A NATIONAL ROLE DELINEATION STUDY OF CLINICAL NUTRITION MANAGERS
AND RELATIONSHIPS WITH EDUCATIONAL NEEDS AND SELF-EFFICACY

by

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B.S., Kansas State University, 2001
M.S., Kansas State University, 2007

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Hospitality Management and Dietetics
College of Human Ecology

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2015

Abstract

Management responsibilities in the dietetics profession are typically aligned with foodservice operations. Clinical Nutrition Managers (CNMs) are registered dietitians with administrative responsibilities for clinical nutrition services within a healthcare facility. However, no studies have clearly delineated the current responsibilities of CNMs or their level of educational preparedness for this important role. Conceptually, a gap exists between the necessary skills and knowledge required for CNMs.

Focus groups, cognitive interviews, and pilot testing were used to develop an audit instrument to measure CNM practice. This audit included 84 tasks in eight job categories. The instrument was distributed online to a national sample of CNMs to assess their involvement, education preparedness, and gaps in education needed for the role. The relationships between responsibilities, educational preparedness, and self-efficacy to perform the job were investigated.

Of the 84 tasks, 73 were deemed core activities [80% of CNMs (n=214) were involved in some capacity]. Significant differences were found in frequency of involvement based on size of facility (number of patient beds) and employer type. Generally, CNMs perceived importance of receiving education higher for a majority of the tasks (80 of 84). Mean scores for the level of educational needs met varied more between tasks. Clinical nutrition managers rated educational needs being met lowest for tasks within the managing financial resources category. Gap analyses revealed that the highest educational priorities were for ensuring compliance with regulations and managing human and financial resources.

Categorical self-efficacy was predicted by both the educational gap and educational preparedness for some categories. Significant predictors for overall self-efficacy were the self-efficacy of the general *(β = 0.203, p=0.007)* and managing financial resources *(β = 0.178, p=0.014)* categories. Significant differences were found in overall self-efficacy based on education level *[$F_{(3, 209)}$ = 3.881, p=0.010]* and length of employment as a CNM *[$F_{(4, 208)}$ = 7.517, p<0.001]*.

This research can serve as a current benchmark for CNM practice. Results allow educators, managers, and the professional association to better inform students and practitioners

about the leadership role. These findings may also assist others in creating leadership development programs, certificates, or graduate degree options specific for CNMs.

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Dedication

I dedicate my work to my beautiful and intelligent children, Riana and Gavin, and my loving and supportive husband, Brian. I love you all.

Chapter 1 - Introduction

This chapter addresses the following components of this study: brief introduction to registered dietitians and the existing literature that supports the research study, justification of this study, the purposes, objectives, research questions, and hypotheses of the study, and the importance of the study to the profession. In this chapter, clinical nutrition managers will be defined and discussed and will subsequently referred to as CNMs. This chapter will also discuss research about clinical nurse managers who are a referent group to CNMs in the healthcare field.

Registered dietitians (RDs) and dietetic technicians, registered (DTRs) provide food and nutrition expertise in a variety of roles and settings. According to The Academy of Nutrition and Dietetics Compensation and Benefits Survey of the Dietetics Profession (2013), the three primary areas of practice for RDs and DTRs are clinical dietetics, food and nutrition management, and community dietetics.

Clinical dietetics is the most prevalent area of practice for RDs and DTRs (The Academy of Nutrition and Dietetics [Academy], 2013). These practitioners complete nutritional assessment of individuals and determine a plan of action to reach specific nutritional outcomes for others (United States Department of Labor, 2014). Clinical RDs typically work in healthcare facilities such as hospitals, long-term care facilities or outpatient facilities (United States Department of Labor, 2014). Food and nutrition management is another area of practice for RDs and DTRs (Academy, 2013). This area of practice involves managing foodservice workers and other dietitians; budgeting for food, labor, equipment and supplies; and managing foodservice departments in a variety of settings (United States Department of Labor, 2014). Finally, community dietitians develop community nutrition programs and educate the public about food and nutrition (United States Department of Labor, 2014). A less commonly known area of practice within the dietetics profession is clinical nutrition management. Clinical nutrition managers (CNMs) are typically defined as RDs "with administrative responsibilities for nutrition services within an organization" (Clark, Moore, Trombley, Skates, Rogaliski, Schofield, & Welch, 2012). General responsibilities of these managers include providing nutrition therapy services; managing clinicians who provide nutrition therapy; collaborating with other healthcare professionals; developing policies, programs, and budgets that benefit the department and organization; and managing human resources (Clark et al., 2012).

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Pratt, Kwon, and Rew (2005) studied perceived importance of duties performed by CNMs and their level of satisfaction regarding performance of these duties. CNMs were generally satisfied with their perceived level of performance of the activities; however, satisfaction with perceived level of performance was not as high for activities such as "performing and/or developing clinical outcome studies" and "securing reimbursement for clinical services" (Pratt et al., 2005). In general, CNMs rated their perceived level of performance higher for those responsibilities that they found to be more important than other responsibilities that were perceived as less important (Pratt et al., 2005).

Researchers have found that RDs with management responsibilities were generally satisfied with their jobs; however, CNMs were less satisfied than other managers in areas such as pay and promotion (Sauer, Canter, & Shanklin, 2010). One explanation for these findings may be that CNMs may compare their pay with other management healthcare professionals who are not RDs (Sauer et al., 2010). Another study found that dietitians who were more involved in professional organizations also had higher job satisfaction levels (Mortenson, Nyland, Fullmer, & Eggett, 2002). Researchers suggest higher job satisfaction with dietitians who are more involved may be due to the exposure of professional research and networking opportunities (Mortenson et al., 2002). These professional involvement activities may lead to improved knowledge and skill level.

Sauer, Canter, and Shanklin (2012) also examined career satisfaction among dietitians with different types of management responsibilities including those with the job title of clinical nutrition managers, department or program directors, assistant or associate directors and managers or assistant managers. In general, management RDs were satisfied with their careers, but CNMs were the least satisfied with their careers (Sauer et al., 2012). Clinical nutrition managers had moderate to high levels of pay compared with other management RDs; however, they were less satisfied with level of pay than the other management RDs (Sauer et al., 2012). Clinical nutrition managers were also found to be less satisfied with career success and career advancement when compared to other management RDs (Sauer et al., 2012).

Statement of Problems

Previous research has shown that CNMs have lower job and career satisfaction than other dietitians with management responsibilities, specifically with pay and promotion (Sauer et al,

2010; Sauer et al, 2012); however, there is little known about why CNMs are less satisfied than other RD managers. There has been limited research conducted with this group of dietitians. Some research was conducted in the late 1990s and early 2000s; however, the healthcare environment has changed dramatically, leaving implications of this past research outdated. The U.S healthcare is dramatically changing due to a variety of factors including implementation of the Patient Protection and Affordability of Care Act of 2010; restriction of resources due to fiscal challenges; tension on the system due to an aging population; and development of new technologies and treatments, which creates questions about their appropriateness of use and cost efficiency (Institute of Medicine, 2013). Although the Academy regularly examines core activities of sub-groups within the profession, the majority of these audits have been conducted with entry-level RDs and DTRs (those who have been credentialed within five years of being registered) (Ward, Rogers, Mueller, Touger-Decker, & Sauer, 2011). Previous audits have excluded CNMs, leaving this role undefined. Leaders in clinical nutrition management reiterate that typically, the CNM role includes both clinical and management responsibilities, CNMs are often promoted from a traditional clinical role, the CNM position is considered advanced level practice, and many of these individuals hold a master's degree. It is also known that there is no clear promotional pathway to becoming a CNM, and they typically are good clinicians who are promoted into a managerial role (N. Hakel-Smith & J. Skates, personal communication, February 17, 2012).

Current research about CNMs is limited making it difficult to establish a literature framework. The clinical nurse manager position is a unique position, but serves as a beneficial comparison to the CNM position. Clinical nurse managers are often clinicians who have been promoted to a management position and oversee human, financial, and other resources; develop staff; and ensure compliance with regulatory and professional standards among other responsibilities (Oroviogolcoechea, 1996). Similarly, CNMs are also often clinicians who have been promoted (Hudson, 2006) with responsibilities similar to clinical nurse managers (Witte & Messersmith, 1995). Given that the core roles of the clinical nurse manager and the CNM are similar, research about the careers of clinical nurse managers is pertinent.

A body of research about the educational preparedness of clinical nurse managers suggests they often feel clinically competent but lack confidence in their managerial responsibilities (Gould, Kelly, Goldstone, & Maidwell, 2001). Research also shows that nurse

managers desire continuing education to improve their managerial and leadership skills (Davies, 1996; Sullivan, Bretschneider, & McCausland, 2003). Researchers have studied the impact of continuing professional development programs for nurse managers and found that there is a relationship between job satisfaction and the availability of these programs for nurse managers (Gould et al., 2001). They also reported a relationship between perceived preparation to assume the various responsibilities of the nurse manager and job satisfaction. When nurse managers perceived that their preparation for the role was poor, they had lower job satisfaction within the role (Gould et al., 2001).

Research has also shown that self-efficacy to complete specific tasks was improved after education was given (Bakken, Byars-Winston, Gundermann, Ward, Slattery, King, Scott, & Taylor, 2010). It is currently unclear as to the types and methods of education that CNMs utilize to prepare for their position; it is also unclear if CNMs perceive themselves as well-prepared for the role as managers. There is also evidence that self-efficacy to perform the job tasks positively impacts job satisfaction (Perdue, Reardon, & Peterson, 2007; Wu, Lee, Liang, Chuang, Lu, & Wu, 2012).

Given the many role and environmental similarities between the CNM and the clinical nurse management positions, training needs for the management role may be similar. Therefore, CNMs likely have the same need as nurse managers for continuing education in managerial responsibilities for their role. They may also have similar perceptions of job satisfaction and self-efficacy related to the level of education preparedness.

There is no clear evidence about the actual responsibilities of CNMs and the educational preparedness for this role. There is no known research that has shown if there is a gap between the skills and knowledge needed for the CNM role and the level of preparedness for the role. There is also little known about what educational opportunities exist specifically to prepare CNMs for their managerial role and if these educational opportunities are sufficient to prepare them for advanced practice. No research was found that examined the impact of educational preparedness on job satisfaction and self-efficacy to complete the job activities of CNMs. Although there has been research that suggests that self-efficacy of job functions impacts job satisfaction in other areas of practice, this relationship has not been explored with CNMs.

Purpose

The purposes of this exploratory study are to determine the responsibilities of the CNM, assess the education preparedness of the CNM for these responsibilities, and examine if there is a gap between the knowledge and skills needed for the CNM role and the knowledge and skills gained through educational preparation for the role. The impact of educational preparedness on self-efficacy to perform the job will also be investigated.

Objectives

The objectives of this research are:

1. To determine the core role activities being performed by clinical nutrition managers.
2. To determine the skills and knowledge needed to perform clinical nutrition manager core role activities.
3. To determine the education preparedness for the core role activities required of clinical nutrition managers.

Research Questions

The research questions of this research are:

1. What are the core role activities of clinical nutrition managers?
2. What are clinical nutrition managers' perceptions regarding their education preparedness for core role activities?
3. Does a gap exist between core role activities and perceived educational preparedness for clinical nutrition managers?
4. Does a relationship exist between self-efficacy and the gap between core role activities and educational preparedness? Specifically to what extent do the extraneous variables, such as length of time in the CNM role, highest level of education, and employer type impact self-efficacy?

Hypotheses

H1: The relationship between core role activities and educational preparation predicts self-efficacy to perform the role activities of clinical nutrition managers.

H2: Overall educational preparedness predicts overall self-efficacy to perform the core role activities of clinical nutrition managers.

Significance of Research

This study is significant to the dietetics profession in many ways. Research about CNMs will increase our understanding about this very unique role. Sauer et al. (2010) found that CNMs were significantly less satisfied with pay, promotion, contingent rewards, and nature of work than other managers. Sauer et al. (2012) also found that CNMs were less satisfied with career success and advancement, skill development and meeting goals than other managers. Given that little is known about the CNM role, we do not have a clear understanding of the reasons behind these discrepancies and the impact of these findings on the profession. This research will provide information regarding the role of CNM in the current healthcare environment and will help explain the discrepancies in satisfaction of CNMs. Thus, this research will help close the gap in literature regarding the causes for lower job and career satisfaction of CNMs.

With greater insight, educators, managers, and the profession can better inform students and practitioners about the leadership role. This research is important because CNMs have a great impact within the healthcare environment. A majority of clinical RDs or DTRs report directly to a CNM. The CNM and his/her leadership style may directly impact satisfaction levels and employee performance of those clinicians. Also, the CNM has the opportunity to develop a mentoring relationship with those clinicians and develop leadership skills in other RDs and DTRs who may then take other leadership or management roles. The CNM can impact the clinicians' motivation to perform well, their self-efficacy levels of leadership activities, and desire to take leadership roles on committees and interdisciplinary teams.

Given that there currently is no clear pathway to becoming a CNM, opportunities exist to create leadership programs, certificates, or graduate degree options specific for CNMs. Distance education may be an effective means for providing educational programs to CNMs.

Definition of Terms

Dietetics. The Academy of Nutrition and Dietetics (2011) defined dietetics as "the integration, application and communication of principles derived from food, nutrition, social, business and basic sciences, to achieve and maintain optimal nutrition status of individuals through the development, provision and management of effective food and nutrition services in a variety of settings."

Dietetic Professional. In reference to this study, a dietetic professional is one who is credentialed as a registered dietitian or a dietetic technician, registered.

    Registered Dietitian (RD). An individual who is credentialed through a series of requirements including education, supervised practice, examination, and continuing professional education (Academy, 2011). These individuals provide expertise in managing and monitoring foodservice functions and nutrition education and counseling (United States Department of Labor, 2014).

    Dietetic Technician, Registered (DTR). An individual who is credentialed by meeting specific educational requirements and passing a registration examination (Academy, 2011). These individuals provide services under the supervision of a dietitian (United States Department of Labor, 2012).

Clinical Nutrition Manager (CNM). RDs "with administrative responsibilities for nutrition services within an organization" (Clark et al., 2012). General responsibilities of these managers include the provision of nutrition therapy services, managing clinicians who provide nutrition therapy, collaborating with other healthcare professionals, developing policies, programs, and budgets that benefit the department and organization, and managing human resources (Clark et al., 2012).

Gap Analysis.   "Defining the present state, the desired or `target' state and hence the gap between them (Institute for Manufacturing, 2014). In the context of this study, a gap between current education and required education to do the tasks successfully will be assessed to determine highest educational priorities to prepare CNMs for their role.

Job Satisfaction. "Individual's mind-set about the job, which may be positive or negative" (Gregoire, 2013, p. 312)

Self-Efficacy. Personal confidence in one's ability to perform a specific task (Bandura, 1997).

Chapter 2 - Review of Literature

This chapter addresses background information relevant to this study. First, information about dietetic professionals including basic statistics and prevalent areas of practice is discussed. Given that the dietetics profession is predominately female, the chapter also examines literature related to women's career development, women as managers, and job and career satisfaction among women. Because many dietetic professionals are employed in the healthcare environment, literature regarding healthcare professionals and women in healthcare will also be examined. Literature specifically related to clinical nutrition managers will be discussed, and clinical nutrition managers are subsequently referred to as CNMs. This chapter examines job and career satisfaction among CNMs, job responsibilities and leadership skills of CNMs, and role delineation techniques used by the dietetic profession. This chapter also discusses literature related to clinical nurse managers who are a referent group to CNMs. Clinical nurse managers will always be referred to as clinical nurse managers. Literature specific to career progression, role delineation methods, education preparation techniques, and job satisfaction of clinical nurse managers will be discussed. Finally, the chapter will address background information related to self-efficacy and factors that both influence self-efficacy and are impacted by self-efficacy.

Dietetic Professionals

According to The Academy of Nutrition and Dietetics (Academy, 2011) formerly known as the American Dietetic Association (ADA), "Dietetics is the integration, application and communication of principles derived from food, nutrition, social, business and basic sciences, to achieve and maintain optimal nutrition status of individuals through the development, provision and management of effective food and nutrition services in a variety of settings." The dietetics profession consists of approximately 90,342 registered dietitians (RD) and dietetic technicians, registered (DTR) (Academy, 2013).

The United States Department of Labor (2014) identifies a variety of roles for RDs including planning and monitoring meal preparation and service; managing foodservice departments; developing community nutrition programs; educating and counseling clients to assist in treating illnesses and encouraging healthful diets; and conducting research. An RD has completed a bachelor's degree in a dietetics program and completed supervised practice hours

both through programs accredited through The Accreditation Council of Education in Nutrition and Dietetics (ACEND). An RD must also complete the registration process by passing "The Registration Examination for Dietitians" and fulfill the Professional Development Portfolio requirements, which include obtaining 75 hours of continuing education every five years (Academy, 2011).

According to the United States Department of Labor (2012), dietetic technicians provide services under the supervision of a dietitian; services include assisting in planning and monitoring of meals, providing client education and counseling on food and nutrition. The DTR is credentialed through one of three ways: completion of an associate's degree and accredited Dietetic Technician program, completion of bachelor's degree in dietetics and an accredited dietetic technician supervised practice program, or complete bachelor's degree in dietetics through an accredited didactic program (Academy, 2011). The individual must also pass the "Registration for Dietetic Technicians" and complete at least 50 continuing education hours for the Professional Development Portfolio requirements (Academy, 2011).

Demographics of Profession of Dietetics

Females comprise the majority of the dietetics profession. According to the Academy of Nutrition and Dietetics Compensation and Benefits Survey of the Dietetics Profession (2013), 95% of dietetic professionals are female with a median age of 46 years. Advanced degrees are prominent in the dietetics profession with 47% of practicing RDs having master's degrees, and 4% having doctoral degrees; 35% of practicing DTRs have a bachelor's degree or higher (Academy, 2013). Registered dietitians and DTRs can obtain other specialty certifications offered through the professional organization, but having these specialty certifications is more prominent among RDs (21%) than among DTRs (11%) (Academy, 2013). Membership in the Academy of Nutrition and Dietetics is also more prevalent among RDs (67%) than among DTRs (40%) (Academy, 2013).

Job Growth in Dietetics

The United States Department of Labor (2014) estimates that job growth for dietitians will be approximately 21% between the years of 2012 and 2022, which is greater than the average growth of all occupations (11%). Employment growth will be due to multiple factors including: the aging population; the increased interest in food, health promotion and wellness;

and disease prevention in healthcare. Dietetic technicians' employment growth is not reported in the 2014 Occupational Outlook Handbook published by the United States Department of Labor Bureau of Labor Statistics. Hospitals continue to be the largest employer of dietetic professionals (31%) followed by government (13%), nursing and residential care facilities (9%), health practitioners offices (7%), and outpatient care facilities (7%). It is anticipated that dietitians with advanced degrees, specialized training or special certifications will have better career prospects in the future (United States Department of Labor, 2014).

Areas of Practice in Dietetics

The Academy's Compensation and Benefits Survey of the Dietetics Profession (2013) reports there are multiple settings in which RDs and DTRs are employed and are identified by 59 position titles clustered into seven practice areas. These seven practice areas include three clinical nutrition settings (acute care/inpatient, ambulatory care, and long term care), community, food and nutrition management, consultation and business, and education and research (Academy, 2013). The most prevalent practice areas for RDs and DTRs are listed in Table 1.

Table 2.1-Prevalent Practice Areas in Dietetics

Practice Area	Registered Dietitians Responding n=6,523 (%)	Dietetic Technicians, Registered n=866 (%)
Clinical Nutrition – Acute Care/Inpatient	32	43
Clinical Nutrition – Ambulatory	17	1
Clinical Nutrition – Long Term Care	8	13
Food and Nutrition Management	12	19
Community	11	11
Consultation and Business	8	2
Education and Research	6	2

Note: Compiled data from The Academy of Nutrition and Dietetics Compensation and Benefits Survey of the Dietetics Profession 2013 (Academy, 2013)

Clinical Dietetics

The two most commonly reported position titles by RDs were clinical dietitian (16%) and clinical dietitian, long term care (8%). The most common titles reported by DTRs were dietetic technician, clinical (42%) and dietetic technician, long term care (12%) (Academy, 2013).

Clinical dietitians work in a variety of facilities including acute care facilities such as hospitals, long-term care facilities, and out-patient centers (United States Department of Labor, 2014). Clinical dietitians are part of the interdisciplinary healthcare team who provides medical nutrition therapy including nutritional assessment, diet and nutritional intervention recommendations, and monitoring and evaluation of nutritional outcomes to patients, residents and clients of these facilities (United States Department of Labor, 2014).

Dietetic technicians work in health care facilities such as hospitals and long-term care organizations (United States Department of Labor, 2012). They typically work under the supervision of an RD and assist with providing food services and nutrition programs. These professionals may provide nutrition counseling or teach principles of food and nutrition to clientele (United States Department of Labor, 2012).

Management in Dietetics

Career advancement is more likely with experience or an advanced degree (United States Department of Labor, 2014). Dietitians with experience may advance into management positions; obtaining an advanced degree is most helpful for dietitians who wish to be promoted in certain areas of practice such as public health, research, or clinical dietetics. Management dietitians often have a variety of responsibilities including but not limited to human resource management of foodservice workers and other dietitians; budgeting for food, labor, equipment and supplies; and managing foodservice departments in a variety of settings (United States Department of Labor, 2014).

Mathieu (2008) interviewed dietitians regarding their advancement into management practice. These RDs stated that flexibility, leadership skills, decision-making, confidence, and working with people are required traits for management practice (Mathieu, 2008). Canter and Nettles (2003) found that dietitians who manage multiple departments believed that the most important skills needed to be successful in their roles included: interpersonal, decision-making, and organizational skills; flexibility; and ability to embrace change. Other abilities deemed as important were time management, listening, and financial management skills; developing staff;

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and strategic thinking, among many others listed (Canter & Nettles, 2003). Canter and Nettles (2003) also found that many multidepartment managers indicated that additional training in a variety of areas of management such as financial management, technology, human resources and communication was necessary.

Clinical Nutrition Management

Clinical nutrition managers (CNMs) are typically defined as RDs "with administrative responsibilities for nutrition services within an organization" (Clark, Moore, Trombley, Skates, Rogalski, Schofield, & Welch, 2012). General responsibilities of these managers include providing nutrition therapy services; managing clinicians who provide nutrition therapy; collaborating with other healthcare professionals; developing policies, programs, and budgets that benefit the department and organization; and managing human resources (Clark et al., 2012). Two of the 59 position descriptions used by the Academy in The Compensation and Benefits Survey are very closely related to clinical dietetic management services including the director of clinical services and the CNM. Position descriptions indicate managing human resource activities of the clinical staff, managing budgets, and other administrative duties for clinical services are often responsibilities of dietitians in these roles (Academy, 2011). These positions have also been labeled as "…chief clinical dietitian, head clinical dietitian, supervising clinical dietitian, coordinator of clinical dietetics and assistant director of clinical dietetics" (Witte, Escott-Stump, Fairchild, & Papp, 1997). The CNM position is one of the most commonly held management positions in the dietetics profession among RDs, as reported by 3% of registered dietitians (Academy, 2013).

