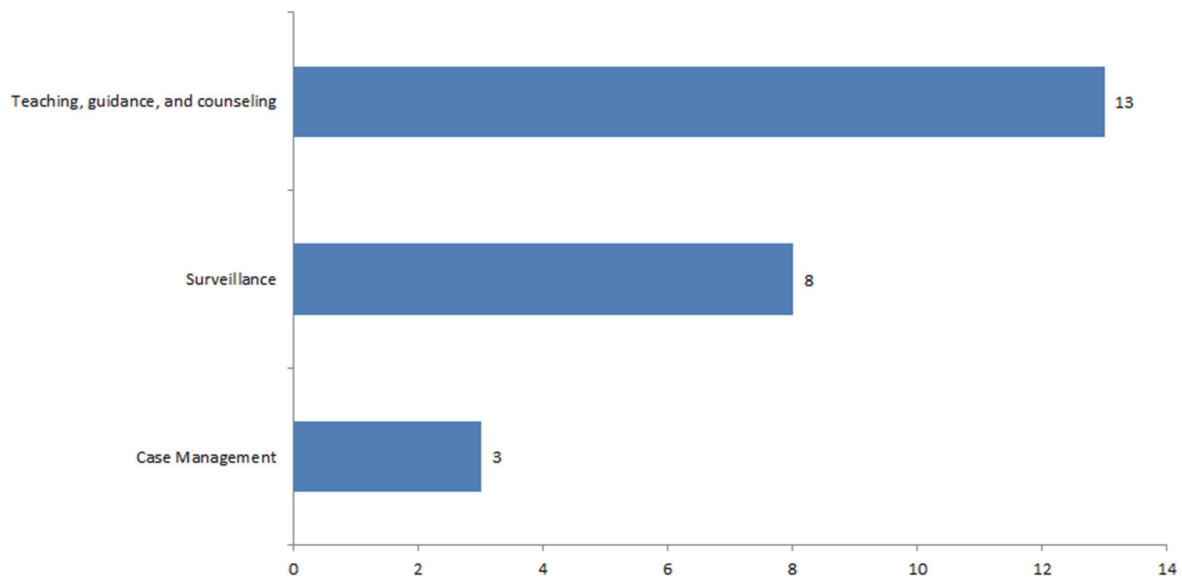


Chart 2 – Number of interventions by category

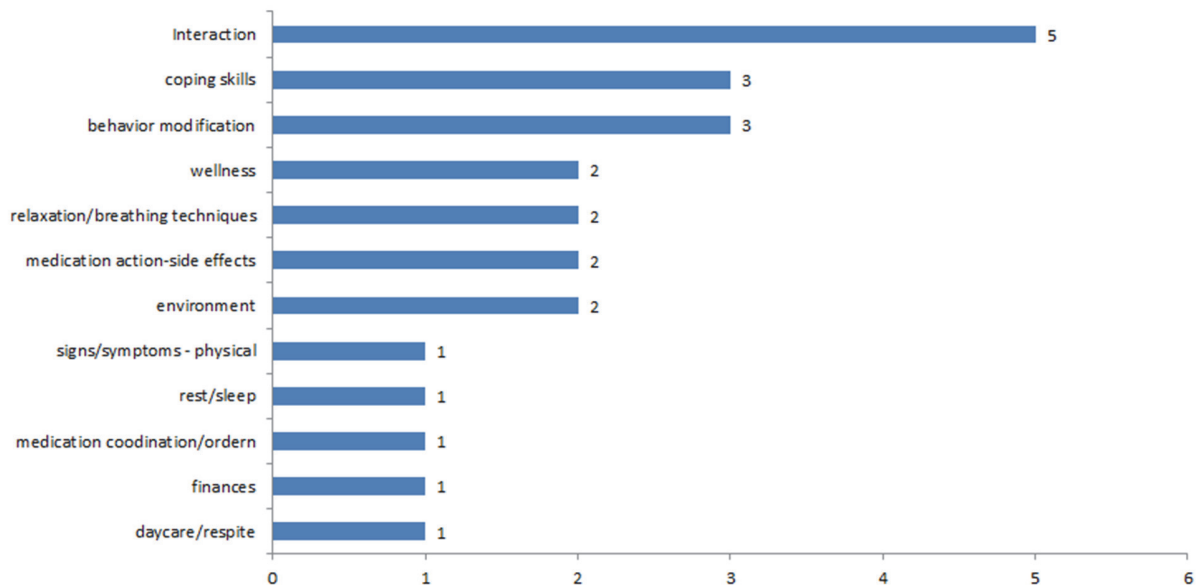


Chart 3 – Number of interventions by target

plans for NC practice that would enable and enhance documentation [18]. Furthermore, NC intervention data may provide opportunities to evaluate NC practice, provide direction for outcomes evaluation and policy development, identify quality issues, and exchange data across systems.