Canter and Nettles (2003) found that many dietetic managers were managing multiple departments. However, Witte and Messersmith (1995) found that many CNMs (41%) did not have dual roles in their facility and reported that 100% of their time was focused on the clinical nutrition management position. Duties performed by CNMs were assessed and validated for 46 of the 54 duties in their position (Witte & Messersmith, 1995). These duties involved the following: ensuring quality standards and customer satisfaction; monitoring compliance with policies, procedures and regulations; providing information to subordinates and other healthcare professionals in the facility and community; performing human resource activities for the clinical staff such as performance appraisals, orientation and training, discipline, staffing and scheduling;

managing financial resources; and providing nutrition and menu knowledge to the foodservice department, among many other duties (Witte & Messersmith, 1995).

There are three levels of practice for the CNM: competent, proficient, and expert (Clark et al., 2012). At the competent level, the RD is new to practice and beginning to gain knowledge and skills to become an effective CNM. At the proficient level, the CNM has a better understanding of the role, is able to problem solve and make decisions regarding practice under specific circumstances, and utilizes evidence-based practice. Those CNMs at the expert level are leaders within the organization and profession who are advancing clinical practice and the profession through collaboration with other healthcare professionals and research in clinical practice. These individuals have extensive experience and education in clinical and management practice and provide strategic leadership to the department, organization, and profession. Regardless of the level of practice, the Academy encourages CNMs to continually obtain additional education and training to build upon current knowledge and skills. These individuals should also only practice at the level in which they are competent (Clark et al., 2012).

Other than the few studies described above, little is still known about clinical nutrition management practice. The RDs who perform as CNMs are not significantly identified in the literature. The CNM role is typically occupied by female professionals; therefore, literature regarding women's career development and women in healthcare will follow.

Women's Career Development

O'Neil and Bilimoria (2005) proposed three phases of women's careers: idealism, endurance, and reinvention. Phase one or idealism occurs early in a woman's career (ages 24-35) and is characterized by the desire for achievement and career satisfaction. Decision-making in this phase is often focused on advancing careers while success is defined as the ability to impact others and personal happiness and fulfillment. Phase two, known as endurance is mid-career (ages 36-45). Women in this phase are described as practical about career decisions and limit career moves to balance personal and professional responsibilities. They also feel successful when their career has provided a sense of happiness and fulfillment. Phase three, or reinvention, occurs later in a woman's career (ages 46-60) and focuses on professional career development and positive contributions to organizations. Women in this phase typically view success by being recognized and respected by others (O'Neil & Bilimoria, 2005).

O'Neil and Bilimoria (2005) also described career patterns, career loci, and career contexts of women professionals. Researchers identified two career patterns including ordered and emergent careers. Ordered careers were traditional paths where women strategically moved through organizational ranks. Emergent career paths were more non-traditional; these careers often involved interruptions and unexpected moves. Women typically had more ordered careers, especially in phase three (reinvention) and there were no differences in career patterns in phase one and two. "The locus of a career describes the focal point from which career orientation, motivation, and success emanate" and include external and internal. When women have an internal locus of control, they believe that they are in control of their career destination and success. In contrast, women who have an external career locus often feel that they lack control and career opportunities are often due to luck or organizational decisions. Researchers have found that women in phase one of their careers exhibit internal locus of control and more external locus of control during phase three of their careers (O'Neil & Bilimoria, 2005).

According to O'Neil and Bilimoria (2005), there are three common career contexts: organizational, societal, and relational. Organizational contexts include the systems of an organization such as policies, procedures, and culture. Societal context involves the impact of the larger society such as societal expectations of women and economic conditions. Relational contexts include the interactions of personal and professional responsibilities and how a woman's decisions may impact others' lives. Factors in each of these contexts have differing impacts on women in different phases of their careers. For example, economic conditions especially impacted women in phase one more so than other career phases. The organization impact of negative managers was reported more in phase two than the other phases. Relational contexts, such as children, impact women in all phases of their careers (O'Neil & Bilimoria, 2005).

Mainiero and Sullivan (2005) described two explanations of women's career development: "the opt-out revolution" and the "kaleidoscope careers" perspective. "The opt-out revolution" assumes that women do not wish to promote into management positions due to family demands that cause them to leave their careers. In contrast, researchers found that there were multiple reasons that women choose to leave the work force, including little opportunities for advancement, gender discrimination, lack of challenging work, balancing work and family life, and personal health. The "kaleidoscope careers" perspective views women's careers as

relational, where career decisions impact many others lives as well as their own. Women will often take non-traditional career paths that are a better fit for their situations. There are typically three issues that women face in making career decisions: authenticity, balance, and challenge. Early in women's careers, being challenged and achieving career goals is the most important factor. During mid-career, balance between work and personal life becomes more important. During late career, authenticity is pushed to the forefront which describes the ability of the woman to be herself and make decisions for her personal benefit (Mainiero & Sullivan, 2005).

Researchers have also investigated the impact of age on the relationships between proactive personality and the following three factors: training motivation, perceived career development from training, and training behavioral intentions (Bertolino, Truxillo, & Fraccaroli, 2011). Proactive personality refers to one's display of motivation to pursue opportunities in the organization. Training motivation is the pursuit of continuing educational activities to participate in learning. Perceived career development from training is the employee's perception of how the educational opportunities will assist in their career development. Training behavioral intentions refers to the likelihood of an employee to participate in educational activities. Researchers found that younger employees with proactive personalities were more likely (compared with older employees) to embrace and participate in training activities and perceive these training activities as relevant to their career development (Bertolino et al., 2011).

Women Managers

There are two common perspectives regarding the impact of female managers in the career advancement of female employees: female managers acting as "change agents" or "cogs in the machine." The "change agent" refers to female managers mentoring female subordinates and assisting them in career advancement. The "cogs in the machine" perspective refers to female managers fostering male careers in order to conform to organizational values (Maume, 2011). Maume (2011) concluded that the female managers followed the "cogs in the machine" perspective and did not impact the career advancement of female employees. However, other research has shown that the number of females in top management positions within an organization influences the number of mid-level managers within the same organization, suggesting that women in top management positions may impact women career advancement within organizations (Kurtulus & Tomaskovic-Devey, 2012). Kurtulus and Tomaskovic-Devey

(2012) concluded that there is a greater impact in organizations that have a larger proportion of female employees. Researchers suggest three reasons for this greater impact in these organizations: a greater probability of females promoting from lower level positions into mid-level managerial positions given the larger proportion of female workers, the organization will utilize promotion to motivate lower level female employees, and organizations that have a larger number of females are less resistant to female managers. Researchers also found that there are certain characteristics that women managers have attributed to advancing in their managerial careers. These characteristics include: interpersonal skills, determination, hard work, enthusiasm, positive attitude, and ambition (Brownell, 1994).

Women's Career Satisfaction

Mallon and Cohen (2001) discovered two main reasons that women leave the organizational work force to become self-employed. These reasons include having an urge to become entrepreneurs and wanting to make a change due to dissatisfaction with the organization. A majority of the women in this study cited the dissatisfaction factor as the motive for becoming self-employed. Factors causing dissatisfaction among these women included: lack of opportunities for professional growth and advancement, inflexibility that did not allow them to properly balance work responsibilities and personal life, and changes within the organization that were not congruent with their values and beliefs (Mallon & Cohen, 2001). O'Neil and Bilimoria (2005) found that women typically experience more dissatisfaction with their organizations during phase two (endurance) and that the dissatisfaction stems from negative workplace interactions, such as gender discrimination and sexual harassment and diminishing choices in life in general.

Career satisfaction determinants have been addressed with managerial women aged 50 to 64 years old in various work sectors including healthcare, general service, education, manufacturing, and financial (Armstrong-Stassen & Cameron, 2005). Perceived health; organizational support, value, and commitment; and challenging and rewarding work were all positively related to career satisfaction. Managerial women also perceived few training opportunities within their organizations. Armstrong-Stassen and Cameron (2005) suggested that to keep older managerial women satisfied with their careers, it was necessary to offer challenging work and sufficient opportunities to develop advanced knowledge and skills for their

job. To increase career satisfaction among managerial women, it would also be important that the organization conveys that it is committed to them, values them, and cares about them (Armstrong-Stassen & Cameron, 2005).

Mainiero and Sullivan (2005) made several suggestions to retain and advance talented female workers. One recommendation included: allow flexibility with work and reward effective use of flexible schedules, which will allow these women to be positive role models for others to remain in the work force. Another recommendation was to make it easier for women to have a "kaleidoscope career model." This would encourage women to return to work after an interruption for various reasons and allow opportunities for career advancement after returning. Another recommendation was to provide advancement pathways based on performance instead of time worked. The final recommendation was to offer a culture that encourages use of programs that offer assistance with caregiving (Mainiero & Sullivan, 2005). In order to retain professional women in the workforce, O'Neil and Bilimoria (2005) suggest that organizations have managers that mentor women, support advancement and development opportunities, give women challenging work, and adequately recognize the contributions that women make in their careers. Organizations should recognize the needs of women in different phases of their careers. For example, women in phase two (endurance) may need more flexible schedules in order to have a better work/life balance during this phase, but women in phase three (reinvention) may need more recognition and challenging work to feel valued (O'Neil & Bilimoria, 2005).

Professionals in Healthcare

Career patterns of healthcare administrators were examined, revealing traditional career, single career change, multiple career changes, and back and forth career patterns (Fahey & Myrtle, 2001). Approximately 1800 surveys were mailed to members of the American College of Healthcare Executives and the Medical Group Management Association. Traditional career patterns were those where healthcare managers may have had job changes within the healthcare industry, whereas, the single career change pattern was defined by a job change outside of the healthcare industry. The multiple career change pattern was characterized by a job change outside of the healthcare industry, which then led to another job change to yet another industry. The back and forth career pattern was characterized as a job change outside of the healthcare industry and then another job change that led back to the healthcare industry. Researchers found

that the most common career pattern among this group was the multiple career changes (32.5%), followed by single career change (22.8%) and traditional career pattern (16%), with the least common career pattern being the back and forth career pattern (15.1%). Researchers also found that career changes were not influenced by age, gender, marital status or education. Achievement of results and the need for early responsibility of important tasks had a greater influence on career decisions for individuals having the multiple career change pattern than those who had other career patterns. These results indicate that individual factors impact career decisions, and some managers change jobs to gain additional managerial experience (Fahey & Myrtle, 2001).

When assessing career advancement factors among women faculty in a school of medicine, the highest ranked need included flexibility of schedule to take care of family obligations (both children and aging parents). Other career needs included establishing mentoring relationships with superiors and departmental support (including sabbatical time and administrative assistant support) to complete grants and manuscripts (McGuire, Bergen, & Polan, 2004).

When studying career advancement with female pharmacists, Muzzin, Brown, and Hornosty (1995) found that women earning advanced credentials (post-baccalaureate) often were not advanced in their careers. When women made the decision to work part-time for personal reasons, career advancement was almost always negatively impacted (Muzzin, Brown, & Hornosty, 1995).

Healthcare managers, supervisors, and directors were asked to rate the importance of 50 knowledge, skills, and ability to effectively manage in their healthcare setting. All items were rated on a 7-point scale with 1 being "not at all important" and 7 being "critically important" (Stowe, Haefner, & Behling, 2011). The most important factors were: effectively leading (6.81), creating a positive work environment (6.74), effectively managing conflict (6.71), multi-tasking (6.71), motivating others (6.63), empathizing with patient/client concerns (6.56), being sensitive to staff problems (6.56), consistently demonstrating personal ethics (6.51), making decisions (6.49), creative problem-solving (6.47), demonstrating ethical business practices (6.37), running effective meetings (6.36), measuring performance of department/organization employees (6.31), and using computer technology (6.26). Items that were rated the lowest included: managing facilities/plants (4.14), managing media relations (3.93), managing account

receivables (3.88), conducting market research (3.81), and managing bond covenants (2.32). The importance of skill domains were rated on the same 7-point scale by healthcare managers. Organizations skills (6.63), business administration skills (6.36), interpersonal skills (6.21), communication skills (6.08), board relation skills (5.08), and fund raising skills (4.48) were rated as the most to least important in the healthcare environment (Stowe et al., 2011).

Individuals with different levels of longevity in their current position rated the importance of the concepts differently (Stowe et al., 2011). Healthcare regulations, audits for clinical compliance, visibility to patients/clients, and diversity were rated lower among individuals in their position for 1-4 years compared with individuals in their position for 5-10 years. Contracts, facility/plant management, communicating to stakeholders, project management, and public speaking were rated lower among individuals in their position for over 10 years compared with individuals in their position for 5-10 years. There were also differences in importance responses based on age, years of experience in the healthcare field, education level and gender. For example, 18 of the 50 items were rated significantly more important by women compared with men. Nine of the items rated more important by women were management/leadership skills (for example effective implementation of clinical programs and project management techniques), seven of the items were interpersonal items (for example sensitivity to staff problems and empathy for patient/client concerns), and two of the items were ethics items (work is consistent with personal ethics and consider ethical implications in clinical decisions). Researchers found the knowledge, skills, and ability concepts loaded into seven domains which included: external stakeholder, personal ethos, communicating change, clinical compliance, managerial tasks, dollars and cents, ethics and quality (Stowe et al., 2011).

Research has been conducted on the number of clinicians that serve on hospital board of directors and how the presence of clinicians on the board impacts quality ratings that the hospital receives (Veronesi, Kirkpatrick, & Vallascas, 2012). Researchers used a quality rating score (1=weak, 4=excellent) published by Annual Health Check that is comprised with 67 standards and indicators. They also determined the compilation of the hospital boards to determine the number of board members that had a clinical background. Veronesi et al. (2012) found approximately 26.03% of board members had a clinical background; doctors were a majority of the clinicians (14%), while nurses and other allied health professions made up the remaining 12% of clinicians on boards. Researchers also found that increasing the number of members

with clinical backgrounds positively impacted the hospital quality ratings. Specifically, research found that there was a significant link between increased number of doctors on the board and increased quality ratings (Veronesi et al., 2012). These results indicate that it is important for clinicians to continue to advance in the healthcare organizations to have a greater impact on the organization.

Women Healthcare Managers

Clinical nutrition managers typically work in the healthcare field in a managerial role. Clinical nutrition manager roles are typically filled by females given that the dietetics profession is predominantly female. Therefore, this section of the literature review focuses on career development and advancement among women healthcare managers.

Four main categories of work stressors have been recognized by female healthcare managers which include work overload, interruptions, responsibility, and relationships (Rodham & Bell, 2002). Female healthcare managers were asked to journal events that they felt were stressful during the day; events related to work load and interruptions were the most cited work stressors. With regards to workload, female healthcare managers stated a sense of always being behind schedule and excessive work to do. Female healthcare managers also reported that they worked long hours, but did not identify this factor as a work stressor. Instead they accepted the long hours as a responsibility of the job that was expected of them. Female managers felt that interruptions made it difficult to complete scheduled tasks, and that interruptions came from a variety of sources including face-to-face, telephone calls, and email correspondence. With regards to responsibility, female healthcare managers noted that checking on subordinates to ensure that work had been done completely and correctly was a work stressor. Stressors arising from relationships with subordinates and superiors were also documented as work stressors among female healthcare managers (Rodham & Bell, 2002).

Female managers were also asked how they recognized that they were stressed and what they did to manage stress (Rodham & Bell, 2002). Female managers often stated that they recognized some sort of behavior change in themselves when presented with work stressors including being less tolerant with others, becoming quiet, and not smiling. When asked what they did to manage stress, female healthcare managers always stated a way to cope with the

stress, but not ways to actually reduce the cause of the stress or manage the stressor (Rodham & Bell, 2002).

Dietetics

Clinical Nutrition Managers

Edelstein (1993) found that dietitians in healthcare facilities perceived little opportunity for advancement and that career ladders were not utilized in most healthcare facilities. Of those dietitians who believed that there were opportunities for career advancement, a majority perceived that the only positions that a dietitian could be advanced to were clinical nutrition manager or foodservice director. Only 2% of dietitians believed that a hospital administrative position was possible. Because other professions, such as nursing have found success in career advancement through the use of career ladders, Edelstein (1993) proposed a career ladder for healthcare dietitians based on five criteria including: developing performance standards, applying tenure, applying continuing education hours and certification, applying professionalism, and applying formal education. It is proposed that dietitians' individual efforts in these five criteria can be evaluated, and the dietitian can be recognized and rewarded for their performance in career advancement efforts (Edelstein, 1993).

Job and Career Satisfaction in Dietetics

Sauer, Canter, and Shanklin (2010) studied job satisfaction among different types of managers in the profession of dietetics and the correlation that job satisfaction had on the managers' intent to leave their current position. Management titles that were examined in this study included: district manager, general manager, director, assistant director, manager, supervisor and clinical manager (Sauer et al., 2010). Researchers in this study used the Job Satisfaction Survey (JSS) instrument that was specifically developed and validated to measure job satisfaction in human service, public, and nonprofit organizations (Spector, 1985). The JSS measures nine domains of job satisfaction including pay, promotional opportunities, fringe benefits, contingent rewards, supervision, co-workers, nature of the work, communication and work conditions (Spector, 1985). Sauer et al. (2010) found that as job satisfaction increased, intent to leave decreased among managerial RDs. Results also showed that managerial RDs were generally satisfied with their jobs; however, clinical nutrition managers were less satisfied

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than other managers in areas such as pay and promotion (Sauer et al., 2010). One explanation for these findings may be that clinical nutrition managers may compare their pay with others in the healthcare profession that are not RDs or in dietetic professional roles (Sauer et al., 2010).

Another study examined job satisfaction among dietitians and determined a relationship between professional involvement and job satisfaction (Mortenson, Nyland, Fullmer, & Eggett, 2002). Researchers found that dietitians who were more involved in professional organizations also had higher job satisfaction levels. Researchers suggested higher job satisfaction with dietitians who are more involved may be due to the exposure of professional research and networking opportunities. These activities may lead to improved knowledge and skill level. Researchers also found that dietitians who had had a mentor early in their professional career were among the most highly satisfied dietitians. Other characteristics of the most highly satisfied dietitians included serving as a mentor, self-employed, consulting with other dietitians, and higher salaries (Mortenson et al., 2002).

Sauer, Canter, and Shanklin (2012) also examined career satisfaction among managerial dietitians including those with the job title of clinical nutrition managers, department or program directors, assistant or associate directors and managers or assistant managers. Researchers found that, in general, management RDs were satisfied with their careers. District managers had the highest career satisfaction and clinical nutrition managers had the lowest career satisfaction. Clinical nutrition managers had moderately to high levels of pay compared with other management RDs; however, they were less satisfied with level of pay than the other management RDs. Clinical nutrition managers were also found to be less satisfied with career success and career advancement when compared to other management RDs (Sauer et al., 2012).

Clinical Nutrition Managers' Job Responsibilities and Leadership Skills

Witte et al. (1997) developed practice criteria based on clinical nutrition managers' responsibilities. Six practice criteria were established including criteria relating to: monitoring and ensuring compliance with regulations; developing, implementing and evaluating programs; communicating and educating others regarding nutrition standards and information; engaging in personal skill and knowledge development throughout their careers; researching in the dietetics profession to improve practice; and managing resources effectively (Witte et al., 1997). All CNM duties determined by Witte and Messersmith (1995) were divided into these six categories.

Guidelines were then developed for each responsibility so that CNMs had a parameter to measure their performance of these activities (Witte et al., 1997).

Pratt, Kwon, and Rew (2005) studied perceived importance of these duties performed by CNMs and their level of satisfaction regarding performance of these duties. They found that three of the top five duties that they deemed important were related to ensuring compliance with regulations, policies and procedures. The other two duties were related to ensuring customer satisfaction and staff retention. Clinical nutrition managers were generally satisfied with their perceived level of performance of these top five activities. Clinical nutrition managers were not satisfied with their perceived performance of "performing and/or developing clinical outcome studies" and "securing reimbursement for clinical services." In general, CNMs rated their perceived level of performance higher for those responsibilities that they found to be more important than others (Pratt et al., 2005).

Arensberg, Schiller, Vivian, Johnson, and Strasser (1996) studied leadership qualities of CNMs using the Leadership Behavior Questionnaire adapted from Sashkin (1990). They assessed self-reported leadership qualities of CNMs and perceived leadership qualities reported by subordinates. A gap was identified between the CNMs' perception and subordinates' perceptions of leadership characteristics that the CNM possessed, with the self-reported perceptions ranked higher than the subordinates' perceptions (Arensberg et al., 1996). The lowest rated leadership quality by both the clinical nutrition manager and their subordinates was the communication leadership characteristic. This characteristic was related to the CNMs' interpersonal communication skills. Another leadership characteristic that was ranked low included empowered leadership. This characteristic was the CNMs' ability to empower others to meet leader's and organizational goals (Arensberg et al., 1996).

Mislevy, Schiller, Wolf, and Finn (2000) conducted research to determine if CNMs perceived that they had power or adequate access to opportunity, information, support and resources within the organization. Clinical nutrition managers generally felt empowered in their positions. Clinical nutrition managers had higher perceptions of power relating to access of organizational information; their lowest rated perceptions of power were related to access to organizational resources. Ratings for perceived power for access to resources and overall empowerment were higher for CNMs with advanced education. Ratings related to access to opportunity and overall empowerment were higher for CNMs employed in larger organizations.

No differences in perceptions of power relating to CNMs' years of experience or time in position were noted (Mislevy et al., 2000).

Development of Clinical Nutrition Managers

Many studies report that CNMs have a need for additional education for certain topics such as technology, human resource management, and financial management (Pratt et al., 2005; Witte & Messersmith, 1995; Canter & Nettles, 2003); however, there are no training programs that target the specific needs for CNMs. Witte and Messersmith (1995) conducted research to clarify the role of the CNM and the educational strategies of these CNMs. Witte and Messersmith (1995) found that only 25% of CNMs were required by their employer to have a graduate degree, whereas, work experience and the credential as registered dietitian were required by 87% and 96%, respectively. Work experience in clinical dietetics was most commonly requested by the employer and three years of experience was the amount of time that was often requested for CNMs (Witte & Messersmith, 1995).

Witte and Messersmith (1995) found that many CNMs (31%) did not plan on being in the position and did not intend on using any specific methods for skill development for the CNM position. However, work experience was a skill development strategy that was positively correlated with perceived improvements in competency in performing required responsibilities. Other dietitians who did want to advance into a CNM position stated that they prepared by gaining an advanced degree; however, having an advanced degree was not correlated to perceived increased competency. Although other skill development strategies were used after gaining the CNM title such as continuing education and networking, CNMs continue to perceive areas that need additional training which included: technology, developing and managing budgets, and marketing (Witte & Messersmith, 1995).

Role Delineation Studies in Dietetics

Given that role delineation will be a critical component of this research project, this section will focus on methodologies used for role delineation in the dietetics profession. The Academy of Nutrition and Dietetics regularly (every five years) conducts practice audits of entry-level RDs and DTRs to determine the nature of their work. Audit results are often used by other organizations such as the Commission of Dietetic Registration (CDR) and the Accreditation Council for Education in Nutrition and Dietetics (ACEND). The Commission uses

the results of these audits to determine exam content for RDs and DTRs, while ACEND uses the data to develop accreditation standards for educational programs (Sauer, Ward, Rogers, Mueller, Touger-Decker, & Molaison, 2011). Although the Academy regularly performs practice audits to determine core activities of subgroups within the profession, the majority of these audits have been conducted with entry-level RDs and DTRs (those who have been credentialed within the last five years) (Ward, Rogers, Mueller, Touger-Decker, & Sauer, 2011). Previous audits have excluded CNMs, leaving this role undefined. The methodology of the practice audits performed by the Academy will be discussed in the following paragraph given that the research methodology and objectives align with this proposal.

The 2010 Entry-Level Dietetics Practice Audit measured the level of involvement of certain activities, frequency of activities, and perceived risk associated with those activities among entry-level dietitians (1-3 years) (Sauer et al., 2011). For this audit, a mixed-mode survey that included both mail and internet methods was used; the questionnaire contained 166 activities that were believed to comprise entry-level practice (Ward et al., 2011). The 166 activities were grouped into 11 categories and three questions were asked of each of the activities including: 1. "In the last year, in what way(s) have you been involved with this activity (if any)?" 2. "[IF INVOLVED] With what frequency have you been personally involved (in any way) with this activity over the last year?" 3. "[IF INVOLVED] How do you rate the risk (of physical harm, financial loss, etc) to recipients of services and/or the effectiveness of your organization if this activity is performed poorly?" (Ward et al., 2011). For the first question, participants had the following options: No involvement, Assist others (scale value of 1), Perform myself (scale value of 2), and Supervise/manage (scale value of 3) (Ward et al., 2011). For the second question related to frequency of involvement, participants were given the following options: Daily (scale value of 20), Weekly (scale value of 4), Monthly (scale value of 1), and Less than monthly (scale value of 0.5) (Ward et al., 2011). For the last question involving risk of the activity, participants were given a scale of 1 to 5 with 1 being low risk and 5 being high risk (Ward et al., 2011). From this audit, researchers determined core activities (those that 40% of practitioners were involved in on average 5 days per month, at minimum) (Ward et al., 2011).

Clinical Nurse Managers

The clinical nurse manager position is a unique position, but serves as a beneficial comparison to the CNM position. Clinical nurse managers are often clinicians who have been promoted to manage human, financial, and other resources; develop staff; and ensure compliance with regulatory and professional standards among many other responsibilities (Oroviogolcoechea, 1996). Clinical nutrition managers are also often clinicians who have been promoted (Hudson, 2006) to manage human, financial, and other resources (Witte & Messersmith, 1995). Given that the roles of the clinical nurse manager and the CNM are similar based on career paths and role responsibilities, a review of research about the careers of clinical nurse managers is pertinent.

People, intellectual, and political skills are all very important for nurse managers (del Bueno, 1989). People skills include listening to and respecting others' ideas, clearly communicating and interpreting information, improving confidence among team members and promoting team relationships. These skills are useful in interviewing, mentoring, disciplining, resolving conflicts, and conducting staff meetings. Intellectual skills include analyzing and interpreting data, identifying problems, prioritizing, selecting alternative solutions, and critical thinking. These skills are utilized for resolving problems, planning, allocating resources, monitoring and assuring quality services, developing standards and policies, and managing risk. Nurse managers should also have political skills which includes the knowledge of influence; nurse managers should understand who has power, how it is attained, when to use it, and how it impacts others. Negotiating and networking are examples of political skills that nurse managers should acquire (del Bueno, 1989).

Career Progression in Nursing

Sherman, Bishop, Eggenberger, and Karden (2007) found that becoming a manager was not a planned career move for a majority of nurse managers participating in their focus groups. They noted that there were no clear career ladders in the nursing profession. A majority of nurses reported lack of training or orientation to the role once they had accepted the managerial role (Sherman et al., 2007).

Adeniran, Bhattacharya, and Adeniran (2012) suggested that "each nurse must take ownership of his or her professional development and career advancement within nursing and

among the multidisciplinary health care team." Researchers have developed a conceptual framework that identified factors that impact leadership development among nurse leaders and nurses who wish to become leaders. This framework is called the model for Professional Excellence and Career Advancement in Nursing (PECAN) and provides a "clear path for researchers to examine variables influencing nurses' professional development and career advancement in a systematic manner" (Adeniran et al., 2012).

According to the PECAN framework, the professional preparedness (their level of clinical expertise and experience) is key to developing leadership skills (Adeniran et al., 2012). Another key variable in developing into a clinical leader is the participation in career advancement and professional development activities which may be impacted by four factors including: human capital, social capital, system and external support. Human capital factors refer to the knowledge and competencies that the nurse has acquired as well as the personal characteristics that the individual possesses to function as a nurse. According to the PECAN framework, these human capital factors encourage nurses to participate in professional development activities to improve knowledge and skills and recognizes self-efficacy as one of the most important human capital factors to influence professional development and career advancement. Social capital factors that may influence professional development and career advancement among nurses refer to the interpersonal relationships that they have and include activities such as participating in mentoring and networking activities and being able to effectively communicate with other healthcare professionals. The PECAN framework highlights mentorship as an important factor in nurse leadership development. System factors include organizational features that support leadership and professional development such as support from healthcare administrators, flexibility in schedule, access to professional development activities, and financial support for continuing education. The PECAN framework suggests that the more positive system factors that are present, the more opportunities for nurses to advance in their careers. Finally, external factors include support from family and engagement in activities outside of the work environment. The PECAN framework postulates that the more support that one has from external sources, the more likely he/she is to participate in professional development activities and advance in one's career. The PECAN framework suggests that the more positive variables that are present from each of the four factors, the more likely the nurse will engage in professional development and career advancement opportunities; however, this

framework is only a conceptual model and the assumptions have not been validated (Adeniran et al., 2012).

Nurse Role Delineation

Some role delineation research has been conducted with clinical nurse managers and advanced practice nurses. Given that there has been no research regarding role delineation among CNMs, research using role delineation in the nursing profession will be examined to determine methods used to define the clinical manager role in healthcare.

Researchers maintain that the most important part of the role delineation process is developing a model of practice (Ackerman, Norsen, Martin, Wiedrich, & Kitzman, 1996). They developed a model for the nurse practitioner (NP) role. Five domains of practice were identified in this model including direct comprehensive care, support of systems, publication and professional leadership, education, and research with the patient being at the center of the model. Each practicing NP will have different levels of responsibilities in each domain depending on their specific position and their specific facility, but NPs will practice at some level in each domain. The model also included support areas that connect the five domains of practice which include collaboration, empowerment, and scholarship; all three of these concepts are utilized in each of the five domains of practice (Acerkman et al., 1996).

Other researchers conducted individual interviews with nurse managers (Sherman et al., 2007). The interviews consisted of 26 open-ended questions developed by the researchers. Responses from the interviews were coded and six competency domains materialized to form a competency model for nurse managers. The six domains included personal mastery, interpersonal effectiveness, financial management, human resource management, caring, and systems thinking. Some of the major responsibilities of the nurse manager role included recruiting staff; scheduling and staffing; budgeting; communicating with family, patients, staff, and other healthcare professionals; managing conflict; participating in direct patient care; and ensuring patient safety and quality services (Sherman et al., 2007).

Researchers adapted the Strong Model of Advanced Practice Role Delineation Tool to assess advanced practice nurses; the Delphi technique was used to establish content validity (Chang, Gardner, Duffield & Ramis, 2010). Email was used to administer the survey and Delphi process; this method was determined to be user-friendly and allowed for a timely response from panel members. Members of the Delphi panel were asked to review the instrument and to rate

their agreement with the domains and activities within the domains on a 5-point Likert scale (5=strongly agree, 1=strongly disagree). The panel was also encouraged to provide comments on the domains of practice. The Delphi included three rounds of review by the panel and feedback to the panel was given by the researchers after each round. The researchers used a content validity index of 75% as the standard to determine acceptable level of agreement with advanced practice nursing activities. After round one, some activities in the instrument did not meet the 75% standard, however, no changes were made to the instrument. Instead, the researchers provided additional explanations at the start of round two. After round two, six of the 42 activities did not meet the 75% standard for content validity. One item was deleted and alternative wording was presented for other items that did not have a 75% content validity index. After round three, all items were left in the instrument with the wording changes; the final instrument included 41 activities divided into 5 domains (Chang et al., 2010).

Evaluating construct validity of the instrument from Chang et al. (2010) was the next phase of the research in developing a role delineation tool to use for advanced practice nurses. In this next phase of the research, nurses were asked to indicate the amount of time spent on each activity by using a 4-point Likert scale (4=to a very great extent, 1=to a little extent) (Chang, Gardner, Duffield, & Ramis, 2011). Researchers then used exploratory factor analysis to determine construct validity. Five factors that were consistent with the five domains of practice were identified (Chang et al., 2011). Reliability was sufficient with a Cronbach's alpha of 0.94 for the overall role delineation tool and greater than 0.80 for all of the domains in the instrument (Chang et al., 2011). Researchers plan to use the results of these studies with the role delineation tool to reduce confusion of the role of advanced practice nurses by clarifying the activities performed by advanced practice nurses to the nursing profession, other healthcare professionals and the general community (Chang et al., 2010).

Stanton, Lammon, and Williams (2011) explored the roles clinical nurse leaders (CNL) using an instrument developed by the American Association of Colleges of Nursing (AACN) that included nine components. A questionnaire was developed that assessed the frequency CNLs performed these roles; a four-point Likert scale was used (1=slight or none, 4=great). The questionnaire also gathered comments about the similarities between their actual role and the role standards developed by the AACN. Findings suggest that CNLs are currently practicing in accordance to standards developed by the AACN (Stanton et al., 2011).

Surakka (2008) investigated roles and responsibilities of nurse managers by using diary methods of data collection; nurse managers were asked to record all of their daily tasks in a diary for one week and describe any normal functions of their role that did not occur. Nurse managers were also asked about their perceptions about performing the correct tasks as a nurse manager. Focus groups were then conducted about leadership and management knowledge of the nurse managers. Three domains of responsibilities arose including responsibility activities, accountability activities, and bedside nursing. Responsibility activities included communicating, cooperating and organizing; accountability activities included supporting staff, ensuring staff competencies, and mentoring staff; and bedside nursing included direct nursing care, indirect nursing care, nursing expertise, and handyman tasks. Surakka (2008) also found that descriptions of the work differed between practice setting of the nurse manager. For example there were frequency variances between university and rural hospitals (Surakka, 2008).

Care and Udod (2003) investigated the knowledge and perceived ability to perform specific competencies required of the nurse manager role. A questionnaire with a 4-point Likert scale (1=contributes minimally to first-line manager competence, 4=essential for first-line manager competence) was used for data collection. Effective communication was rated the highest for both knowledge and perceived ability to perform the competency; human and leadership competencies were typically rated high for both knowledge of the competency and ability to perform the competency. The lowest ranked competencies for both categories were typically conceptual and financial management competencies. There were several competencies that had large variances between the knowledge scale and the ability to perform scale; these competencies included conflict resolution, stress management, effective staffing methods, effective discipline, and delegation. Care and Udod (2003) also found fewer variances between respondents' perceived knowledge and perceived need for additional education preparation.

Researchers explored managerial and developmental issues of nurses in new and innovative roles through the use of a survey that included open, closed, and Likert-type questions (McKenna, Richey, Keeney, Hasson, Poulton, & Sinclair, 2008). They found that 92.4% of these nurses had a job description and 43.3% of them had their job description updated within the last year. Performance appraisals were done by a variety of people including another nurse, a service administrator, another health professional, or a combination of individuals. Factors that assist or hinder work effectiveness were also discussed. Level of support was one of the main

factors that assisted these nurses with effectiveness in the role; support from nursing administration, multi-disciplinary colleagues, and nursing colleagues were all important. Other factors that were noted to assist nurses being effective in their innovative roles included communication and interpersonal skills, knowledge/skills and experience, personal attributes and initiative, ongoing professional development/training, autonomy, teamwork, time and clinical supervision. Some factors that were noted that hindered effectiveness included lack of time for their role, lack of facilities, workload, high staff turnover, role not understood, lack of secretarial support, poor communication, funding constraints, need for training, and lack of support from management. Job satisfaction was also investigated, and researchers found that 92.4% of them stated their role increased job satisfaction. Respondents gave various explanations for the increased satisfaction including autonomy, variety of job responsibilities, and skills gained (McKenna et al., 2008).

From these findings, McKenna et al. (2008) suggested that it is critical to have a job description that is updated often and communicated to all those who will be working with the nurse in the innovative role. A support structure is also important and should include support from staff and other professionals. The workload of the individual should be evaluated as the role becomes operationalized.

Nurse Management Educational Preparedness

Gould, Kelly, Goldstone, and Maidwell (2001) found that clinical nurse managers often felt clinically competent but poorly prepared for managerial responsibilities. Nurse managers that perceived themselves as being poorly prepared were found to have lower job satisfaction in their current roles. Nurse managers felt that they needed more education on human resource management, financial management, effective communication, utilization of information technology, decision-making, ensuring compliance with standards and regulations among many other current responsibilities (Gould et al., 2001). Kleinman (2003) also postulated that clinical nurse managers are typically less prepared for the management responsibilities than the clinical activities. According to Davies (1996), clinical nurse managers have an increased need for continuing education and that these educational requirements are unique in the fact that clinical nurse managers must stay up-to-date on clinical skills as well as obtain effective managerial and leadership skills. Sullivan, Bretschneider, and McCausland (2003) reported that experienced nurse managers indicated they needed professional development opportunities in the following

areas: conflict resolution techniques, recruitment and retention methods, advanced technology skills, strategic planning and policy development, compliance with regulatory agencies, team building, time management skills and many other areas of practice. Researchers also found that new managers needed professional development activities that assisted with communication, conflict resolution, scheduling, financial resource management, human resource management, compliance with regulatory agencies and many others.

Kleinman (2003) developed a questionnaire to investigate competencies needed for clinical nurse managers and nurse executives and their perceptions of educational requirements to fulfill these roles. Both groups (clinical nurse managers and nurse executives) reported that staffing and scheduling, management, and human resources were the top three competencies needed for their roles. Finance and strategic planning competencies were also found to be very important for nurse managers. Both groups perceived graduate degrees important for the nurse executive positions; however, nurse executives rated the importance of graduate degrees higher than nurse managers for the nurse manager role. Kleinman (2003) postulates that this difference in importance for the nurse manager role may be due to the fact that many nurse managers received on-the-job training for many of the required competencies for their role.

Mathena (2002) developed a tool to examine professional development of leadership skills among nurse managers including preferred learning styles, barriers of participating in professional development activities, and amount of time easily spent on education per month. The instrument also investigated two categories using a 5-point Likert scale including "perceived importance of the skill set to a successful manager" and "perceived need for professional development in the skill set." The eight categories included in this portion of the questionnaire were interpersonal, clinical, technical, financial, staff development, resource management, political, and general skills. Revisions were made to the instrument to improve face validity after interviews were conducted with nurse leaders regarding the categories in the instrument. Mathena (2002) used paired sample t-tests to compare the importance of a skill set to the perceived need of education for the skill set and found in all variables "a statistical significance between what nurse managers think is important to their success and what professional development is needed." The five categories that nurse managers rated the most important were communication, negotiation, critical thinking, balance between work and home, and conflict management. The five skills that they rated the highest need for educational intervention

included situational analysis, data management, cost benefit analysis, financial projections, and financial analysis. Interestingly, nurse managers that had more than 5 years of experience rated their educational needs higher in six of the eight categories when compared with nurse managers that had five or less years of experience in the role. This result may indicate that experience nurse managers are either more open to learning new material or more willing to acknowledge their knowledge deficit (Mathena, 2002).

Purcell and Milner (2005) examined management development among clinical nurse managers and found that nurse managers often perceived that there were few programs available to help develop their managerial skills. The researchers also found that even when nurse managers were aware of managerial development activities, nurse managers rarely attended these activities. Nurse managers stated the following reasons for not developing management skills: not feeling encouraged to develop managerial skills, the expectations of continuing to be a clinician and care for patients while also completing administrative duties, and the perception that patient care is more important than managerial responsibilities (Purcell & Milner, 2005). Mathena (2002) found that nurse managers identified lack of time and resources as barriers to develop professionally. Given the many similarities between the clinical nutrition management and the clinical nurse management positions, perceptions of needed training for the management role may be similar among individuals in these two professions.

Nurse Management Preferred Methods of Training

Nurse managers typically stated that preferred educational methods included "study days" and part-time courses; however, they did not desire distance or full-time courses as strategies to gain more managerial education (Gould et al., 2001). Foster (2000) found that the most common method for nurse managers to gain managerial competencies was from role modeling and mentoring from senior nurse managers. Other methods included attending specific training sessions for nurse managers, "self-development", which included working with peers and senior nurse managers to develop an individual specific program for each ward manager, and the "cafeteria" approach in which ward managers were to develop their own learning plans. Foster (2000) also found that attending specific training was becoming a more common approach to gaining managerial competencies. The desired method of increasing and improving managerial competencies among a majority of ward managers was the "self-development" approach (80%) while the others preferred attending specific nurse manager training programs

(Foster, 2000). Senior nurse managers also preferred the "self-development" approach for their ward managers, but they preferred that this approach be combined with other styles such as attending specific training sessions (Foster, 2000). Mathena (2002) found that nurse managers preferred hands-on learning and mentorship and that they could realistically spend about 10 hours a month on professional development activities.

Kleinman (2003) suggested that training initiatives that emphasize the development of management skills must be a priority if the clinicians are to advance in their managerial roles. These training initiatives could include tuition reimbursement for continuing education, online programs or certificate programs, and continuing education programs specific to the managerial competencies for these roles (Kleinman, 2003).

Impact of Training in Nurse Management

Other professions, specifically nursing in healthcare have provided educational programs for specific needs of the professional and conducted research in this area to determine the impact that the educational program has on the professionals' skills (Martin, McCormack, Fitzsimons, and Spirig, 2012). They conducted research to evaluate the effectiveness of a program used to develop leadership skills in clinical managers; the program consisted of approximately 18 days of training using lectures, workshops and one-on-one coaching techniques. Researchers measured managers' and managers' staff perceptions of leadership skills before and after the implementation of the leadership training program. They found that perceived competencies of some leadership skills and practices of nurse managers were improved after the implementation of the leadership training program (Martin et al., 2012).

Davies (1996) studied a group of clinical nurse managers and determined the gaps in knowledge and self-efficacy related to both clinical and managerial skills. Then they developed an educational program of 20 hours of continuing education to be provided to these nurse managers. The educational program consisted of 10 two-hour sessions held on-site for ease of participation by the managers. The educational sessions improved managerial knowledge and influenced nurse managers to make behavioral changes; nurse managers indicated behavioral changes by stating specific ways they implemented concepts learned in the educational sessions (Davies, 1996).

Other researchers examined the differences in perceptions of understanding of and ability to perform nurse leadership competencies after a leadership training (Krejci & Malin, 1997).

The 12 competencies from the Leadership Competency Instrument were used; participants rated both their understanding of the competency and ability to perform the competency on a 5-point scale for all 12 competencies before, directly after, and 3 months after attending a leadership training. The leadership training was a 3-day workshop focused on improving leadership effectiveness. Results showed that nurses with a higher education level scored significantly higher for understanding and ability on the pre-training competency questionnaire, but there were not significant differences in the post-training scores. There were also significant increases in understanding and ability to perform the competencies immediately after the training and those significant increases were sustained three months after the training. This study highlights the importance of educational interventions given that the training had a significant impact on perceptions of leadership competency understanding and performance (Krejci & Malin, 1997).

Researchers have also evaluated the impact of a leadership certificate program on perceptions of importance and performance of leadership competencies (Omoike, Stratton, Brooks, Ohlson, & Storfjell, 2011). The Administrative Nursing Leadership (ANL) certificate program included six courses: leadership theory, operational management, organizational behavior, human resource management, financial management, and strategic planning courses. The ANL certificate program was administered 40% online and 60% via videoconferencing to accommodate the work schedules of participants. The Leadership Survey which included 61 responsibilities grouped into 12 domains was used to measure both the importance and competence of performing each activity; the survey utilized a 5-point Likert scale (1=least important/competent, 5=most important/competent). Using paired sample t-tests, researchers found that prior to participating in the ANL certificate program, participants rated competence levels significantly lower than importance levels in 11 of the 12 domains. These findings may indicate that participants did not feel prepared to perform important activities. Results also showed that participants reported significantly higher competency levels in 11 of the 12 domains after participating in the ANL certificate program, which may indicate that training was beneficial in increasing competence of leadership activities (Omoike et al., 2011).

Nurse Managers' Job Satisfaction

Empowerment, organizational support, and role satisfaction among nurse managers were investigated using a survey of a combination of scales that measured each constructs (Patrick & Laschinger, 2006). The Alienation from Work scale developed by Aiken and Hage (1966) that

measures role dissatisfaction was used; researchers reversed score this scale to measure role satisfaction (Patrick & Laschinger, 2006). The scale that Patrick and Laschinger (2006) used included six items measured on a 5-point Likert scale; high role satisfaction was indicated by a high score. The six questions in the Alienation from Work scale (Aiken & Hage, 1966, p. 501). included:

1. How satisfied are you that you have been given enough authority by your board of directors to do your job well?

2. How satisfied are you with your present job when you compare it to similar positions in the state?

3. How satisfied are you with the progress you are making towards the goals which you set for yourself in your present position?

4. On the whole, how satisfied are you that (your superior) accepts you as a professional expert to the degree to which you are entitled by reason of position, training and experience?

5. On the whole, how satisfied are you with your present job when you consider the expectations you had when you took the job?

6. How satisfied are you with your present job in light of career expectations?

Results showed that nurse managers had a moderate level of empowerment in their roles and perceived moderate levels of organizational support; nurse managers were moderately satisfied with their role (Patrick & Laschinger, 2006). Both empowerment and organizational support were predictors of nurse manager role satisfaction (Patrick & Laschinger, 2006). Nurse managers reported the most satisfaction with their role authority and acceptance by other professionals; they were least satisfied with achievement of their own professional goals within the role (Patrick & Laschinger, 2006).

Challenges among nurse managers and sources of professional and personal satisfaction were investigated using personal interviews and a Delphi study with first-line nurse managers (Thorpe & Loo, 2003). Personal interviews were coded by two researchers to provide inter-rater reliability and the data from the Delphi study were analyzed using both quantitative and qualitative methods. Nurse managers reported that there had recently been changes to their roles including job enlargement, a higher emphasis on efficiency, and changes in human resources such as shortage of nursing staff. Nurse managers also reported that staffing and retention and

managerial and staff frustrations regarding the role of the nurse manager were continuing challenges. Effectively managing human resources and achieving goals were mentioned as the main sources of professional satisfaction. Participants stated that future sources of professional satisfaction included providing quality care to patients, mentoring and developing staff, and having an impact on the organization as managers. Sources of personal satisfaction for nurse managers included making an impact on the organization and perceiving a high quality of life in general. Nurse managers reported the main source of personal satisfaction for them in the future is maintaining work-life balance. Nurse managers recommend to senior administrators that increasing training and developmental methods for nurse managers and providing a supportive work environment are important factors to improve their satisfaction levels (Thorpe & Loo, 2003).

Researchers have studied the impact of continuing development programs for nurse managers and found that there is a relationship between job satisfaction and the availability of development programs for nurse managers (Gould et al., 2001). They also found a relationship between perceived preparation to take on the various responsibilities of the nurse manager and job satisfaction. When nurse managers perceived that their preparation for the role was poor, they had lower job satisfaction within the role (Gould et al., 2001).