The finding that the data from three case studies could be aggregated, analyzed, and interpreted demonstrates the value of using standardized terminology for NC intervention documentation and aligns with previous research using large Omaha System datasets from acute care, home care, and family home visiting in the United States as well as globally [20–26]. This type of data is important for quality improvement, orientation

discussions, and clinical teaching of NC practice. This potential is illustrated by data from the three case studies. The most common Omaha System Problems across the three case studies were *Mental health*, *Health care supervision*, and *Medication regimen*. Consistent with the literature, the case study data suggests that NCs should evaluate the *Mental health* problem, because clients with complex chronic conditions may traverse through many emotions and behaviors in dealing with changes in their healthcare status and may alter achievement of client goals [27]. In JT's case (Case Study no. 1), escalating stress played a role in the number of migraine occurrences. In PL's case (Case Study no. 2), her anxiety regarding her future with

MS was beginning to overwhelm her. In SB's case (Case Study no. 3), her frustration with frequent declines in her health status got the NC wondering if an underlying depression was the reason for her non-adherence to medication.

In all three case studies, the *Health care supervision* problem was an essential focus of NC practice and an important component in care planning that guided interventions. These clients faced challenging issues that impacted their perceptions and participation in their healthcare plan. JT (Case Study no. 1) did not fully follow a treatment plan, PL (Case Study no. 2) needed to obtain routine healthcare and return as requested to see the provider, and SB (Case Study no. 3) often failed to seek care for symptoms. Furthermore, the case study data shows the critical need for NCs to assess the problem of *Medication regimen*. Medication assessment in NC practice takes into account how the emotional toll impacts adherence to the medication regimen. The NC helps redirect the client to objectively recognize the potential consequences. For example, in JT's case (Case Study no. 1), he would try a prescribed medication for a short period of time or take it late in the onset of the migraine and then conclude it was ineffective. In SB's case (Case Study no. 3), she was often non-adherent with her medications and this was a primary cause for her repeated hospitalizations.

Case study data analysis also revealed the importance of a comprehensive, holistic approach to chronic disease management. Nurse coaching guides the client, supports healthy choices/changes, and oversees the progress of client's goals [8-11]. There were numerous *Teaching, guidance and counseling* interventions that addressed adjustment to illness, medication action and side effects and basic dietary management. These interventions encouraged action and responsibility for self-care, reinforced coping and helped the client make decisions to problem-solve. In SB's case (Case Study no. 3), the NC reinforced the importance of taking medications as prescribed and encouraged noting changes/patterns in order to report to the provider in a timely manner. The NC offered guidance in making choices to promote better health by recognizing patterns that were crucial to JT's (Case Study no. 1) behavior changes. The NC helped PL (Case Study no. 2) focus on the here and now, become more aware of her energy/fatigue, and counseled her on conservation of energy for better management of her fatigue.

Nurse coaching *Surveillance* includes client-centered assessment and coaching clients to self-monitor [8-11]. In JT's situation (Case Study no. 1), the NC encouraged self-assessment of his stressors, the events that may have precipitated them, and the impact they were having on his family and finances. This included keeping a log of migraine symptoms, when he took the medication and a pain scale to rate if the medication helped. Likewise, the NC devised a log so that SB (Case Study no. 3) could note and report any changes, symptoms or side effects in a timely manner. With PL (Case Study no. 2), the *Surveillance* of her physical signs and symptoms such as balance and coordination were a safety issue that needed to be addressed, including monitoring her rest and exercise.

Nurse coaching *Case management* was provided for each client in the case studies, as the NC was a conduit for improving communication among clients, primary care providers and other community resources [8-11]. For JT (Case Study no. 1), the NC made connections with financial resources and medication resources. In PL's case (Case Study no. 2), the coordination consisted of suggestions for durable medical equipment for the home, such as a shower or bath chair. The NC assisted SB (Case Study no. 3) with elder care resources and support groups.

This study provides a first and necessary step for use of the Omaha System in NC documentation to improve NC intervention description, and develop standardized, evidence-based guidelines for NC practice. It also supports interoperability, exchange, and re-use of NC data for research and evaluation related to NC care quality. There is also potential to use the Omaha System to capture assessment and outcome data for cost/benefit analysis [13, 14, 18, 20-26]. Defining NC practices in documentation using the Omaha system can advance the quality of these practices in a consistent way. This in turn, can translate key components (such as *Knowledge, Behavior, Status* changes) to determine sustainable healthcare outcomes over time. Further research is needed to examine how the Omaha System can be utilized to better understand the value of NC for patients, and to examine the interventions/outcomes of interdisciplinary NCs. With accurate use of the Omaha System over time there is potential to generate a database of big data research in the effectiveness of NC interventions, client outcomes and population health trends [26]. Although NC practice is well underway, further research is needed to better understand the relationship between NC interventions and client outcomes, and answer questions regarding the potential for decreased resource utilization lower healthcare costs. The ability to represent NC care may be the key to providing new knowledge for NC practice and scholarship.

Health care system changes are needed to improve the health of populations suffering from chronic health conditions [1, 2]. Nurse Coaches have the potential to advance the role in practice and within organizations by demonstrating effectiveness and promoting interoperability [8-14]. Interdisciplinary health coaches may also find using the Omaha System useful to facilitate communication among providers [3-8]. This study shows the feasibility of consistent NC knowledge representation and documentation across care settings. There is potential to use the Omaha System to promote better continuity of care and encourage interdisciplinary collaboration.

Conclusion

The Omaha System has potential for use as a NC documentation tool and should be considered for development of a standardized, evidence-based guideline for NC practice. Defining NC practice by documentation using the Omaha system can advance the quality of these practices in a consistent way. Such changes may support a new model of chronic disease management and inform,

refine and improve practitioner-patient engagement while positively impacting population health.

Conflict of interest

The authors of the article have no actual or potential conflict of interest to disclose.

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