Sullivan et al. (2003) conducted a qualitative research study that specifically examined aspects of the nurse manager role that were the most satisfying to the individual. Some of the aspects that were the most satisfying to the nurse manager included autonomy and flexibility, ability to change practice, program development, opportunity to develop others, ability to influence policy development, and opportunity for professional development. Some of the traits of the role that they found to be challenging included staffing issues, limited control over the environment, limited support resources, changes in healthcare, lack of respect, and conflict management (Sullivan et al., 2003). Other researchers found that experienced nurse managers stated that they were satisfied with their roles, but newer nurse managers complained of being overwhelmed and unable to perform well in their role (Sherman et al, 2007). Major stressors of the nurse manager were "being all things to all people," managing regulatory issues, maintaining a proper budget, and taking care of oneself. A majority of nurse managers stated they desired to improve their work-life balance (Sherman et al., 2007).

Rudan (2002) conducted a survey of graduate nursing students regarding their interest in pursuing a career in a nursing administration role. Of the 52 respondents, 47 replied that they were not interested in pursuing administration as a career move. There were several reasons provided for the disinterest in administration including lack of support from their current manager, job politics of an administrative role, inflexible and long hours of the nurse administrator, loss of clinical skills due to completing more managerial task, loss of patient/family contact, unrealistic expectations for the job, and financial incentives not adequately rewarding the job functions (Rudan, 2003).

Gap Analysis Techniques

Gap analysis is often referred to as the difference between what is and what should be and it is an "effective method to determine deficiencies in knowledge and practice" (Fater, 2013). Gap analysis is typically done in marketing and economics research where companies are determining what products and services are the highest priority on which to focus (Ulwick, 2002). Traditional gap analysis considers the difference between customers' importance of desired outcomes of a product and satisfaction of that outcome being met by a current product (Ulwick, 2002). Ulwick (2002) developed the opportunity algorithm which is [importance + (importance-satisfaction) = opportunity]. This formula is used to ask customers the importance of desired outcomes and the satisfaction of the desired outcomes are being satisfactorily met to determine an opportunity rating (Ulwick, 2002). In this formula, the amount in parenthesis (importance – satisfaction) cannot be less than zero; if the numbers yield a number less than zero, the formula should be calculated as zero to maintain the integrity of the formula (Ulwick, 2002).

Researchers have used Ulwick's (2002) "opportunity algorithm" formula to conduct a gap analysis to explore the roles and educational needs of nurses (Watts, Foley, Hutchinson, Pascoe, Whitecross, & Snowdon, 2004). They used the "opportunity algorithm" to determine where opportunity presented itself for further education for nurse development (Watts, et al., 2004). Watts et al. (2004) defined importance as the participants' perceived importance of the educational need and satisfaction was defined as the participants' perception that the educational need was satisfactorily met. Researchers asked participants to rate their perceived importance of an educational need on a 10-point scale (1=unimportant; 10=extremely important); the

satisfaction of the educational need being met was also asked on a 10-point scale (1=need was unmet; 10=need was completely met). The "opportunity algorithm" was calculated, which provided educational opportunity scores (Watts et al., 2004). Higher opportunity scores determined areas of practice where education should be provided to support current nursing roles (Watts et al., 2004).

Fater (2013) used the gap analysis technique to identify areas of strength and areas of improvement of a nursing curriculum. In this research, the research team first developed core competencies needed by nurses in entry level practice. The research team then conducted a systemic review of each course in the curriculum to identify relevant learning experiences that developed nursing students in the competency at one of the competency levels of knowledge, attitude, or skill development. The research team then used the Nurse of the Future Nursing Core Competencies Gap Analysis tool to determine areas of strength and areas of opportunity within the curriculum. This tool required the researchers to determine the number of meaningful learning opportunities that were available to meet each competency on a scale of one to four [one=no opportunities available, two=few opportunities (between one and 10), three=several opportunities (between 11 and 29), and four=many opportunities (greater than 30)]. The tool also required researchers to determine the number of competencies that they believed should be available to meet the competency on that same one to four scale. The gap was then calculated by subtracting the scaled score for the number of opportunities that were available from the scaled score of the number of opportunities they believed should be available. This gap analysis revealed strengths in the curriculum as to what competencies were being achieved and areas for improvement within the curriculum (Fater, 2013).

Researchers have also used gap analysis to determine gaps in skill development during the undergraduate curriculum and medical internship for doctors (Hannon, 2000). Clinical competencies were developed based on a literature review and discussion with medical educators that revealed skills doctors should attain during their undergraduate degree and internship. Medical students were asked to rate how well they were helped to acquire certain competencies. They were given a choice of "well covered, adequate, and not enough." Students were also asked about professional characteristics being "fully developed," "partially developed," or "not developed." The participants of the survey indicated that the undergraduate curriculum and

internship did not provide adequate help to develop needed skills and competencies for doctors and the curriculum should be reassessed (Hannon, 2000).

Similarly, researchers used a gap analysis technique to determine needs of education for palliative care in pediatrics (Kolarik, Walker, & Arnold, 2006). This study used a survey technique which asked medical residents to rate their level of formal training, personal experience, knowledge, competence, and emotional comfort with tasks in pediatric palliative care each utilizing a 5-point Likert scale (1=none, 2=minimal, 3=moderate, 4=good, and 5=exceptional). Participants were also asked to rank in order of importance aspects of pediatric palliative care for future training. Mean responses were reported and all were between 1.2-2.7 indicating that participants had minimal training, personal experience, knowledge, competence, and emotional comfort in the pediatric palliative care tasks. Participants reported they believe this area of practice is important to them, and they would benefit from additional training in palliative care (Kolarik et al., 2006).

Self-Efficacy

Self-efficacy is the belief "in one's capabilities to organize and execute the courses of action to produce given attainments" (Bandura, 1997, p. 3). Self-efficacy and self-esteem are often not differentiated; self-efficacy refers to "judgments of personal capability" to perform a specific task, whereas self-esteem refers to "judgments of self-worth" (Bandura, 1997, p. 11). Self-efficacy alone may not determine adequate performance; however, given proper skills and incentives, perceived self-efficacy can impact an individual's choice of activities, their effort level, and their persistence in managing stressful situations (Bandura, 1977).

According to Bandura and Adams (1977), self-efficacy has four main sources including personal accomplishments, vicarious experiences of observing others succeed, verbal persuasion that the individuals has characteristics to be successful, and physiological arousal where individuals rate their level of stress and anxiety. Personal accomplishments are extremely instrumental because they refer to individuals' becoming proficient in skills; successes will increase self-efficacy. Repeated failures may decrease self-efficacy unless the failure is later overcome through persistence (Bandura, 1977). Vicarious experiences where individuals' observe others successfully complete activities can be another source of self-efficacy; however, this source of self-efficacy has a weaker influence than direct personal accomplishments

(Bandura, 1977). Verbal persuasion by others is often used to influence self-efficacy; however, this source also has a weaker influence on self-efficacy than personal accomplishments (Bandura, 1977). Lastly, emotional arousal has also been shown to impact perceived self-efficacy. Typically individuals are more successful in situations where they are not experiencing high emotional arousal (fearful, anxious, agitated, etc.) (Bandura, 1977).

Researchers have investigated the impact of an educational intervention on researchers' self-efficacy, and the impact of self-efficacy intervention workshops on self-efficacy (Bakken, Byars-Winston, Gundermann, Ward, Slattery, King, Scott, and Taylor, 2010). The self-efficacy intervention workshops had four breakout sessions, each focusing on improving one of the four sources of self-efficacy; the educational intervention was training on research methods and other research topics. There was a control group that did not participate in the self-efficacy intervention workshops or the educational intervention; the experimental group participated in both interventions. Self-efficacy was measured four times: just prior to the self-efficacy workshop, after the self-efficacy workshop, prior to the educational training, and after the educational training. Participants were given several statements regarding research activities that they may perform as a researcher; self-efficacy was measured on a 11-point scale (0=not confident) to 10 (completely confident) for each activity. Self-efficacy scores significantly increased from pre-self-efficacy workshop to post-self-efficacy workshop; however, there was not a significant difference in self-efficacy between the control and experimental groups, thus suggesting that the workshop served to assist in improving baseline self-efficacy of those individuals' who participated in the workshop. Self-efficacy scores also significantly increased from pre-educational intervention to post-educational intervention (Bakken et al., 2010).

Other researchers have examined the learning histories of individuals' on job self-efficacy and assessed if there are differences based on gender (Williams & Subich, 2006). They examined the four sources of self-efficacy (Bandura, 1977) across six domains of learning (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) (Willliams & Subich, 2006). They found that learning experiences significantly predicted self-efficacy for both genders (Williams & Subich, 2006). Researchers also found that fewer learning activities in the realistic and investigative domains were reported by women and fewer learning activities in the social domain were reported by men. These differences in these same domains in regard to self-

efficacy and job interests exist, which may indicate that learning activities does impact self-efficacy and job interests (Williams & Subich, 2006).

Researchers examined the relationships between self-efficacy, professional commitment, and job satisfaction among medical professionals working with diabetics (Wu, Lee, Liang, Chuang, Lu, & Wu, 2012). The self-efficacy construct was measured using the General Self-efficacy scale (developed by Zhang and Schwarzer (1995), which uses a 4-point Likert scale (1=completely incorrect, 4=completely correct); the job satisfaction construct was measured with the "job satisfaction scale" (developed by Lin, Wang, Li, & Hung, 2007), which uses a 5-point Likert scale (1=strongly disagree, 5=strongly agree) (Wu et al., 2012). Self-efficacy was positively correlated with age, years of service in their respective fields, and number of years caring for patients with diabetes. Job satisfaction was positively correlated with age, years of service, years caring for patients with diabetes, and self-efficacy (Wu et al., 2012). Results indicated that 34.1% of the variance in job satisfaction was explained by age, years of service, years caring for patients with diabetes, self-efficacy, and professional commitment. Professional commitment was found to be the most influential predictor of job satisfaction (Wu et al., 2012). Another interesting finding of this research was that self-efficacy was a significant influence on job satisfaction (Wu et al., 2012). In this study, 70% of the participants were "qualified diabetes health educators" which requires training and certification; these educators are offered trainings through professional organizations and may have higher self-efficacy which then may increase satisfaction levels (Wu et al., 2012). Other researchers have also found a link between self-efficacy and job satisfaction, specifically to the satisfaction of the actual work tasks; self-efficacy of completing tasks was one of the largest predictors of job satisfaction (Perdue, Reardon, & Peterson, 2007). They suggest that the answers to questions such as "Do I have confidence that I can perform the work successfully?", "Am I fully prepared to accomplish the tasks to which I am assigned?", among other questions may predict job satisfaction with the work tasks (Perdue, et al., 2007).

Summary

This chapter explored literature among a variety of topics that support this study. It is known that the dietetics profession is predominately female and many of these female professionals work in the healthcare environment. This study will specifically explore managers

of clinicians in the dietetics profession, in which little research exists. In order to gain a greater understanding of a predominately female profession, career development of women was examined to gain greater insight into the career patterns and choices of women during their working lives. Literature relevant to women managers was also explored to provide a greater understanding of factors impacting decisions to become managers and job satisfiers.

Literature about healthcare professionals and female healthcare managers was explored providing evidence-based findings on skills needed to be successful in the healthcare environment and factors considered difficult. Given that little research has been conducted with CNMs, literature related to clinical nurse managers, a similar group of professionals, was examined to determine perceptions of the role, education preparedness for the role, education programs available for the professionals, and self-efficacy to perform the manager role. Literature regarding role delineation methods used by both the dietetic and nursing profession was examined to assist in developing methodology to audit clinical nutrition management practice.

Through this literature review, theories about women's career moves in healthcare workers were summarized. The literature also provides evidence that there are specific skills required to be successful in the healthcare management environment and factors of the job that make the healthcare manager role difficult or dissatisfying. Although these components have been addressed in other female dominated professions, they have not been explored specifically with CNMs. Therefore, this study aims to explore the CNM as a healthcare management profession to determine the core responsibilities of the job, role preparedness, self-efficacy to perform the role, and satisfaction of the role. Chapter three will discuss the proposed methodology.

Chapter 3 - Methodology

The purposes of this exploratory study were to determine the responsibilities of the clinical nutrition manager (CNM), assess the education preparedness of the CNM for these responsibilities, and examine if there is a gap between the knowledge and skills needed for the CNM role and the knowledge and skills gained through educational preparation for the role. The impact of educational preparedness on self-efficacy to perform the job was also investigated. Figure 3.1 illustrates the overview of the methodology and project timeline.

Population and Sample

The population of this study was CNMs in the United States. To reach this population, the Clinical Nutrition Management Dietetic Practice Group (CNM DPG) of the Academy of Nutrition and Dietetics (Academy) was asked for permission to contact their membership. Dietetic practice groups consist of Academy members who desire to network with colleagues with similar interests or who work in the same area of practice (Academy, 2012a). The CNM DPG is a group that consists of "managers (or those interested in becoming managers) of clinical nutrition programs across the health care continuum…" (Academy, 2012b). There are currently 2,056 members of the CNM DPG who served as the primary population of the current study (Academy, 2012b). The sample of this study was determined by members of the CNM DPG who identified themselves as managers who supervised clinical staff by answering a prescreening question on the survey and completed an online survey.

Instrument Development

This study included two phases: instrument development and data collection. Figure 3.1 outlines the timeline for the study. The first phase utilized focus groups and cognitive interviewing to determine specific responsibilities of the CNM role, which assisted in developing a practice audit instrument for clinical nutrition management practice. The second phase of this study utilized an online survey designed using data from the first phase.

Witte and Messersmith (1995) validated 46 of the 54 job duties for CNMs. Questions based on these duties discovered by Witte and Messersmith (1995) were developed and further explored in the focus groups and cognitive interviewing that assisted in developing the final instrument. Appendix A includes the validated duties found by Witte and Messersmith (1995).

Clearly, the research that Witte and Messersmith (1995) conducted is dated. With changes in healthcare in the past 20 years, obvious differences in the healthcare environment exist. Dr. Sandra Witte was contacted to gain permission to utilize the CNM responsibilities that were identified in the 1995 Witte and Messersmith study. Permission was granted to utilize and modify the CNM job duties (Appendix B).

Figure 3.1-Methodology and Timeline for Research

Phase 1

Develop focus group guide and focus group questions based on Witte and Messersmith (1995)—May 2014

Determine focus group sample to request participation—June 2014

Conduct focus groups to determine task statements for practice audit tool—July 2014

Recruit participants for cognitive interviews from focus group participants—July 2014

Develop task statements for practice audit tool—July 2014

Conduct cognitive interviews—August 2014

Revise task statements—August 2014

Phase 2

Final review of task statements by interviewee panel—September 2014

Develop practice audit—September 2014

Determine pilot test sample—October 2014

Pilot test practice audit tool—October 2014

Revise instrument—November 2014

Collect and analyze data—December 2014-March 2015

Focus Groups

This study used focus groups to identify and validate current job responsibilities for CNMs. Data collected was used to develop a practice audit instrument that was administered to a larger sample of CNMs.

Focus groups are composed of six to eight individuals with specific characteristics in common who discuss their beliefs about an issue for the purpose of gathering qualitative information (Krueger & Casey, 2000). Focus groups are planned and conducted by a moderator or researcher. Focus groups typically include a series of discussions with different groups of six to eight people with similar characteristics so that the researcher can identify common themes between the groups. Focus group questions should be planned and appropriately sequenced in an interview guide; questions are typically open-ended (Krueger & Casey, 2000).

With technological advances, internet, also referred to as online, focus groups have been used. Online focus groups present many benefits including reducing costs, improving research speed, reaching participants over a broad geographical area, and improving access to busy professionals (Edmunds, 1999). Some disadvantages to using online focus groups includes reduction of group dynamics compared to standard focus group participation, limitation of participants to those who are comfortable using technology, and the possibility of technical difficulties (Edmunds, 1999).

Online focus groups have been used in the healthcare environment. Gallagher (2005) used synchronous focus groups to gather opinions of student nurses. The planning process for these synchronous online focus groups was similar to traditional face-to-face focus groups for recruitment and development of a focus group guide (Gallagher, 2005). During implementation, a moderator was present to ask the focus group questions and control the pace of the conversation (Gallagher, 2005). Focus groups conducted by Gallagher (2005) were online synchronous discussions but utilized a chat room session where all questions and responses were typed. Similarly, Kenny (2005) conducted online focus groups with nurses by providing written instructions about the purpose of the focus groups and instructions on how to use the computer technology during the focus groups as part of the planning and implementation process. This study was considered to be asynchronous and participants could access the discussion board over a two month period (Kenny, 2005).

In this study, synchronous online focus groups were conducted utilizing video conferencing technology so that participants could see and hear one another and the moderators of the discussion. These online focus groups were conducted with a convenience sample of CNMs that served on the executive board of the CNM DPG within the last five years and other CNMs known to the researchers to determine the general responsibilities of CNMs. A total of four focus groups with two to eight participants were conducted utilizing an online video conferencing platform. Each focus group session was scheduled for 60 minutes and was audio-recorded. A video conferencing platform was used rather than more traditional face-to-face focus group methodology to facilitate participation. Given that there is typically one CNM per medical facility, CNMs are dispersed throughout the United States. This dispersion likely makes convening in one location burdensome on focus group participants. CNMs are typically very busy professionals, which makes it difficult for them to be absent from work to travel to participate in a focus group. By utilizing online video conferencing to conduct the focus groups, a more geographical representation of CNMs was possible, and this online platform reduced the burden on the participants.

In order to reduce anxiety among participants related to using a video conferencing platform, detailed instructions were given on how to utilize the system prior to the date of the focus group. Within the instructions, one researcher's contact information was provided to the participants if they had problems connecting to the online meeting the day of the focus group. Participants were also offered a series of dates where researchers were available to practice with the technology prior to the actual scheduled focus group. The video conferencing platform also has a phone number for participants to call if they experienced technological issues. This number also serves as a backup method of a teleconference platform if the video conferencing system does not function properly or if the participants did not have the required equipment, such as a webcam and microphone needed for the video platform.

Participant Selection

Focus group participants were selected from various geographical regions of the United States and from different sizes of facilities to ensure adequate representation of the population of CNMs. A list of the past five years of executive board members was posted on the CNM DPG website. The current CNM DPG chair was contacted to gain permission to contact these CNM DPG members. Past executive board members of the CNM DPG were contacted via email and

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asked to participate in the online focus groups. The email also included the purpose of the focus groups; the required information to comply with the approved protocol of the Institutional Review Board of Human Subjects; explanations about the incentive to participate; how the focus groups would be conducted; and how the results of the focus groups would be used. Appendix C includes the email that was sent to CNMs requesting their participation in the focus groups. Clinical nutrition managers who agreed to participate were provided with an informed consent to participate (Appendix D) and instructions on how to use the online video conferencing technology (Appendix E). A doodle meeting request was sent to the volunteers to find dates and times that were convenient for them to have the focus groups. Focus group participants were also requested to complete the demographic section of the online survey prior to the focus group date. Once the meetings were scheduled, participants in each focus group were notified of the date and time of their specific discussion with further instructions on completing the demographic questionnaire and use of the online technology (Appendix F). One day prior to the focus group discussions, participants were emailed a reminder of the focus group date and time. Focus group participants each received a $25 Visa gift card as an incentive for contributing.

Focus Group Plan

Witte and Messersmith (1995) validated 54 duties completed by CNMs (Appendix A). These duties were coded into eight categories of job responsibilities (Appendix G). These categories were used to form questions to pose to focus group participants regarding CNM job responsibilities. Focus group participants were given this list of categorized duties to review prior to the focus group.

A discussion guide was developed to direct the focus group discussions (Appendix H). Guidelines by Edmunds (1999) and Greenbaum (2000) were used to develop the discussion guide.   The first section of the discussion guide included an introduction of the moderators and focus group participants. The next section included a description of the purposes of the focus groups, the role of the moderators, and an explanation of the ground rules for the focus groups. Ground rules included informing participants that the discussion was audio-recorded, responses were confidential, participants should not interrupt others and speak at a sufficient level, and a reminder that all participants were free to express their own opinions. The third section of the focus group included the questions specific to the data to be collected. Demographic questions were asked in addition to questions regarding CNM job responsibilities. The final section of the

discussion guide included a wrap-up discussion where the participants were asked if there is additional information they would like to provide. In this section, the moderators thanked all participants, reminded them of how the results of the discussion would be utilized, and informed participants that a gift card would be mailed to them for their participation. The discussion guide also included a time approximation of all sections.

Focus Group Data

After all focus groups were conducted, the discussions were transcribed and the comments were coded and categorized by common themes. Job responsibilities were categorized into domains. Cognitive interviewing was also utilized after focus groups to determine if the tasks were understood correctly and consistently by CNMs. Following the focus groups and cognitive interviewing, the survey instrument was developed to include responsibilities determined from the focus group data.

Cognitive Interviewing

Given that a practice audit is a large component of this study, the Commission of Dietetics Registration (CDR) personnel were contacted to discuss previous audit tools and recommendations for future practice audits within the dietetics profession. Commission personnel suggested the use of cognitive interviewing after focus groups. This technique has been used in other advanced practice audits when developing the task statements (C. Reidy & K. Manger-Hague, personal communication, April 8, 2014). The advanced practice audit conducted in 2013 utilized cognitive interviewing with five participants and pilot tested the survey with nine individuals to improve face and content validity of the audit tool (Brody, Byham-Gray, Touger-Decker, Passannante, Rothpletz, & O'Sullivan Maillet, 2014). Given that survey development and practice statements were an important component of this study, cognitive interviewing was used to improve face validity and ensure the questions were clearly understood by the participants.

Cognitive interviewing is a technique that assists researchers with identifying and solving issues with survey questions (Beatty & Willis, 2007). Cognitive interviewing is used for two purposes including to "evaluate the quality of the response or to help determine whether the question is generating the information that its author intends." There are two techniques used in cognitive interviewing: "thinking-aloud" and "probing." The thinking aloud technique is

utilized to persuade participants to verbalize their thought processes when deciding on an answer to the survey question. This technique helps researchers understand how participants reached their responses. The probing method helps researchers determine if the question is correctly understood by participants. The researchers will often ask "Can you tell me in your own words what that question was asking" (Beatty & Willis, 2007). The probing technique was utilized in this specific study to ensure that task statements were correctly understood by participants of the final survey.

Participant Selection

Cognitive interviewing is typically done with five to 10 participants to determine any issues with survey questions (Willis, 1999). After cognitive interviewing is completed, researchers meet to discuss changes to the questionnaire and to determine if another round of cognitive interviewing is needed prior to pilot testing of the survey (Willis, 1999).

In the current study, focus group participants were asked if they would volunteer for the cognitive interviewing phase. Participants who were interested in the cognitive interviewing were assigned a number. Of the 15 participants who volunteered, six participants were randomly selected using a random number generator. Those individuals who participated in the cognitive interview received an additional $25 Visa gift card as an incentive to volunteer for the cognitive interviews. Cognitive interview participants were requested to complete an informed consent form (Appendix I).

Cognitive Interview Plan

A discussion guide was developed to direct the cognitive interviews (Appendix J). One-hour interviews are considered optimal given that longer interviews are demanding for participants (Willis, 1999). It is also suggested that not all questions on the survey instrument need to be asked for participants to explore, but there are typically skip patterns in the survey or questions with the greatest concern to be discussed during cognitive interviewing (Willis, 1999). Therefore, a random number generator was used to randomly select task statements from each category proportionate to the total number of task statements. There were a total of 87 draft task statements, and 30 statements were randomly selected to review in the cognitive interviews. For the task statements, participants were asked what the statement meant to them.

Cognitive interviewing was done utilizing the synchronous video-conferencing system that was used to conduct the focus groups. The instructions for utilizing the video-conferencing platform were redistributed to those individuals participating in the cognitive interviews.

At the beginning of the interview, the researcher stated the purpose of the cognitive interviews to ensure that the questions were asked appropriately for accurate understanding among survey participants. The interviewer also electronically sent the interviewee a copy of the task statements prior to the interview that were to be discussed during the session. The interviewer asked the participant to state what each statement meant to the individual. All interviews were audio-recorded and transcribed.

Cognitive Interview Data

The transcriptions were organized so that comments from all six interviewees were listed under each task statement. Three researchers analyzed the comments independently to determine if the meaning of each task statement were similar among the six participants. The three researchers then met and task statements were revised based on comments from the participants. Researchers discussed changes until consensus was met regarding the wording of the statements.

Survey Development

The survey consisted of two sections: 1. Practice audit and 2. Demographic questions. The 2010 Entry-Level Dietetics Practice Audit was the most recently conducted role delineation by the Academy of Nutrition and Dietetics. The audit was used to measure the level of involvement of certain activities, frequency of activities, and perceived risk associated with those activities (Sauer, Ward, Rogers, Mueller, Touger-Decker, & Molaison, 2011). The Commission on Dietetic Registration provided permission to their instrument with modifications to conduct a practice audit specifically for clinical nutrition managers. A similar instrument design was used for this study; the activities of the CNM were grouped into categories. The participants were asked a series of questions regarding activities performed in the CNM position including: 1. "In the last year, in what way(s) have you been involved with this activity (if any)?" 2. "[IF INVOLVED] With what frequency have you been personally involved (in any way) with this activity over the last year?" (Ward, Rogers, Mueller, Touger-Decker, & Sauer, 2011).

Two additional questions regarding educational preparedness for the activities were asked of each task statement. These questions included: 3. "How important is it to receive education

related to this task in order for a CNM to perform it successfully?" (Watts, Foley, Hutchinson, Pascoe, Whitecross, & Snowdon, 2004). 4. "How well were educational needs met to complete this activity successfully?" Additionally, for each category of task statements, self-efficacy to perform task statements within that category was asked. This question was "How confident are you that you can successfully complete the activities at the present time in this category?" To measure self-efficacy, Bandura (2006) suggests that participants should be asked to rate their perceived ability to complete tasks on a 100-point scale in 10-unit increments or a 10-point scale with 1-unit increments where zero is "cannot do", five is "moderately certain can do", and 10 is "highly certain can do." Bandura (2006) suggests avoiding smaller point scales because they are less sensitive and less reliable. It is also important to highlight that participants should rate perceived current ability instead of past or potential ability to complete an activity (Bandura, 2006).

A similar scaling for practice statements in previous audits was used. For question one, participants had the following options: No involvement, Assist others (scale value of 1), Perform myself (scale value of 2), and Supervise/manage (scale value of 3) (Ward et al., 2011). For the second question related to frequency of involvement, participants were given the following options: Daily (scale value of 20), Weekly (scale value of 4), Monthly (scale value of 1), and Less than monthly (scale value of 0.5) (Ward et al., 2011). For the question involving importance of the educational need, participants were given a 5-point scale with one being not at all important and five being extremely important (Watts et al., 2004). For the question related to educational needs being met, participants were given a 5-point scale with one being educational need completely unmet and five being educational need completely met (Watts et al., 2004). A scale of zero to four (zero being cannot do, five being highly certain can do) was given for the question regarding self-efficacy of performing the activities within the category.

Core job responsibilities of the CNM were determined. A formula used in other practice audits defined the core activities as "activities with which at least 40% of all practicing entry-level RDs are involved in some way, and for which average frequency of involvement is at least 5 days per month" (Ward et al., 2010). However, in entry-level practice, job responsibilities are broader than in clinical nutrition management practice, which is a more specific area of practice. Therefore, core responsibilities were defined as activities with which 80% of all practicing CNMs were involved in some way.

The instrument also included demographic questions to further describe the sample. The instrument contained a screening question at the beginning of the questionnaire to correctly identify CNMs in the CNM DPG. This question was similar to a question used by Sauer, Canter, and Shanklin (2010) in their survey of managers. The screening question was: "Do you currently supervise clinical staff?"

Another variable of interest that was measured was overall job satisfaction. The questionnaire measured job satisfaction with two questions including "How satisfied are you with your current job as a CNM?" (1=Very dissatisfied, 5=Very satisfied), and "Over the last 6 months, your satisfaction level with your job has": (1=significantly decreased, 5=significantly increased). These measurement items were helpful to make comparisons to previous research findings in regards to job satisfaction among CNMs.

 The instrument was an electronic survey utilizing the Qualtrics Survey System. It included a cover letter at the start of the survey that described the following: purposes of the study, confidentiality and anonymity of responses, voluntary participation, use and importance of the results, and researchers' contact information. This letter also described that completion of the survey indicated informed consent to participate in the study (Appendix K).

Pilot Test

A pilot test to evaluate instrument reliability and validity was conducted with a convenience sample of CNMs from one main contract management companies in healthcare. A prescreening question was asked to determine if these CNMs were members of the CNM DPG. If they were members of the CNM DPG, they were thanked and the survey ended. If they were not members of the CNM DPG, they continued to the pilot test of the survey. A majority of CNMs screened out of the pilot test due to being a member of the CNM DPG. Therefore, this screening question was removed from the pilot test, and CNMs from the contract management company were asked to complete the pilot test, but not participate in the final data collection. The pilot test included more questions for each task statements than the final questionnaire described above. For each task statement, six questions were asked in the pilot test including questions about ways the participant was involved with the activity, frequency of involvement, self-efficacy of successfully performing the task, importance of receiving education to perform the task successfully, how well educational needs were met through formal education, and how

well needs were met through professional continuing education. The pilot test included questions regarding clarity of the questions in each job category, additions of job tasks that may need to be added to job categories, clarity of instructions in the survey, opinion about the design of the survey, and space to allow for recommendations to the questionnaire. The survey was administered electronically utilizing the Qualtrics Survey System. Data were entered into SPSS for windows and statistical analysis was conducted to evaluate the reliability of the measurement items. Specifically, Cronbach's alpha was conducted for all questionnaire constructs to determine reliability. Table 3.1 summarizes the Cronbach alpha for the pilot test and final data collection.

_____

Insert Table 3.1

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Following the pilot test, the survey was revised based on the comments and statistical analysis. Specifically, many of the participants responded that the survey was too long. Therefore, the survey was shortened by reducing the number of questions asked per task statement from six questions to four questions. Instead of asking about self-efficacy of each task statement, self-efficacy of each job category was asked. Also, the two questions regarding how well educational needs were met were combined into one question. The pilot test survey included six open-ended questions at the end of the survey; due to length, three of these open-ended questions were eliminated prior to final data collection. Participants also asked that the answer selections of perform myself and manage/supervise others be clarified for the first question of ways they were involved in each job activity. Participants stated that they often could mark both selections. Therefore, the survey was modified so that participants could mark all that apply on this question. Overall, instructions were clarified, and survey appearance was modified to reflect practice audits conducted by Commission of Dietetic Registration.

Data Collection

The final questionnaire was electronically sent to members of the CNM DPG to complete through the group's electronic email listserv. Members also were instructed to pass the survey link along to CNMs that they knew and may not be a member of the CNM DPG. A total of four reminder emails were sent to members of the CNM DPG through the listserv over an eight week time period. Other strategies used to improve participation in the survey included: the

researcher met with the CNM DPG executive council at the national Food and Nutrition Conference and Expo Meeting to encourage further marketing of the survey, survey postcards were distributed through the CNM DPG Showcase Booth at the Food and Nutrition Conference and Expo, personal invitations to participate in the survey were sent to CNMs who worked with the university, information was shared with three state associations in which the researchers had personal connections, the survey information was posted on a contract management's discussion board, and the survey information was shared on Facebook. Incentives were used and included a lottery drawing for one of twenty-five $50 Visa gift cards. Participants were eligible for the drawing if they completed the survey and provided his/her name and contact information.

Data Analysis

Data were entered into SPSS software for windows for analysis. Descriptive analysis was used to assess the data and generate a demographic profile of the sample. Advanced procedures were reviewed with expert statistical consultants. Core responsibilities were defined as activities with which 80% of all practicing CNMs are involved in some way.

Composite scores for the core activities and educational preparedness were calculated. Gap analyses were conducted to determine the highest opportunities for educational needs similar to the Watts et al. (2004) study. The "opportunity algorithm" from Ulwick (2002) was utilized {importance + (importance-satisfaction) = opportunity} to determine highest educational needs similar to the Watts et al. (2004) study. In order to protect the integrity of the algorithm, the (importance-satisfaction) portion of the formula should not be less than zero; if it does calculate to be less than zero, zero should be used in the formula instead of the value of less than zero (Ulwick, 2002). Regression was used to determine the following: 1. the impact of significant variances between core role activities and education preparedness on self-efficacy to perform the core role activities and 2. the impact that education preparedness had on self-efficacy to perform the core role activities. ANCOVA procedures were used to determine if there were differences in self-efficacy between different levels of demographic variables when means had been adjusted for the composite mean gap scores. Those demographic variables included length in the role as CNM, highest level of education received, and employer type. T-tests and ANOVA were used to determine differences between various demographic groupings such as length in the role as a CNM, size of facility, and level of education.

Project Approval

Prior to data collection, approval from the research institution's review board was obtained. Participants in the focus groups, pilot test, and survey were informed of their rights to participate, the study methodology, and the use of the data by using cover letters on the online survey. Instructions were provided prior to conducting the focus groups. Informed consent was obtained at each phase of research. Before distributing the electronic survey, permission was obtained from the Academy in addition to the CNM DPG executive council.

Limitations

One limitation of this study was using the CNM DPG to distribute the questionnaire. Not all clinical nutrition managers belong to this DPG, and members of the DPG may respond differently than those who are not members. Survey burden was also another limitation. Given that multiple questions were asked of each task statement, the survey was lengthy, creating a time burden on the participants and may have impacted response rate.

Table 3.1-Cronbach's Alpha for Pilot Test of Practice Audit Instrument

Category/Question	n^a	Cronbach's Alpha[b]	Category/Question	n^a	Cronbach's Alpha[b]
General			**Ensuring Compliance with Regulations**		
Way(s) involved	70	0.69	Way(s) involved	47	0.84
Frequency of involvement	9	0.51	Frequency of involvement	0	--
Self-efficacy	47	0.81	Self-efficacy	39	0.72
Importance of education	57	0.81	Importance of education	47	0.94
Level of educational needs met through formal education	57	0.90	Level of educational needs met through formal education	44	0.96
Level of educational needs met through professional continuing education	57	0.92	Level of educational needs met through professional continuing education	43	0.90
Communicating			**Monitoring Quality Assurance**		
Way(s) involved	38	0.82	Way(s) involved	33	0.91
Frequency of involvement	7	0.89	Frequency of involvement	14	0.94
Self-efficacy	31	0.89	Self-efficacy	30	0.93
Importance of education	41	0.91	Importance of education	34	0.94
Level of educational needs met through formal education	35	0.93	Level of educational needs met through formal education	32	0.99
Level of educational needs met through professional continuing education	36	0.88	Level of educational needs met through professional continuing education	32	0.97
Providing Clinical Expertise			**Managing Human Resources**		
Way(s) involved	28	0.85	Way(s) involved	24	0.86
Frequency of involvement	1	--	Frequency of involvement	1	--
Self-efficacy	21	0.83	Self-efficacy	21	0.90
Importance of education	29	0.86	Importance of education	27	0.96
Level of educational needs met through formal education	28	0.89	Level of educational needs met through formal education	19	0.98
Level of educational needs met through professional continuing education	28	0.87	Level of educational needs met through professional continuing education	26	0.98

[a]n=number of valid cases

[b]If -- is indicated, there were too few valid cases for the analysis

Table 3.1 (continued)—Cronbach's Alpha for Pilot Test Practice Audit Instrument

Category/Question	n^a	Cronbach's Alpha[b]	Category/Question	n^a	Cronbach's Alpha[b]
Managing Financial Resources			**Managing Information Technology**		
Way(s) involved	25	0.83	Way(s) involved	26	0.80
Frequency of involvement	2	1.00	Frequency of involvement	3	0.87
Self-efficacy	16	0.88	Self-efficacy	22	0.86
Importance of education	24	0.88	Importance of education	26	0.84
Level of educational needs met through formal education	23	0.98	Level of educational needs met through formal education	23	0.95
Level of educational needs met through professional continuing education	25	0.97	Level of educational needs met through professional continuing education	21	0.94

[a]n=number of valid cases

[b]If -- is indicated, there were too few valid cases for the analysis

Chapter 4 - Determining Clinical Nutrition Management Practice: Results from Practice Audit

Introduction

Various required competencies and educational experiences prepare dietitians for a broad range of entry-level job responsibilities. Advanced practice is also evident in specific areas of practice such as pediatric, renal, oncology, sports, and gerontological nutrition, where specialized certifications are granted by the Commission on Dietetic Registration (CDR). Interestingly, there are no specific certifications or educational programs developed for other advanced practice areas such as clinical nutrition management, where advanced clinical, management, and leadership expertise is paramount. Clinical nutrition managers (CNMs) are registered dietitians (RDs) "with administrative responsibilities for nutrition services within an organization" (Clark, Moore, Trombley, Skates, Roglaski, Schofield, & Welch, 2012). Although CNMs often provide specialized expertise, there is no clear definition of the core role or job responsibilities. It is plausible that additional educational strategies, similar to other specializations would better prepare practitioners in this important role.

Within the last 20 years, limited research has been conducted with CNMs. Therefore, clinical nurse managers were identified as a comparison group to assist in the development of research questions. The clinical nurse manager role is similar to CNMs in the healthcare environment given that they oversee human, financial, and other resources; develop staff; ensure compliance with regulatory and professional standards, among other responsibilities (Oroviogolcoechea, 1996). Clinical nurse managers are often clinicians that have been promoted into the managerial role (Oroviogolcoechea, 1996), similar to the career paths of CNMs (Hudson, 2006). Therefore, comparisons among clinical nurse managers and CNMs were made in this research.

Clinical nurse managers often feel clinically competent but lack confidence in their managerial responsibilities (Gould, Kelly, Goldstone, & Maidwell, 2001). Nurse managers desire continuing education to improve their managerial and leadership skills (Davies, 1996; Sullivan, Bretschneider, & McCausland, 2003). Kleinman (2003) also postulated that clinical nurse managers are typically less prepared for the management responsibilities than the clinical activities. According to Davies (1996), clinical nurse managers have an increased need for

continuing education and these educational requirements are unique in the fact that clinical nurse managers must stay current on clinical skills and obtain effective managerial and leadership skills. Management skills that had important educational opportunities for nurse managers included conflict resolution techniques, recruitment and retention methods, advanced technology skills, strategic planning and policy development, compliance with regulatory agencies, team building, time management skills and many other areas of practice.

Given that the career paths and general job responsibilities are similar among clinical nurse managers and CNMs, the two groups likely have similar educational needs. For example, Pratt, Kwon, and Rew (2005) studied perceived importance of duties performed by CNMs and their self-reported level of satisfaction regarding their performance. Clinical nutrition managers were not satisfied with their perceived performance of all of their management responsibilities. This finding suggests that CNMs perceived the need for additional education to prepare them to function in a managerial role in the current healthcare environment. These findings are consistent with the Academy of Nutrition and Dietetics' (Academy) focus on the need to enhance management and leadership skills across all areas of practice (Academy, 2014). The Academy (2014) suggests that current management and leadership resources be made readily available and additional educational materials be created to develop management and leadership skills in more practitioners.

The lack of clarity regarding the responsibilities of the CNM role continues to exist, making it difficult to determine areas where educational efforts might focus. Another issue is that it is unclear about the availability of current educational resources for CNMs. It is likely that lack of availability of resources poses an issue in educational enhancement for the role. Therefore, it is important to first understand the collection of current CNM job tasks so that professional development needs can be identified. Obviously, it is important that sound research methods be utilized to describe this area of practice and needs of these practitioners.

Many credentialed healthcare professions conduct practice audits to determine educational standards and examination domains. This research strategy helps to ensure that credentialed healthcare professionals are adequately prepared for their responsibilities. For example, the Academy regularly performs practice audits to determine core activities of subgroups within the profession. The majority of these audits have been conducted with entry-level RDs and dietetic technicians, registered (DTRs) or those who have been credentialed within

the last five years (Ward, Rogers, Mueller, Touger-Decker, & Sauer, 2011).   Although the previous audits have not focused on CNMs, the methods used can be modeled to form additional insight about clinical nutrition management practice.

Most recently, the 2010 Entry-Level Dietetics Practice Audit measured the level of involvement, frequency, and perceived risk associated with specific activities among entry-level dietitians, and collectively, these same variables are important to know about clinical nutrition management practice. The only related insight available was provided by Witte and Messersmith (1995), who conducted a job analysis of CNMs to determine a position description. In this research conducted 20 years ago, 46 job responsibilities were identified and validated (Witte & Messersmith, 1995).   These job responsibilities are likely outdated, however they also provide a foundation to assess today's CNM job tasks.

Insight about clinical nutrition management is important since the healthcare environment has changed dramatically within the last 20 years, and many changes may have impacted the role and responsibilities of healthcare managers. Although research has shown that CNMs are in need of additional training for specific topics (Pratt et al., 2005; Witte & Messersmith, 1995), there are limited educational initiatives targeted specifically to CNMs. Therefore, the purposes of this exploratory study were to identify a demographic profile of CNMs, determine and validate their current job responsibilities, identify core CNM role activities, and assess differences in frequency of involvement of the activities and selected demographic variables.

Methodology

Qualitative and quantitative methods were used in this study, which included two phases. In phase one, focus groups and cognitive interviews were conducted with CNMs to identify and validate job duties of CNMs. The ultimate objective of the focus groups and cognitive interviews was to develop a practice audit tool to survey CNMs. Results of the focus groups and cognitive interviews were utilized to create task statements for the practice audit tool. An online practice audit survey was developed and pilot tested. In phase two, the practice audit tool was administered to a larger group of CNMs for data collection. The research protocol was reviewed and approved by the university's institutional review board for human subjects' research.

Phase One—Focus Groups and Cognitive Interviews

Online, synchronous focus groups were conducted to identify and validate the job duties of CNMs. Online focus groups were conducted rather than traditional face-to-face focus groups given that CNMs are dispersed across the United States, often with one CNM per healthcare facility. CNMs also have busy schedules, making it difficult for them to leave their normal work day to travel to participate in a focus group.

Focus Group Recruitment

The population for phase one of the study included a convenience sample of CNMs serving on the executive board of the CNM dietetic practice group (DPG) of the Academy within the last five years. The CNM DPG website provides contact information for all executive board members since 1985, including current members. The Chair of the CNM DPG was contacted to gain permission to contact past executive board members to participate in focus groups for the research study. After permission was gained, past board members were invited to participate in the focus groups. When individuals volunteered to participate, a doodle meeting request link was provided to assist in scheduling dates and times for the focus groups. A total of 22 individuals participated in the four focus groups, with four to eight participants per group. Once the dates and times were scheduled, participants received a confirmatory email detailing the date and time of the online focus group, and instructions about the focus group which included: use the online videoconferencing system, completion of an informed consent form, and completion of the online demographic questionnaire. One day prior to the date of the focus group, a reminder email was sent to all participants.

Focus Group Data Collection

A discussion guide was developed to lead the focus group conversations using principles established by Edmunds (1999) and Greenbaum (2000). The discussion guide included an introduction and role of moderators, purposes of the focus groups, explanation of ground rules, and questions to be asked. The questions that were presented to the participants pertained to job responsibilities performed by CNMs. To focus and organize the discussions, job categories were developed from the job duties validated by Witte and Messersmith (1995). These duties were grouped into eight categories (Appendix G). These eight categories and the duties within them were presented to the focus group participants the day prior to the focus group. During the

discussion, participants were asked to look at a category and corresponding duties and determine if any duties should be eliminated or added to the category. These questions were asked for each of the eight categories. Participants were also asked about their perceived preparedness for the CNM role and self-efficacy to perform in the CNM role.

At the conclusion of the focus groups, a debriefing was provided that summarized how results would be utilized, the upcoming cognitive interviews and sought to recruit participants for the cognitive interviews. Focus groups lasted about 60 minutes and participants were mailed a $25 gift card within one week of the discussion as appreciation for their contributions to the research.

Focus Group Data Analysis

Focus group discussions were transcribed and comments were categorized by common themes. Two researchers reviewed the transcriptions independently and negotiated themes until a consensus was met. After reviewing the common themes of the four focus groups, it was determined that information saturation had occurred. Using the themes from the focus group discussions, the original themes developed by Witte and Messersmith (1995), and the competency statements from the CNM Standards of Professional Performance (Clark et al., 2012), job task statements were developed. A review of the job task statements was conducted by three researchers. Wording of the task statements and category placement was negotiated until a consensus between the three researchers was met. There were a total of 87 job task statements. A random number generator was used to randomly select 30 statements to focus on during the cognitive interviewing. A proportionate number of statements from each category were randomly selected.

Cognitive Interviews

Cognitive interviewing is typically used to identify and solve issues related to survey questions (Beatty & Willis, 2007). Therefore, cognitive interviewing was used in this study to improve the face validity and ensure the job task statements were clearly understood by the participants. Online synchronous interviews were conducted utilizing a videoconferencing platform.

Cognitive Interview Recruitment

At the end of each focus group, the process of cognitive interviewing was explained, and participants were invited to participate at a later date. A total of 15 participants volunteered for the cognitive interviewing phase. Names were assigned a number and a random number generator was used to select six participants for cognitive interviewing. Participants were asked to complete an informed consent form prior to the interview.

Cognitive Interview Data Collection

An interview guide was developed to direct the discussion. The moderator stated the purpose of the cognitive interviews at the beginning of the session. Participants also received the job task statements electronically so that they could read through the statements, if needed. Participants were asked to describe in their own words, what each statement meant to the individual. All interviews were audio-recorded.

Cognitive Interview Data Analysis

Interviews were transcribed and were organized so that comments regarding each task statement were listed for all six participants. Comments were then analyzed by three researchers independently. Changes to the task statements were negotiated by the researchers until a consensus regarding wording was met between researchers. A total of 84 job task statements in eight categories were determined for the final practice audit.

Phase Two—Survey

The Qualtrics online survey consisted of two parts: 1. practice audit with the 84 job task statements categorized into the eight domains of general, ensuring compliance with regulations and accreditation standards, communicating, monitoring quality assurance/performance improvement (QAPI), providing clinical expertise, managing human resources, managing financial resources, and managing information technology and 2. demographic section. A screening question was asked at the beginning of the survey to qualify that CNMs were responding. The screening question was "Do you currently supervise clinical staff?"

In the practice audit section, four questions were asked for each job task statement. Figure 4.1 illustrates the method used to ask the questions. The first two questions were adapted from the 2010 Entry level Dietetics Practice Audit which measured the level of involvement of

certain activities and frequency of activities among entry-level dietitians (Ward et al., 2011).
The first question in the practice audit asked "in the last year, in what ways have you been
involved in this activity (if any)?" and had four responses including no involvement, assist others
in performing, perform myself, and supervise/manage activity. The second question for each
task statement asked "[IF INVOLVED], with what frequency have you been personally involved
(in any way) with this activity over the last year?", and participants had a choice of four
responses including daily, weekly, monthly, and less than monthly. The third and fourth
questions asked about educational preparedness for the CNM job activities. The third question
asked "How important is it to receive education related to this activity for a CNM to perform it
successfully?" Participants were asked to rate importance to receive education on a 5-point
Likert scale where 1 was low importance and 5 was high importance. Question four asked
participants to rate how well their educational needs were met to complete each task statement
successfully. Participants rated their educational needs on a 5-point Likert scale (1=unmet;
5=completely met). For each category of job task statements, a final question regarding self-
efficacy was asked, and participants were given five options including definitely cannot do,
probably cannot do, don't know if I can do, moderately certain I can do, and highly certain I can
do.

Figure 4.1-Example of Practice Audit

Job Task	Way(s) Involved?				Frequency of Involvement?				Importance of Education?					Level of Educational Needs Met?				
	NI	AO	PM	S/M	D	W	M	<M	1	2	3	4	5	1	2	3	4	5
Develop Strategic Plans																		
Provide medical nutrition therapy to clients/patients																		
Note: NI=No Involvement; AO=Assist Others; PM=Perform Myself; S/M=Supervise/Manage Others D=Daily; W=Weekly; M=Monthly; <M=Less than Monthly Importance of Education measured on a 5-point Likert scale (1=Very Low; 5=Very High) Level of Educational Needs Met measured on 5-point Likert scale (1=Unmet; 5=Completely Met)																		

Other questions were asked at the end of the practice audit section which included overall
job satisfaction with the CNM role, the change of job satisfaction over the last six months, and
overall self-efficacy rating to perform in the CNM role. The demographic section included 12
demographic questions including primary dietetic credential, position title, level of education,
length of employment as a CNM, length in current job, type of employer, size of facility,

reporting structure, satisfaction with level of mentorship received, and perception of competence level. The survey closed with three open-ended questions: what strategies are most beneficial to prepare RDs for the CNM role, what factors that impact CNMs' self-efficacy, and what strategies would be the most beneficial to enhance self-efficacy to perform in the CNM role. The final instrument can be found in Appendix M.

Survey Recruitment and Data Collection

Prior to distribution, the survey was reviewed and approved by the CNM DPG executive council and the Academy. The researcher met with the CNM DPG executive council at a national meeting to foster support for the survey and encourage further marketing. A survey postcard was distributed at the CNM DPG's Showcase Booth at the national conference. An electronic postcard with survey information was also distributed through the CNM DPG's electronic mail list. Electronic reminders were delivered through the membership list on four occasions throughout an eight week period. Personal CNM associates were contacted and encouraged to participate in the survey and to forward the information to other CNMs. Personal contacts within three state dietetic associations were asked to share the information with CNMs in their states. A contact employed by a contract management company also posted the survey information to the regional discussion board and the information was shared on social media (Facebook).

Survey Data Analysis

Descriptive statistical analysis techniques were used to fulfill the purposes of this study using the Statistical Package for the Social Sciences. Frequencies were calculated to determine the percentage of CNMs involved in any way, their level of involvement, and frequency of involvement in each activity. Means were calculated to determine the average frequency of involvement in each activity. Analysis of variance (ANOVA) and independent sample t-tests were conducted to determine differences frequency of involvement among different demographic variable levels. Statistical significance was set at a *p*-value of <0.05.

Results

A total of 614 participants accessed the survey link and then answered the screening question. From this group, 488 (79%) indicated that they supervised clinical staff this group was

directed to the practice audit. The remaining 126 participants (21%) who did not supervise clinical staff were routed to the end of the survey and thanked for their participation. There are currently 2,056 members of the CNM DPG, therefore about 29.9% responded to the screening question. However, the practice audit was comprehensive and consisted of eight categories of job task statements, leading to some drop-out during the survey. Therefore, each category has a declining response. The first category had 314 responses, while the last category had 214 responses. Of the 488 participants who were allowed to continue in the survey from the screening question, 214 completed the survey, resulting in a 43.9% dropout rate. The response rate of completed surveys compared with the number of members in the CNM DPG was 10.4%. However, based on discussions with nine expert CNMs, it is estimated that approximately 20% of members in the CNM DPG may not supervise clinical staff, thus leaving 1645 members eligible to complete the practice audit (personal communication, November 2014). Therefore, the response rate of the 214 completed surveys compared with the eligible members of the CNM DPG was estimated at 13.0%.

Table 4.1 presents the demographic profile of the 215 participants completing the demographic section of the survey. For position title, participants could select as many job titles as they felt appropriate for their specific role. A majority of the participants (66%) reported Clinical Nutrition Manager as their position title, most (98.6%) reported their primary credential as RD/RDN, and a majority of respondents (60%) held a master's degree. A majority (66.5%) described their employer as a self-operated organization, many (44.7%) reported to a non-RD foodservice director, and many identified their primary mentor as either a clinical director (18.1), a non-RD foodservice director (17.6), a foodservice director who is an RD (16.2), or not having a primary mentor (12.4). Using the Academy of Nutrition and Dietetics Standards of Professional Performance for Clinical Nutrition Managers (Clark et al., 2012), 46.5% of participants rated themselves as being a proficient CNM. The average length of time being a CNM and length of time in their current job was 11.3 years (range 0.5-42 years) and 10.5 years (range 0.3-43 years), respectively. The average size of the facilities in which CNMs managed (measured in number of patient beds) was 413 beds (range 24-4000).

Insert Table 4.1

Cronbach's alpha was conducted for each of the eight job categories and is reported in Table 4.2. All categories had a Cronbach's alpha greater than 0.70 except for the general category (0.61) and the category of ensuring compliance with regulations (0.65). The general category included job tasks that were general in nature, did not fit within other job categories, and were not necessarily related to one another. However, the job task statements included within the category of ensuring compliance with regulations were related to one another. The Cronbach's alpha did not improve if individual items were removed.

Given that CNM daily practice is essentially undefined, descriptive analyses were conducted to provide insight into the level and frequency of involvement for each of the job task statements. Table 4.2 summarizes the level of involvement and frequency of involvement of the eight categories of job tasks. Generally speaking, a majority of CNMs were involved in all of the job task categories. Core activities were defined as those job tasks where at least 80% of CNMs were involved in some capacity. Of the 84 task statements, 73 were deemed core activities. Frequency of involvement was measured using the following scale: daily (20), weekly (4), monthly (1), and less than monthly (0.5). Frequency of involvement was monthly or more often for 76 of the 84 task statements (measured by a mean of 1.00 or greater).

General Practice

In the general category, nine of the eleven statements were designated as core activities. The two that were not considered core included "provide leadership for functional areas of foodservice operations" (21% of CNMs were not involved in any way) and "manage all or some functional areas of other organizational departments" (50.2% of CNMs were not involved in any way). Often, more CNMs performed the general job task statements themselves with the exception of managing or leading foodservice operations or other organizational departments, in which more CNMs assisted others with these responsibilities. Another exception was with providing medical nutrition therapy and managing clinical operations where more CNMs supervised or managed others performing these responsibilities.

The means of frequency of involvement were calculated to provide insight about how often CNMs were involved in each activity. A mean approximating 20 indicated that CNMs on average performed this activity on a daily basis, a mean of 4 indicated they performed the task on

a weekly basis, a mean of 1 indicated that they performed the task on a monthly basis, and a mean of 0.5 indicated that CNMs performed the task less than monthly. The means of frequency of involvement for the general tasks ranged from 2.33 to 18.85 or slightly more often than monthly to slightly less often than daily, respectively. Clinical nutrition managers were most frequently involved with managing clinical operations (18.85 ± 4.26) and providing leadership to clinical nutrition services (18.60 ± 4.64); 100% of CNMs reported being involved in these two task statements. Clinical nutrition managers were least involved with collaborating with others to develop a marketing plan (2.33 ± 4.73), identifying market trends (2.53 ± 4.86), and developing strategic plans (2.53 ± 4.93).

Ensuring Compliance with Regulations and Accreditation Standards

In the category of ensuring compliance with regulations and accreditation standards, 10 of the 11 job tasks were determined to be core activities. The task that was not defined as a core activity was "develop policy and procedures for optimal reimbursement of nutrition services" (28.4% of CNMs were not involved with this activity). More CNMs performed the tasks in this category themselves with the exception of "developing emergency and disaster policies and procedures" in which more CNMs assisted others in this task. The means of frequency of involvement for the ensuring compliance with regulations and accreditation task statements ranged from 0.87 to 8.70 or just under monthly to between daily and weekly, respectively. Clinical nutrition managers were most frequently involved with monitoring staff compliance with policies and procedures (8.70 ± 8.83) and identifying nutrition-related regulations (5.54 ± 7.64). The majority of CNMs reported being involved in these two tasks (100% and 99.6%, respectively). Clinical nutrition managers were least frequently involved with reviewing and approving the diet manual (0.87 ± 2.45) and developing emergency policies and procedures (0.96 ± 2.57).

Communicating with Others

All job tasks in the communicating category were core activities. More CNMs performed the tasks in this category themselves with the exception of distributing nutrition-related information to the community in which more CNMs were likely to supervise or manage others performing this task. Clinical nutrition managers were most frequently involved in serving as an interdepartmental and interdisciplinary liaison (11.18 ± 8.83) and developing and maintaining

effective communication channels (10.73 ± 8.97). Clinical nutrition managers were least frequently involved with developing nutrition-related committees (2.12 ± 4.26) and distributing nutrition-related information to the community (1.76 ± 3.75). Furthermore, CNMs reported the lowest percentage of being involved in any way in these two tasks.

Monitoring Quality Assurance and Performance Improvement

All job tasks in the monitoring quality assurance process improvement were categorized as core activities. A higher percentage of CNMs reported that they performed these tasks themselves rather than assisting others or supervising/managing others performing the tasks. Generally, CNMs were less frequently involved with these tasks as all tasks were performed less than weekly but more often than monthly (frequency mean scores were between 1.00-4.00 for all tasks).

Providing Clinical Expertise

Nine of the eleven job task statements in the providing clinical expertise category were categorized as core activities. With these nine core activities, over 90% of CNMs reported involvement of some type in the tasks. The two tasks that were not designated as core activities were designing and conducting clinical research studies and analyzing and reporting clinical data from research studies with 57.9% and 52.5% of CNMs reporting no involvement in the activities, respectively. In general, more CNMs indicated that they performed the tasks themselves rather than assisting others or supervising/managing others for most task statements in this category with a few exceptions. More CNMs indicated that they supervised or managed others performing the tasks of developing and providing evidence-based nutrition education and ensuring the appropriate use of the nutrition care process. More CNMs reported that they assist others with designing and conducting clinical research studies. Clinical nutrition managers were most frequently involved in advancing clinical practice through mentoring, coaching, and training (9.57 ± 8.94) and providing nutrition expertise for foodservice operations (9.33 ± 8.92), indicating that they were involved in these activities between daily and weekly. Clinical nutrition managers were least frequently involved in designing and conducting clinical research studies (0.92 ± 2.28) and analyzing and reporting clinical data from research studies (1.01 ± 2.28), indicating that they were involved approximately monthly with these activities.

Furthermore, CNMs reported the lowest percentage of involvement in any way in these two activities.

Managing Human Resources

In the managing human resources category, 19 of the 21 job tasks were designated as core activities. The two tasks that were not categorized as core activities included monitoring federal employment regulations and labor relations and making salary decisions in which 34.4% and 40.7% of CNMs reported no involvement in these tasks, respectively. Generally, CNMs reported higher levels of involvement in all tasks in this category with greater than 89% of CNMs reporting some type of involvement in all tasks except for the two tasks that were not designated as core activities. Clinical nutrition managers were the most frequently involved in motivating staff to perform at the highest level (13.08 ± 8.80) and identifying noncompliant behavior of staff (8.55 ± 9.15). These activities were being performed, on average, between daily and weekly. Clinical nutrition managers were least frequently involved in developing job descriptions for clinical staff (0.54 ± 0.26) and developing competency assessment systems (0.62 ± 0.45). These activities were performed on average less than monthly.

Managing Financial Resources

Half of the eight activities in the financial management category were designated as core activities. Those tasks that were not categorized as core activities included assessing financial performance of area of responsibility (23.4% of CNMs reported no involvement), preparing financial reports (42.3% reported no involvement), negotiating contracts for nutrition support (54.4% reported no involvement), and securing financial resources and physical space for nutrition services (38.1% reported no involvement). Generally, CNMs reported that they were more likely to perform all activities in the financial management category themselves except for negotiating contracts for nutrition support, in which more CNMs were likely to assist others with this task. Clinical nutrition managers were less frequently involved with tasks in this category with the average frequency of involvement between less than monthly and monthly (0.53 to 1.64).

Managing Information Technology

All six tasks in the managing information technology were designated as core activities, with greater than 92% of CNMs reporting some type of involvement in each of the activities. More CNMs reported performing all activities themselves compared with assisting others or supervising/managing others performing these tasks. Clinical nutrition managers were most frequently involved in utilizing technology to efficiently communicate with others (17.94 ± 5.79) and utilizing technology to disseminate nutrition information to others (8.24 ± 8.85). On average, these tasks were performed between daily and weekly. CNMs were least frequently involved in developing work flow procedures to implement when technology is non-functional (2.10 ± 4.93) and training staff on utilizing the electronic medical record (2.43 ± 5.22). On average, CNMs performed these activities between weekly and monthly.

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Insert Table 4.2

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Comparisons between Demographic Variables

ANOVA was conducted to assess significant mean differences in frequency of involvement based on education level, length of time employed as a CNM, and size of facility. Size of facility was measured in the number of patient beds managed by the CNM. Significant differences are summarized in Table 4.4. Significant differences were found for three job tasks based on education level, four tasks based on length of time employed as a CNM, and five job tasks based on size of facility (number of patient beds).

The primary significant differences in frequency of involvement were associated with size of facility in which CNMs worked. Significant differences were found with frequency of involvement based on size of facility and the following job tasks: managing foodservice operations, $F(4, 187) = 4.128, p=0.003)$; providing leadership to foodservice operations, $F(4, 179) = 3.655, p=0.007$; providing leadership to clinical programs across multiple organizations, $F(4, 176) = 3.039, p=0.019$; and developing emergency and disaster policies and procedures, $F(4, 180) = 7.455, p<0.001$. Post hoc ANOVA procedures were conducted to determine which groups were significantly different than others based on these demographic variables. Clinical nutrition managers who worked in smaller facilities (less than 100 patient beds and 100 to 350 patient beds) were significantly more frequently involved in managing foodservice operations

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and providing leadership to foodservice operations than CNMs who worked in facilities with greater than 1000 patient beds. Furthermore, CNMs who worked in facilities with greater than 1000 patient beds were significantly more involved in providing leadership to programs across multiple organizations than those who worked in facilities with 100-350 patient beds. Clinical nutrition managers who worked in small facilities (<100 patient beds) were significantly more involved in developing emergency and disaster policies and procedures than those who worked in any other sized facility (100 to 350, 351 to 700, 701 to 1000, and >1000 patient beds) (Table 4.3).

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Insert Table 4.3
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Independent sample t-tests were conducted to assess mean differences in frequency of involvement based on employer type. Table 4.4 summarizes the eight job tasks found to have significant mean differences between CNMs employed by contract management companies and self-operated organizations. Clinical nutrition managers who were employed by contract management companies were significantly more involved in managing all or some functional areas in foodservice operations *[t(192) = 2.221, p=0.029]*, providing leadership to foodservice operations *[t(184) = 2.421, p=0.017)*, and mentoring dietetic students and interns *[t(193) =2.214, p=0.027]* than CNMs who were employed by self-operated organizations. On the other hand, CNMs who were employed by self-operated organizations were significantly more frequently involved with identifying process improvement opportunities *[t(204) = 1.998, p=0.047]*, designing and implementing quality improvement initiatives *[t(201) = 2.073, p=0.040]*, and developing job descriptions for clinical staff *[t(198) = 3.093, p=0.002]* among a few other human resource management functions compared with CNMs employed by contract management companies (Table 4.4).

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Insert Table 4.4
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Discussion

The purposes of this exploratory study were to identify a profile of CNMs and their core job tasks. In addition, differences in frequency of task involvement were determined based on varying demographic variables.

The methodology used in the current study modeled that used by the Commission of Dietetic Registration (CDR) to determine entry-level practice for dietitians. Entry-level practice is currently tracked through CDR for specific reasons. Therefore, entry-level practice is a defined population of practitioners who have been credentialed within the last five years. However, with clinical nutrition management, there currently is no set definition of this population of practitioners. The scope of practice being audited is also different between entry-level practitioners and clinical nutrition managers. Entry-level practice audits identify the scope of responsibility among a very broad area of practice given that these individuals may work in management, clinical, or community settings. Clinical nutrition management is considered a more specific and advanced area of practice for the purpose of this study.

Previous audits conducted by CDR with entry-level practitioners have had a higher response rate than the current study. Most recent practice audits have had a response rate greater than 60% (Rogers & Fish, 2005; Sauer, Ward, Rogers, Mueller, Touger-Decker, & Molaison, 2010) compared with the estimated 13% response rate in the current study. These studies utilized mixed mode methods of distribution including a mail survey and an electronic survey. Also, the CDR conducted these studies and had easy access to dietitian's contact information given that all practitioners register through CDR to maintain their credential. Additionally, other studies specifically with CNMs have had higher response rates. Specifically, Witte and Messersmith (1995) had a 67% response rate; however they only sampled a portion of CNMs working in acute care facilities, which limits the generalizability of their results. Another recent study conducted by Bange (2014) utilized similar methods to reach the CNM population, which resulted in a similar estimated response rate (7.1%). A mixed mode method of distribution was considered in this study. However, upon conversations with nine expert CNMs, it was determined that the disadvantages outweighed the benefits of sending a mail survey to CNMs (personal communication, November 2014). Clinical nutrition managers felt that paper surveys would get lost in the busy healthcare environment and would be easily thrown away.

Summary of Demographics

Given that limited research has been conducted with CNMs, little is known about the population's demographics. Demographics in the current study differ from those gathered in research by Witte and Messersmith (1995) but are similar to CNM demographics gathered in research conducted by Bange (2014). For example, in the current study, 60% of participants held a master's degree. Similarly, Bange (2014) found that 59.6% held a master's degree, while only 46% of participants held a master's degree in the research done by Witte and Messersmith in 1995. The increase in CNMs having master's degrees in the current study and study conducted by Bange (2014) seem to be consistent with the overall increase in dietetic practitioners earning graduate level degrees. According to the Academy of Nutrition and Dietetics Compensation and Benefits Survey, 51% of registered dietitians hold graduate degrees, which had increased from 2011 (Academy, 2013). It also appears that in the last 20 years, the job title of this group of dietitians is shifting from chief clinical dietitian to clinical nutrition manager. In 1995, Witte and Messersmith found that 32% of participants were chief clinical dietitians and only 12% had the job title of clinical nutrition managers. On the other hand, in the current study, 66% had the job title of CNM and only 9.8% were chief clinical dietitians, which was similar to Bange's (2014) findings where 56.8% were CNMs and only 6.2% were chief clinical dietitians. The differences in titles between the 1995 study and the two more current studies may indicate a shift in the role from supervisory to managerial responsibilities.

There were a number of other demographic variables that were similar between the current study and research conducted by Bange (2014), indicating a consistent sampling of CNMs between the two studies. For example, both studies found the following: the largest group of participants indicated they had been a CNM for three to ten years, a majority of CNMs worked for self-operated organizations rather than for contract management companies, and many of participants rated themselves as proficient CNMs. The similarities in demographics between the current study and research done by Bange (2014) may be due to the similar sampling methods used for the two studies and that the two studies were conducted within a close proximity of time. Both studies utilized the CNM dietetic practice group to distribute the survey; therefore, essentially the same group of individuals was sampled. On the other hand, Witte and Messersmith distributed their survey by randomly selecting 100 acute care facilities with greater than 300 patient beds. This difference in sampling methods and the changes in

healthcare over the last 20 years may help explain some of the demographic differences between the Witte and Messersmith (1995) study and the current study.

Summary of Clinical Nutrition Managers' Job Responsibilities

Through focus groups and cognitive interviewing, eight job categories were validated among CNMs. The eight categories consisted of the following: General, Ensuring compliance with regulations and accreditation standards, Communicating, Monitoring Quality Assurance and Process Improvement, Providing Clinical Expertise, Managing Human Resources, Managing Financial Resources, and Managing Information Technology. The eight job task categories were slightly different than the six domains that were developed by Witte, Escott-Stump, Fairchild, and Papp (1997). Witte et al. (1997) identified the following job domains performed by CNMs: monitoring and ensuring compliance with regulations; developing, implementing, and evaluating programs; communicating and educating others; engaging in personal skill and knowledge development; researching in dietetics practice; and managing resources effectively. The current study retained all but one of the job domains of the previous study and re-categorized the job tasks within those domains to develop updated categories based on the feedback from CNMs within the focus groups. The only domain that was not included in the current study was engaging in personal skill and knowledge development given that this is a responsibility of all registered dietitians as a part of the professional portfolio development process. Due to the many changes in healthcare within the last 20 years, managing resources effectively was found to be a large enough domain to develop three separate categories within the current study. The categories in the current study included managing human resources, managing financial resources, and managing information technology. Managing information technology was validated in the current study, but not included in the Witt et al. (1997) domains. Information technology within the current healthcare environment is obviously more prevalent given the use of electronic mail, electronic medical records, and other electronic healthcare management systems.

In the current study, 84 job tasks were validated, while research by Witte and Messermith (1995) identified 54 job duties. The difference in the number of job tasks between current and previous studies suggests that CNMs scope of responsibility has changed in recent years. Also, as discussed previously, several job tasks were added from the expansion of the managing

resources effectively to include human resource management, financial resource management and information technology management.

In the current study, 73 of the 84 job tasks were categorized as core job tasks by using the following criteria: at least 80% of CNMs indicated they were involved in the activity in some way (assisting others, performing themselves, or supervising/managing others performing the task). After reviewing the CNM practice audit data, a definition specific to CNM core tasks was developed by determining an appropriate cut point within the data. Clinical nutrition managers were most frequently involved in tasks listed below. All of these tasks had a mean greater than 10.0 indicating that CNMs performed these duties on a daily to weekly basis.

- Managing clinical operations
- Providing leadership to clinical nutrition services
- Utilizing technology to efficiently communicate with others
- Motivating staff to perform at their highest level
- Providing medical nutrition therapy to clients/patients
- Managing foodservice operations
- Providing leadership to foodservice operations
- Developing and maintaining effective communication channels between clinical services and other healthcare professionals and departments
- Serving as an interdisciplinary and interdepartmental liaison within the healthcare team.

Management and leadership skills are important in all areas of dietetics practice (Canter, Sauer, & Shanklin, 2012). Management skills considered essential for dietetics practitioners include financial resource management, strategic planning, problem-solving, decision-making, effective communication, human resource management, quality assurance and process improvement, technology and negotiation skills (Academy, 2014). All of these skills were included within the eight categories in the current study, thus, illustrating the importance of management skills for CNMs. Current findings suggest that CNMs are involved in many managerial job tasks; therefore, the development of management and leadership skills are important prior to being promoted to that managerial role. For example, the majority of participants were involved in some way in managing and leading clinical operations on almost a

daily occasion and many were involved in managing and providing leadership to foodservice operations.

In terms of managing financial resources, CNMs performed these activities less frequently. A possible explanation may be that CNMs are managing a cost center rather than a revenue center. Further research is needed to determine why this important managerial responsibility is not performed as frequently by CNMs. Many CNMs were very involved in managing human resources and information technology. Although some tasks were not frequently performed, a majority of CNMs performed all of the tasks in these two categories, indicating that these tasks are an important part of clinical nutrition management practice. Clinical nutrition managers were also very involved in tasks in the following categories: communicating, monitoring quality assurance and performance improvement, and ensuring compliance with regulations and accreditation standards, all of which are important management skills in the healthcare environment. Many dietitians perceive that management skills are needed by practitioners who work in foodservice operations (Academy, 2014). Results illustrate that management skills span across the clinical area of practice. This study supports the Academy's recommendations that all practitioners enhance their management skills to advance in their careers (Academy, 2014). This study also supports the Academy's priorities of enhancing management and leadership skills at both entry-level and advanced level practice (Academy, 2014).

Some differences also were found in frequency in involvement among varying demographic variables. For example, CNMs working in larger facilities were more likely to provide leadership to clinical programs across multiple organizational units compared to CNMs working in smaller facilities. Many CNMs in facilities with greater than 1000 patient beds provided performed several tasks in multiple facilities. These CNMs may work in larger healthcare systems where they are the regional CNM and manage clinical operations for several facilities within the system. Also, CNMs who worked in smaller facilities were more frequently involved in managing and providing leadership to foodservice operations and developing emergency and disaster policies and procedures. Given that size of facility was measured in number of patient beds managed, this finding suggests that CNMs who do not have to manage as many patient beds may have broader scopes of responsibility, including both clinical and foodservice duties, whereas CNMs in larger facilities tend to manage more patient beds and

appear to be less involved in foodservice operations and developing disaster policies and procedures.

There were several interesting differences between clinical nutrition managers who were employed by contract management companies and those employed by self-operated organizations. For example, CNMs employed by contract management organizations were more frequently involved in managing and providing leadership to foodservice operations than CNMs who worked for self-operated organizations. Kwon and Yoon (2003) found that a majority of facilities that outsourced at least one dietetic service also outsourced all three dietetic services (patient feeding, cafeteria foodservice, and clinical nutrition services). They also found that clinical nutrition managers who worked for contract companies felt that the management functions were efficient and effective. In order to improve efficiency, CNMs who are employed by contract management companies that manage both foodservice and clinical services within the hospital may have responsibilities for both areas.

Clinical nutrition managers who were employed by contract management companies were also more likely to mentor dietetic students and interns. Many of the large contract management companies have large accredited dietetic internship programs where they have developed educational resources to assist with mentoring students and can accept a large number of interns to place in various facilities across the United States. Contract management companies may also be more likely to mentor dietetic students and interns given that it can be used as a recruitment tool for future employees.

In healthcare, 20-30% of foodservice operations are outsourced to contract management companies (Minasian, 2012). In hospitals that outsource their food and nutrition services department, contract management companies often provide services to those departments, such as recruiting skilled management, training, and increasing purchasing power (Minasian, 2012). Given that many of the contract management companies are nationwide, the corporate office often has developed training resources, performance standards, and systems that they can distribute nationally to the facilities in which they have contracts. This may explain why in the current study, CNMs who worked for contract management facilities were less frequently involved in designing and implementing quality improvement initiatives and developing job descriptions. The corporate offices of contract management companies may provide these resources.

Conclusions and Limitations

This research described clinical nutrition management practice. Findings of this study illustrate the value of the Academy's priorities of expanding and enhancing business and management skills in all practice areas of the dietetics profession (Academy, 2014).

This CNM practice audit provides a foundation to further define and evaluate CNM practice for the dietetics profession. Results may help guide practitioners who aspire to become a CNM identify appropriate professional development opportunities to assist them to gain the necessary skills to perform successfully within the role. For example, aspiring CNMs can use the practice audit results to explore what the job entails. They can also identify specific tasks where they lack experience and seek continuing education opportunities for skill development. Current CNMs and administrators who supervise CNMs may also be interested in using the results to benchmark their scope of responsibilities to those in this study.

Given that this study is the first known audit that focuses on clinical nutrition management practice, it is essential that additional research be conducted to validate the results of the current study. Future studies also should be conducted to determine the educational priorities of CNMs to adequately prepare them for the core role activities. Once educational priorities are determined, educational resources can be developed to enhance skills of CNMs and those who aspire to become CNMs.

The limitations of the current study include using the CNM DPG as the research population. Although it was requested that CNMs forward the survey to other CNMs who may not be members of the CNM DPG, only seven participants were not members of the DPG. There is likely a greater population of CNMs who are not members who were not adequately represented in this study. However, there is no known efficient and effective method for reaching those non-DPG members. Therefore, external validity was impacted and results cannot be generalized to those CNMs who are not members of the CNM DPG. Additionally, non-response bias is likely a limitation of this study. Those who participated in the survey may respond differently than those who chose not to participate. Another limitation was survey length and participant drop-out rate. Given that the survey was an audit of practice, it was essential for the instrument to be comprehensive; therefore, the survey was quite extensive and may have led to the large drop-out rate. Additionally, given that the survey was lengthy, tasks were not explored that went beyond the scope of what is generally thought to be in the clinical

nutrition management area of practice; therefore, it is unknown if there are subgroups in clinical nutrition management practice that are involved in tasks less frequently recognized as responsibilities in this role.

Table 4.1-Demographic Profile of Clinical Nutrition Managers (n=215)

Characteristic	n	%[a]	Characteristic	n	%[a]
Position Title[b]			*Primary Person Report To*		
Clinical Nutrition Manager	142	66.0	Foodservice Director, non-RD	96	44.7
Director, Clinical Nutrition	26	12.1	Foodservice Director, RD	45	20.9
Director of FN/Patient Services	22	10.2	Hospital Administrator	29	13.5
Chief Clinical Dietitian	21	9.8	Clinical Director	28	13.0
Internship Director	7	3.3	Regional Director	7	3.3
Other	27	12.6	Other	9	4.2
Primary Dietetic Credential			*Employer Description*		
RD/RDN	212	98.6	Self-Operated Organization	143	66.5
DTR	0	0.0	Contract Management Company	70	32.6
CDM	0	0.0	Self-Employed	2	0.01
Other	3	1.4			
Highest Level of Education			*Primary Mentor*		
			Clinical Director	38	18.1
Baccalaureate Degree	53	24.7	Foodservice Director, non-RD	37	17.6
Some Graduate Work	27	12.6	Foodservice Director, RD	34	16.2
Master's Degree	129	60.0	None	26	12.4
Doctoral Degree	4	1.9	Other CNMs	22	10.5
			Hospital Administrator	22	10.5
Competence Level			Regional Director	11	5.2
Competent	51	23.7	Other RDs	9	4.3
Proficient	100	46.5	Physician	4	1.9
Expert	64	29.8	Other	7	3.3
Length as CNM			*Size of Facility (Number of Beds)*		
<3 years	40	18.8	<100	19	9.1
3-10 years	84	39.4	100-350	91	43.5
11-15 years	25	11.7	351-700	70	33.5
16-25 years	41	19.2	701-1000	21	10.0
>25 years	23	10.8	>1000	8	3.8

[a]Responses may not equal 100% due to non-response of the question
[b]Participants could select all that applied

Table 4.2-Clinical Nutrition Managers' Ratings for Way(s) Involved and Frequency of Involvement for Job Tasks in the General Category

Category/Activity (n, α)[a]	Core Activity[b]	Way(s) Involved[c]				Frequency of Involvement (Days/Month)[d]				
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
General (n=314, α=0.61)										
Manage all or some clinical operations	X	9.3	59.0	62.5	100.0	93.2	4.9	1.9	0.0	18.85 ± 4.26
Provide leadership for clinical nutrition services	X	7.4	66.9	55.0	100.0	91.6	6.8	1.0	0.6	18.60 ± 4.64
Develop clinical standards and procedures to apply current evidence-based nutrition knowledge	X	27.7	64.6	58.6	99.4	15.4	27.1	37.9	19.6	4.63 ± 6.70
Develop strategic plans	X	46.2	57.0	31.2	94.9	7.0	14.3	34.2	44.5	2.53 ± 4.93
Provide medical nutrition therapy to clients/patients	X	18.4	53.3	71.1	91.1	57.7	17.7	11.0	13.7	12.42 ± 9.93
Collaborate with others to develop and implement a marketing plan for nutrition services	X	45.7	42.8	24.3	85.0	6.3	12.3	33.1	48.2	2.33 ± 4.73
Manage all or some functional operations within foodservice operations	X	49.8	27.2	32.3	81.2	50.9	26.7	9.5	13.0	11.40 ± 8.84
Provide leadership for clinical programs across multiple organizational units	X	27.2	47.6	33.2	80.0	30.1	22.8	23.9	23.2	7.28 ± 8.45
Identify market trends to implement and provide competitive services	X	38.9	44.9	21.3	79.6	6.7	16.3	29.7	47.3	2.53 ± 4.86
Provide leadership for functional areas within foodservice operations		43.7	31.8	31.2	79.0	49.5	26.0	10.1	14.4	11.11 ± 8.89
Manage all or some functional areas within other organizational departments		26.5	17.9	17.6	49.8	26.4	19.0	21.2	33.3	6.42 ± 8.25

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"
[b]At least 80% of participants reported involvement in some way in the activity
[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply
[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5
[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.2 (continued)—Clinical Nutrition Managers' Ratings for Ways Involved and Frequency of Involvement for Job Tasks in the Ensuring Compliance with Regulations and Accreditation Standards Category

| Category/Activity (n, α)[a] | Core Activity[b] | Way(s) Involved[c] | | | | Frequency of Involvement (Days/Month)[d] | | | | |
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
Ensuring compliance with regulations and accreditation standards (n=264, α=0.65)										
Monitor staff compliance with organizational policies and procedures	X	20.9	77.2	53.2	100.0	37.4	21.0	33.2	8.4	8.70 ± 8.83
Identify nutrition-related standards and regulations	X	26.4	78.1	48.3	99.6	21.3	20.5	33.5	24.7	5.54 ± 7.64
Create and maintain nutrition-related policies and procedures that are in compliance with accrediting agencies and state and federal regulations	X	32.6	82.6	42.0	99.6	12.6	10.7	38.5	38.2	3.52 ± 6.35
Document and evaluate regulatory data required by organization	X	29.2	70.8	44.3	97.3	13.4	16.8	46.6	23.3	3.93 ± 6.43
Assess the effectiveness of chart audits to ensure the appropriate utilization of the nutrition care process	X	19.1	74.0	51.5	97.3	2.7	10.8	57.9	28.6	1.70 ± 3.22
Review and approve diet manual	X	22.6	69.7	36.0	96.6	1.6	0.8	7.5	90.1	0.87 ± 2.45
Review and approve patient menus	X	39.4	61.0	33.3	92.0	6.6	6.1	20.9	66.4	2.10 ± 4.83
Prepare regulatory reports for clinical services	X	20.1	67.4	30.7	90.5	4.1	6.9	53.3	35.8	1.80 ± 3.85
Identify regulations impacting coding and billing of nutrition services	X	39.8	50.6	26.1	81.2	3.4	5.1	18.6	73.0	1.43 ± 3.56
Develop emergency and disaster policies and procedures	X	47.1	40.3	26.2	80.2	1.7	2.1	10.3	85.9	0.96 ± 2.57
Develop policies and procedures for optimal reimbursement of nutrition services		31.8	45.5	22.7	71.6	2.2	3.1	18.1	76.5	1.13 ± 2.91

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"
[b]At least 80% of participants reported involvement in some way in the activity
[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply
[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5
[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.2 (continued)—Clinical Nutrition Managers' Ratings for Ways Involved and Frequency of Involvement for Job Tasks in the Communicating with Others Category

Category/Activity (n, α)[a]	Core Activity[b]	Way(s) Involved[c]				Frequency of Involvement (Days/Month)[d]				
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
Communicating (n=238, α=0.81)										
Develop and maintain effective communication channels between clinical services and other healthcare professionals and departments	X	36.4	85.8	60.3	100.0	47.9	22.5	21.6	8.1	10.73 ± 8.97
Serve as an interdisciplinary and interdepartmental liaison within the healthcare team	X	29.0	84.0	62.2	99.6	49.6	25.8	21.2	3.4	11.18 ± 8.83
Identify and inform clinicians of current evidence-based nutrition knowledge	X	27.7	76.5	59.7	98.7	17.2	23.0	42.7	17.2	4.86 ± 7.02
Inform clinicians of pertinent evidence-based information regarding the department and organization	X	20.6	80.3	46.2	98.3	10.2	25.1	43.8	20.9	3.59 ± 5.71
Advocate the value of nutrition services to key stakeholders	X	36.3	75.9	43.0	95.4	11.7	16.1	30.9	41.3	3.51 ± 6.15
Communicate nutrition information to healthcare stakeholders	X	26.4	76.6	50.2	92.5	14.4	21.0	29.3	35.4	4.19 ± 6.63
Create and facilitate nutrition-related committee(s)	X	32.4	70.0	45.4	89.5	5.0	12.3	42.0	40.6	2.12 ± 4.26
Distribute pertinent nutrition-related information to the community	X	42.3	42.7	61.9	86.2	3.7	11.2	28.4	56.7	1.76 ± 3.75

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"
[b]Core Activity: At least 80% of participants reported involvement in some way in the activity
[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply
[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5
[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.2 (continued)—Clinical Nutrition Managers' Ratings for Ways Involved and Frequency of Involvement for Job Tasks in the Monitoring Quality Assurance and Performance Improvement Category

# Category/Activity (n, α)[a]	Core Activity[b]	Way(s) Involved[c]				Frequency of Involvement (Days/Month)[d]				
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
Monitoring quality assurance/ performance improvement (n=231, α=0.83)										
Identify quality improvement issues	X	42.7	83.6	61.2	99.6	12.7	19.7	48.2	19.3	3.91 ± 6.28
Identify process improvement opportunities	X	43.3	84.4	55.0	99.6	11.5	19.8	48.0	20.7	3.67 ± 6.02
Evaluate quality improvement data	X	32.2	86.5	48.7	98.7	4.4	17.3	67.3	11.1	2.30 ± 3.99
Report results of quality improvement activities	X	31.2	84.4	38.5	98.3	1.3	7.6	61.6	29.5	1.34 ± 2.35
Design and implement quality improvement initiatives	X	43.3	80.5	50.2	98.3	1.8	10.7	45.1	42.4	1.45 ± 2.71
Develop, implement, and evaluate systems to ensure patient safety	X	54.5	71.0	46.3	97.0	11.9	13.3	38.5	36.2	3.48 ± 6.19
Develop and implement action plans to maintain/improve patient/client satisfaction	X	54.3	62.9	48.7	93.1	4.2	17.8	48.4	29.6	2.19 ± 3.95
Collect and analyze data regarding patient/client satisfaction	X	51.3	55.6	43.5	89.2	8.5	22.6	48.1	20.8	3.19 ± 5.30

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"

[b]At least 80% of participants reported involvement in some way in the activity

[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply

[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5

[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.2 (continued)—Clinical Nutrition Managers' Ratings for Ways Involved and Frequency of Involvement for Job Tasks in the Providing Clinical Expertise Category

| Category/Activity (n, α)[a] | Core Activity[b] | Way(s) Involved[c] | | | | Frequency of Involvement (Days/Month)[d] | | | | |
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
Providing clinical expertise (n=224, α=0.73)										
Provide clinical nutrition leadership on committees	X	15.2	87.9	50.2	99.1	5.4	23.4	52.3	18.9	2.64 ± 4.37
Advance clinical practice through mentorship, coaching, and training of staff	X	32.6	83.9	63.8	98.7	41.8	23.2	20.9	14.1	9.57 ± 8.94
Evaluate and select nutrition-related products	X	40.6	75.0	54.0	97.8	2.3	8.2	20.9	68.6	1.33 ± 3.01
Provide nutrition expertise to other healthcare professionals, administration, and policy makers	X	30.4	84.8	54.9	97.8	19.1	24.1	31.8	25.0	5.23 ± 7.32
Develop evidence-based standards of care for patient/client outcomes and intervention protocol	X	39.7	70.1	61.2	96.9	2.3	4.5	29.9	63.3	1.25 ± 2.95
Ensure the appropriate use of the nutrition care process	X	26.5	73.5	75.3	96.4	39.0	14.7	31.2	15.1	8.77 ± 9.06
Develop and provide evidence-based nutrition education	X	35.9	55.2	75.3	95.1	25.8	15.5	29.1	29.6	6.22 ± 8.23
Establish and manage facility's nutrition support formulary	X	29.9	67.4	49.8	95.0	8.5	9.4	19.8	62.3	2.59 ± 5.41
Provide nutrition expertise for foodservice operations	X	39.3	65.2	46.0	91.5	40.6	24.1	15.6	19.8	9.33 ± 8.92
Analyze and report clinical data of research studies		22.4	26.5	22.9	47.5	1.2	5.6	14.3	78.9	1.01 ± 2.28
Design and conduct clinical research studies		24.4	19.5	22.2	42.1	1.3	3.2	11.6	83.9	0.92 ± 2.28

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"
[b]At least 80% of participants reported involvement in some way in the activity
[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply
[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5
[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.2 (continued)—Clinical Nutrition Managers' Ratings for Ways Involved and Frequency of Involvement for Job Tasks in the Managing Human Resources Category

Category/Activity (n, α)[a]	Core Activity[b]	Way(s) Involved[c]				Frequency of Involvement (Days/Month)[d]				
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
Managing human resources (n=216, α=0.84)										
Motivate staff to perform at highest level	X	35.3	88.4	43.7	100.0	61.4	15.2	14.3	9.0	13.08 ± 8.80
Identify noncompliant behavior of staff	X	35.3	83.3	40.9	99.5	38.5	13.1	15.5	32.9	8.55 ± 9.15
Conduct on-going and annual performance appraisals	X	11.4	88.6	30.1	99.1	0.5	5.6	19.5	74.4	0.88 ± 1.54
Conduct on-going staff training	X	38.9	80.1	56.0	99.1	6.6	14.2	54.0	25.1	2.56 ± 4.79
Recruit, select, and promote staff	X	31.9	81.9	34.3	98.6	2.3	5.1	19.6	72.9	1.23 ± 3.01
Administer disciplinary action for staff	X	32.7	82.9	32.7	98.6	10.8	10.8	18.3	60.1	3.08 ± 6.00
Develop and manage employee orientation for staff	X	33.8	71.3	44.0	97.2	1.4	3.8	23.3	71.4	1.03 ± 2.39
Schedule employees	X	19.0	68.5	38.0	96.3	13.9	32.5	40.2	13.4	4.55 ± 6.38
Determine staffing needs to effectively meet standards of care	X	30.1	75.5	27.3	95.4	12.4	10.5	15.7	61.4	3.36 ± 6.36
Develop performance standards for clinical staff	X	25.3	71.0	32.7	94.0	0.5	1.9	15.6	82.1	0.74 ± 1.42
Develop productivity standards for clinical staff	X	22.1	70.5	30.9	92.6	1.9	2.4	22.1	73.6	1.07 ± 2.72
Develop competency assessment systems	X	26.1	72.9	31.2	92.2	0.0	1.4	13.9	84.6	0.62 ± 0.45
Develop job descriptions for clinical staff	X	27.8	74.5	22.2	92.1	0.0	0.5	4.8	94.7	0.54 ± 0.26
Mentor dietetic students and interns	X	33.6	71.5	60.3	92.1	19.9	16.9	20.9	42.3	5.08 ± 7.56
Terminate staff	X	33.6	69.6	26.7	91.7	2.0	1.5	2.5	94.0	0.96 ± 2.76
Initiate conflict resolution for staff	X	40.6	80.6	35.5	91.7	7.7	11.5	16.8	63.9	2.49 ± 5.18
Foster staff career advancement plans	X	26.2	73.4	35.0	89.3	5.6	6.6	22.7	65.2	1.93 ± 4.48
Coordinate dietetic students' and interns' supervised practice	X	35.3	62.3	51.6	89.3	12.4	15.8	21.3	50.5	3.57 ± 6.31
Conduct productivity studies	X	25.1	67.0	30.7	87.9	7.6	5.6	43.9	42.9	2.39 ± 5.11
Monitor federal employment regulations and labor relations		29.3	38.6	20.9	65.6	8.9	6.5	16.1	68.5	2.55 ± 5.55
Make salary decisions		30.1	35.2	18.1	59.3	1.2	2.4	8.9	87.6	0.86 ± 2.17

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"

[b]At least 80% of participants reported involvement in some way in the activity

[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply

[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5

[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.2 (continued)—Clinical Nutrition Managers' Ratings for Ways Involved and Frequency of Involvement for Job Tasks in the Managing Financial Resources and Managing Information Technology Categories

Category/Activity (n, α)[a]	Core Activity[b]	Way(s) Involved[c]				Frequency of Involvement (Days/Month)[d]				
		% Assist Others	% Perform Myself	% Supervise /Manage	% Involved in Any Way	% Daily	% Weekly	% Monthly	% Less than Monthly	Mean[e] ± SD
Managing financial resources (n=214, α=0.75)										
Develop, justify, and implement programs and services	X	48.1	64.0	32.2	91.6	2.0	3.4	25.0	69.6	1.13 ± 2.75
Develop strategies to effectively control costs in clinical services	X	40.2	65.4	27.6	90.2	3.5	8.0	36.0	52.5	1.64 ± 3.62
Identify sources of revenue	X	44.7	59.1	26.5	85.6	3.1	2.6	33.3	60.9	1.37 ± 3.40
Develop and manage operating budget for clinical services	X	40.2	50.0	19.6	81.8	3.2	9.1	31.6	56.1	1.60 ± 3.50
Assess financial performance of area of responsibility		30.4	54.2	19.6	76.6	2.2	7.3	54.2	36.3	1.46 ± 2.94
Secure financial resources and physical space for nutrition services		32.5	37.7	11.6	61.9	0.0	0.6	5.7	93.7	0.55 ± 0.30
Prepare financial reports		28.0	35.5	12.6	57.7	0.0	5.7	43.9	50.3	0.92 ± 0.80
Negotiate contracts for nutrition support		29.3	20.0	9.8	45.6	0.0	0.0	6.3	93.7	0.53 ± 0.12
Managing information technology (n=214, α=0.71)										
Utilize technology to efficiently communicate with others	X	41.6	93.9	64.5	100.0	88.7	3.8	3.8	3.8	17.94 ± 5.79
Develop work flow procedures to implement when technology is non-functional	X	43.9	76.2	47.7	95.8	6.9	5.4	14.7	73.0	2.10 ± 4.93
Identify, evaluate, and implement technology systems for efficient and effective nutrition care	X	56.5	74.8	56.1	94.9	33.2	14.6	15.6	36.6	7.56 ± 8.86
Train staff on utilizing the electronic medical record	X	42.1	66.8	60.3	94.9	7.9	6.9	30.5	54.7	2.43 ± 5.22
Utilize technology to disseminate nutrition information to others	X	41.1	78.0	57.9	93.9	35.6	19.3	23.3	21.8	8.24 ± 8.85
Analyze data from technology systems	X	39.3	79.0	40.2	92.5	20.1	15.6	39.2	25.1	5.16 ± 7.55

[a]n is different for each category due to drop out throughout the survey; α is the Cronbach's Alpha of "Frequency of Involvement"
[b]At least 80% of participants reported involvement in some way in the activity
[c]Way(s) Involved Scores: No Involvement=0; Assist Others=1; Perform Myself=2; Supervise/Manage=3; Percentages will not equal 100 given that participants could select all that apply
[d]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5
[e]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly

Table 4.3-Significant Differences in Clinical Nutrition Managers' Frequency of Involvement Based on Demographic Variables (n=215)

Mean ± SD[a]				
Education Level				
Task (Results from ANOVA)	**Baccalaureate Degree**	**Some Graduate Coursework Completed**	**Master's Degree**	**Doctoral Degree**
Collect and analyze data regarding patient/client satisfaction (F=2.884, p=0.037)	4.80 ± 6.75^x	1.17 ± 1.07^y	3.06 ± 5.08^{xy}	5.50 ± 9.67^{xy}
Train staff on utilizing the electronic medical record (F=3.639; p=0.014)	1.98 ± 4.70^x	5.54 ± 8.15^y	2.07 ± 4.57^x	0.50 ± 0.00^{xy}
Recruit, select, and promote staff (F=3.129, p=0.027)	1.62 ± 3.87^x	1.30 ± 3.74^x	0.96 ± 1.90^x	5.38 ± 9.75^y
Length of Time Employed as a CNM				
Task	**< 3 years**	**3-10 years**	**11-15 years**	**years** ‖ **>25 years**
Provide leadership to clinical nutrition services (F=3.147, p=0.015)	18.33 ± 5.11^{xy}	19.23 ± 3.45^x	18.08 ± 5.31^{xy}	20.00 ± 0.00^x ‖ 16.37 ± 7.08^y
Establish and manage facility's nutrition support formulary (F=2.488, p=0.045)	4.89 ± 7.62^x	2.05 ± 4.31^{xy}	0.80 ± 0.75^y	2.67 ± 5.96^{xy} ‖ 2.67 ± 5.71^{xy}
Schedule Employees (F=2.851, p=0.025)	3.89 ± 5.63^{xy}	6.53 ± 7.88^x	3.72 ± 5.37^{xy}	2.82 ± 4.30^y ‖ 3.89 ± 5.31^{xy}
Provide leadership to clinical programs across multiple organizational units (F=3.662, p=0.007)	3.81 ± 6.06^x	9.24 ± 9.07^y	10.96 ± 8.93^y	6.38 ± 7.81^{xy} ‖ 8.91 ± 9.59^{xy}
Size of Facility[b]				
Task	**< 100**	**100-350**	**351-700**	**701-1000** ‖ **>1000**
Provide leadership for functional areas within foodservice operations (F=3.655, p=0.007)	14.47 ± 8.08^x	12.51 ± 8.68^x	11.41 ± 8.88^{xy}	6.33 ± 8.36^{xy} ‖ 3.44 ± 6.80^x
Manage all or some functional operations within foodservice operations (F=4.128, p=0.003)	14.31 ± 8.34^x	12.89 ± 8.57^x	11.41 ± 8.88^{xy}	6.56 ± 8.14^{xy} ‖ 3.50 ± 6.77^y
Provide leadership for clinical programs across multiple organizational units (F=3.039, p=0.019)	8.04 ± 9.33^{xy}	5.99 ± 7.78^x	8.20 ± 8.72^{xy}	10.85 ± 9.45^{xy} ‖ 15.43 ± 7.81^y
Collaborate with others to develop and implement a marketing plan for nutrition services (F=2.477, p=0.046)	4.83 ± 7.13^x	1.55 ± 3.14^y	2.03 ± 4.24^{xy}	2.05 ± 4.47^{xy} ‖ 3.94 ± 6.66^{xy}
Develop emergency and disaster policies and procedures (F=7.455, p<0.001)	4.38 ± 7.54^x	0.54 ± 0.14^y	0.85 ± 2.43^y	0.71 ± 0.85^y ‖ 0.63 ± 0.23^y

[a]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly
[b]Licensed beds
Note: Means with different superscripts (x, y, z) differ significantly (p<0.05) by Tukey's Post-Hoc test

Table 4.4-Significant Differences in Clinical Nutrition Managers' Frequency in Involvement Based on Employer Type (n=215)

Job Task	Mean[a] ± SD		t	Sig.[b]
	Contract Management	**Self-Operated Organization**		
Provide leadership for functional areas within foodservice operations	13.44 ± 8.35	10.27 ± 8.99	2.421	0.017
Manage all or some functional operations within foodservice operations	13.33 ± 8.43	10.47 ± 8.98	2.221	0.029
Mentor dietetic students and interns	7.04 ± 8.78	4.25 ± 6.86	2.244	0.027
Schedule Employees	3.31 ± 5.00	5.30 ± 7.00	2.329	0.021
Identify process improvement opportunities	2.76 ± 4.99	4.43 ± 6.77	1.998	0.047
Design and implement quality improvement initiatives	0.97 ± 0.81	1.54 ± 2.97	2.073	0.040
Conduct on-going performance appraisal	0.58 ± 0.19	1.02 ± 1.87	2.723	0.007
Develop job descriptions for clinical staff	0.50 ± 0.00	0.53 ± 0.12	3.093	0.002

[a]Mean of 20=daily, 4=weekly, 1=monthly, 0.5=less than monthly
[b]Significance level set at $p \leq 0.05$

Chapter 5 - Gap Analysis between Clinical Nutrition Managers' Responsibilities and Perceived Education Preparedness and Implications on Self-Efficacy

Introduction

The dietetics profession is multidisciplinary, with areas of practice requiring specialized training. However, some advanced areas of practice do not have specialized training options for specific job responsibilities. For example, clinical nutrition managers (CNMs) are administrative registered dietitians (RDs) who manage clinical and other nutrition services within healthcare organizations (Clark, Moore, Trombley, Skates, Roglaski, Schofield, & Welch, 2012). Clinical nutrition managers provide management, leadership, and clinical expertise, yet receive no formal specialized training programs. No current research has been conducted to determine the educational needs of CNMs.

The job duties of CNMs were validated by Witte and Messersmith in 1995 and performance guidelines were subsequently established for each responsibility to measure performance (Witte, Escott-Stump, Fairchild, & Papp, 1997). The implications of this research do not align with significant changes in healthcare within the last 20 years such as the Patient Protection and Affordability of Care Act of 2010, fiscal challenges creating fewer resources, aging population, and the development of new technologies (Institute of Medicine, 2013). These changes likely have impacted the role and responsibilities of managers, their educational needs, and performance.

It is unclear if existing education meets the needs of clinical nutrition management practice or if there are adequate opportunities for professional development. Some evidence suggests that CNMs may have specific education needs for technology, human resource management, and financial management (Pratt, Kwon, & Rew, 2005; Witte & Messersmith, 1995). Witte and Messersmith (1995) found that 31% of CNMs did not forecast being in this role nor intended to seek skill development (Witte & Messersmith, 1995). Work experience was the most often used skill development strategy and positively correlated with perceived improvements in job competence (Witte & Messersmith, 1995). Other RDs who did want to advance to the CNM position stated that they prepared by gaining an advanced degree; however,

having an advanced degree was not correlated to perceived increased competence (Witte & Messersmith, 1995). Although other skill development strategies were used after gaining the CNM title, such as continuing education and networking, CNMs continued to perceive a need for more training in technology, developing and managing budgets, and marketing (Witte & Messersmith, 1995). Given the multiple factors impacting the healthcare environment, it is likely that CNMs need additional education.

Clinical nurse managers have similar educational backgrounds, have been promoted from a clinical role into a managerial role, and have both management and clinical duties comparable to CNMs. Clinical nurse managers also have expressed the need for further education to perform successfully in their role. Research has shown that clinical nurse managers often feel clinically competent, but poorly prepared for management responsibilities (Gould, Goldstone, & Maidwell, 2001). Nurse managers also perceived the need for additional education on several topics including: human resource management, financial management, effective communication, utilization of information technology, decision-making, ensuring compliance with standards and regulations, among many others (Gould et al., 2001).

Given that CNMs and nurse managers have similar educational backgrounds, they likely share similar needs for supplemental education. Since CNMs are often clinicians who have been promoted into the managerial role, a majority of their work experience is likely in clinical dietetics. Therefore, additional education is likely needed for leadership and managerial responsibilities. Thus, there likely is a gap between educational preparedness and greater opportunity to provide resources for these individuals in management and leadership responsibilities. This notion is consistent with the Academy of Nutrition and Dietetics' (Academy) support for providing more educational opportunities in leadership and management to enhance knowledge and skills across all areas of practice in the profession (Academy, 2014).

Separations between role tasks and educational preparedness may correlate with attitudes and beliefs about the CNM position. For example, Sauer, Canter, and Shanklin (2010) found that CNMs were significantly less satisfied with their jobs compared to other managerial RDs. Clinical nutrition managers were less satisfied with pay, contingent rewards, promotion, and nature of the work compared to other managerial RDs (Sauer et al., 2010). Clinical nutrition managers also had the lowest career satisfaction among managerial RDs, and were comparatively less satisfied with career success and advancement (Sauer, Canter, & Shanklin,

2012). However, little is known about why they are less satisfied with these factors or relationships with educational preparedness.

Feeling unprepared for a role may also impact the individual's self-efficacy or one's confidence level in performing specific tasks (Bandura, 1997). Self-efficacy can often impact an individual's choice of activities, their effort level, and their persistency in managing stressful situations (Bandura, 1977). Discussions with key leaders in CNM practice revealed that concerns exist with CNMs' levels of self-efficacy to perform certain tasks of the role (N. Hakel-Smith & J. Skates, personal communication, February 17, 2012). However, no studies have evaluated CNMs' self-efficacy. In other populations, research has shown that educational interventions may be effective in improving self-efficacy (Bakken, Byars-Winston, Gundermann, Ward, Slattery, King, Scott, & Taylor, 2010) and that self-efficacy influenced job satisfaction (Perdue, Reardon, & Peterson, 2007; Wu, Lee, Liang, Chuang, Lu, & Wu, 2012). It is important to identify education that may impact self-efficacy of CNMs in the role.

The purposes of this study were to examine gaps between educational needs and the knowledge and skills attained for the role, and to investigate the impact of educational preparedness on self-efficacy and overall job satisfaction. Differences in educational preparedness were also compared among varying levels of demographic variables. The hypotheses included the following.

H1: The relationship between core role activities and educational preparation predicts self-efficacy to perform the activities of CNMs.

H2: Overall educational preparedness predicts overall self-efficacy to perform the core role activities of CNMs.

Methodology

The methodology was approved by the university's institutional review board for the use of human subjects. The research relied heavily on a role practice audit, which was developed through focus groups, cognitive interviewing, and pilot testing with CNMs. The electronic audit was developed utilizing the Qualtrics survey system. The practice audit was distributed to CNMs who were members of the CNM dietetic practice group (DPG) though an email blast to the membership listserv. Educational priorities were also addressed.

The online survey consisted of two sections including the practice audit section with 84 job task statements and a demographic section. In the practice audit section, four questions were asked of each job task statement. The first two questions were adapted from the 2010 Entry-Level Dietetics Practice Audit (Ward, Rogers, Mueller, Touger-Decker, & Sauer, 2011). The first question measured level of involvement of activities with four response options including no involvement, perform myself, assist others in performing, and supervise or manage the activity. The second question asked about frequency of the activity and had four response options including daily, weekly, monthly, and less than monthly. Two additional questions were asked of each task statement to measure educational preparedness. Specifically, the third question asked about perceived importance of receiving education to perform the task successfully and included five response options (1=not at all important; 5=very important). Question four asked participants to rate their perception of how well the educational needs for each task had been met and included five response options (1=completely unmet; 5=completely met).

Gap analysis refers to the difference between what is and what should be, and has been used to determine deficiencies in professional knowledge and practice (Fater, 2013). A theoretical example of gap analysis was provided from marketing research where a gap analysis measured the difference between customers' importance of desired outcomes of a product and satisfaction of that outcome being met by a current product (Ulwick, 2002). The formula used to measure this difference was [importance + (importance-satisfaction)] and is called the "opportunity algorithm" (Ulwick, 2002). Researchers later used the "opportunity algorithm" to analyze the roles and educational needs of nurses (Watts, Foley, Hutchinson, Pascoe, Whitecross, & Snowdon, 2004). Watts et al. (2004) defined importance as nurses' perceived importance of the educational need and satisfaction as nurses' perceived satisfaction that the educational need was met. Higher opportunity scores indicated the educational needs with the highest priority. This educational gap analysis method was adopted for the current study to determine the highest opportunity or need for educational resources for CNMs.

Clinical nutrition managers rated their confidence in performing the tasks in each category on a 5-point scale (0=definitely cannot do; 5=highly certain can do) to measure categorical self-efficacy. CNMs were asked to rate their overall self-efficacy using a 5-point scale (1=very low; 5=very high). Two questions related to job satisfaction were also asked including how CNMs would rate their overall job satisfaction (1=very dissatisfied; 5=very

satisfied) and how their job satisfaction had changed over the last six months (1=decreased significantly; 5=increased significantly). The instrument administered to CNMs is available in Appendix M.

Statistical Analysis

Cronbach's alpha was conducted to determine the internal consistency among items within categories. Opportunity scores were calculated by using the two educational questions asked of each task statement in the practice audit section of the survey. Importance was measured as the importance of receiving education to successfully complete the task and was measured on a five point Likert scale (1=not at all important; 5=very important). Satisfaction was expressed as how well CNMs perceived that their educational needs were met for each job task and was measured on a five point Likert Scale (1=completely unmet; 5=completely met). The gap was determined by using the algorithm [importance + (importance-satisfaction)]. Opportunity scores could range between one and nine.

Simple regression analysis was used to test both hypotheses. Gap scores were calculated for each job task in a category using the opportunity algorithm. A composite gap score for each category was then calculated by summing individual job task gap scores. A mean categorical composite gap score was then calculated among all individuals. Composite educational preparedness scores for each category were calculated with similar methods. Each individual had educational preparedness scores for each task statement based on their rating using a 5-point Likert scale. Educational preparedness scores for each job task were summed together for each individual to calculate an individual composite educational preparedness score. Simple regression analysis was used to determine if composite mean gap scores for each category predicted clinical nutrition managers' categorical self-efficacy and to determine if composite educational preparedness scores for each category predicted clinical nutrition managers' categorical self-efficacy. Multiple regression was used to determine if categorical self-efficacy predicted clinical nutrition managers' overall self-efficacy.

Analysis of covariance (ANCOVA) was used to determine if there were significant differences in self-efficacy between various demographic variables, when the mean scores were adjusted for the covariate of the overall composite educational gap. The demographic variables of interest included education level, employer type, and length of time employed as a CNM.

Analysis of variance (ANOVA) procedures were used to evaluate differences in self-efficacy based on length of time employed as a CNM and educational level. Independent sample t-tests were conducted to determine if there were significant differences in self-efficacy based on employer type.

Results

Demographic Sample

A total of 614 members of the DPG entered the survey link. Of these, 488 (79%) indicated that they supervised clinical staff and were then routed to the online practice audit. The remaining 126 participants (21%) who did not supervise clinical staff were routed to the end of the survey and thanked for their participation. At the time of the study, there were 2,056 members of the CNM DPG, translating to a 29.9% response rate to the screening question. However, the practice audit was comprehensive and consisted of eight categories of job task statements, likely causing some drop-out. Therefore, each category has a declining response set. For example, the first category had 314 responses, while the last category had 214 responses. Of the 488 participants deemed qualified to continue, 214 completed the survey; therefore, there was a 43.9% dropout rate. The response rate of completed surveys compared with the number of members in the CNM DPG was 10.4%. However, based on discussions with nine expert CNMs, it is estimated that approximately 20% of members in the CNM DPG may not supervise clinical staff, thus leaving 1645 members eligible to complete the practice audit (personal communication, November 2014). Therefore, the response rate of the 214 completed surveys compared with the eligible members of the CNM DPG was estimated at 13.0%.

Of the 215 participants completing the demographic section of the survey, a majority of the participants (66%) reported Clinical Nutrition Manager as their position title, most (98.6%) reported their primary credential as RD/RDN, and a majority of respondents (60%) held a master's degree.   A majority (66.5%) described their employer as a self-operated organization, many (44.7%) reported to a non-RD foodservice director, and many identified their primary mentor as a clinical director (18.1%), a non-RD foodservice director (17.6%), a foodservice director who is an RD (16.2%), or not having a primary mentor (12.4%). When asked to rate their competence level using the Academy of Nutrition and Dietetics Standards of Professional Performance for Clinical Nutrition Managers (Clark et al., 2012), 46.5% of participants

identified themselves as proficient CNMs. The average length of time being a CNM and length employed in current job was 11.3 years and 10.5 years, respectively. Tables 4.1 and 4.2 (Chapter 4) provide the complete demographic profile of the sample.

Table 5.1 summarizes the perceptions of CNMs in regards to importance of receiving education, the level that educational needs have been met, and the gap between the importance of education and how well educational needs were met for all 84 job tasks. Data in Table 5.1are arranged in descending mean gap scores. Cronbach's alpha was conducted for each of the eight job categories for both educational questions and is reported in Table 5.1. All categories had a Cronbach's alpha greater than or equal to 0.85, indicating strong categorical internal consistency.

Level of Importance for Education

Importance of receiving education was measured on a 5-point Likert scale (1=low importance; 5=high importance). In general, CNMs reported that it was important to receive education (with means of 4.00 or higher) for all job tasks except for managing all or some functional areas within other organizational departments (3.51 ± 1.32), reviewing and approving the diet manual (3.98 ± 1.11), scheduling employees (3.73 ± 1.10) and making salary decisions (3.89 ± 1.03). Even with these four tasks, a majority of CNMs reported that it was important to receive education to complete these tasks successfully. For managing other organizational departments, 55.5%, 23.5%, and 21% of CNMs rated receiving education as important, neutral, and unimportant, respectively. Obtaining education to perform the task of reviewing and approving the diet manual was rated as important, neutral, and unimportant by 70.4%, 19%, and 10.7%, respectively. Obtaining education for scheduling employees was rated important, neutral, and unimportant by 86.7%, 26.3%, and 7.6% of CNMs, respectively. For making salary decisions, 62.0%, 30.4%, and 7.6% of CNMs rated receiving education as important, neutral, and unimportant, respectively. Generally, CNMs rated tasks within the monitoring quality assurance and performance improvement category higher with means for a majority of the tasks approximating 4.4 or higher.

The variable, importance of receiving education was assessed using pre-defined competency levels (i.e. competent, proficient, expert), length of time employed as a CNM, and educational status. These analyses yielded some interesting findings. Importance of receiving education increased with education level for the two tasks related to research activities within the

providing clinical expertise category. Therefore, those with a bachelor's degree rated importance lower for these two tasks than those with a master's degree. For a majority of the tasks within the categories of communication, monitoring quality assurance and performance improvement and managing financial resources, importance of receiving education increased with higher levels of competency. Therefore, those CNMs who perceived their competency level as an expert rated importance of receiving education higher for the tasks compared with CNMs perceiving themselves as competent or proficient. No other trends were identified in importance of education when assessed across competency level, education status, and length of time employed as a CNM. Means across these demographic variables followed the same patterns as the sample mean values, generally scoring above a 4.0 on a 5-point scale.

Level of Educational Needs Met

To measure if educational needs were met, a 5-point Likert scale (1=completely unmet; 5=completely met) was used. These means ranged from a low of 2.62 to a high of 4.44 for developing policies and procedures for optimal reimbursement of nutritional services and providing medical nutrition therapy to clients and patients, respectively. For developing policies and procedures for optimal reimbursement of nutritional services, 48.7% of CNMs rated educational needs as unmet, compared to 25.2% who indicated their educational needs were met. The majority of CNMs (87.6%) rated educational needs as met for the task of providing medical nutrition therapy to patients and clients. The level of educational needs met was generally rated lowest for tasks in the managing financial resources category with means less than 3.0 on a 5-point scale. On the other hand, CNMs generally rated the level of educational needs for the providing clinical expertise higher with a majority of the means greater than 3.6 on a 5-point scale.

Pre-defined competency ranks (i.e. competent, proficient, expert), length of time employed as a CNM, and educational status were used to assess educational needs being met. These analyses yielded some interesting findings. Clinical nutrition managers perceived that educational needs were more highly met as perceived competency increased for several of the tasks in the categories of providing nutrition expertise, managing human resources, and general, and all of the tasks in the managing financial resources category. Therefore, expert managers perceived that educational needs were more highly met than competent managers. There were

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no significant patterns in level of educational needs met based on education status and length of time employed as a CNM.

Mean Educational Gap Scores

A gap analysis was conducted using the opportunity algorithm [Importance + (Importance – Needs Met)]. The mean gap score for each job task indicated the level of need for education for job tasks. The higher the mean gap score, the greater the need for education in that area. Lower mean gap scores indicate that CNMs did not perceive the educational needs for the task to be high, the educational need was met for that job task, or a combination of both low importance and educational needs being met. Mean gap scores range between one and nine, with nine indicating the highest educational need or opportunity. The midpoint gap score was used to determine opportunity for educational resources. Therefore, those job tasks with mean gap scores of 4.5 or higher were considered to be those with opportunity for education.

Of the 84 job tasks, 80 had mean gap scores greater than 4.5. The mean gap score ranged between 4.19 and 6.16. Given that a majority of the tasks were considered to warrant more education, further analysis was done to determine the highest educational needs. Assessing the data categorically by quartiles did not yield useful findings. However, of those tasks that were in the top quartile, a majority of the tasks were in the categories of ensuring compliance with regulations and accreditation standards and managing human and financial resources. Clearly, it is evident that education priorities should focus on these three categories of tasks.

CNM Audit Categories

General Practice

In the general category, CNMs rated importance of receiving education for the tasks between 3.51 and 4.63. The task statement that was rated the highest in regards to importance of receiving education was developing clinical standards and procedures to apply current evidence-based nutrition knowledge (4.63 ± 0.65). Clinical nutrition managers rated importance to receive education lowest for managing all or some functional areas within other organizational departments. Importance means across demographic variable levels (competency level,

education level, and time employed as a CNM) followed the same patterns as the overall sample means, generally scoring above a 4.0 on a 5-point scale.

Clinical nutrition managers rated educational needs being met less than 4.0 on a 5-point scale for all job tasks with the exception of providing medical nutrition therapy to clients/patients (4.44 ± 0.79). The two lowest rated job tasks in regards to educational needs being met were collaborating with others to develop a marketing plan (2.90 ± 1.20) and identifying market trends to provide competitive services (2.95 ± 1.21). Additionally, educational needs being met increased as perceived competency level increased for a majority of tasks in this category.

Mean gap scores ranged between 4.19 and 5.65 for the general category of job tasks. The largest mean gap scores were for developing clinical standards and procedures to apply current evidence-based nutrition knowledge (5.65 ± 1.36) and providing leadership for clinical nutrition services (5.57 ± 1.34).

Ensuring Compliance with Regulations and Accreditation Standards

Clinical nutrition managers rated importance to receive education for the tasks in this category between 3.98 and 4.60 on a 5-point scale. On average, CNMs rated the highest importance of receiving education for identifying nutrition-related standards and regulations (4.60 ± 0.59). The lowest importance of receiving education was for reviewing and approving the diet manual (3.98 ± 1.11). Importance means across demographic variable levels (perceived competency, education level, and length of time being a CNM) followed the same patterns as the overall sample means, generally scoring above a 4.0 on a 5-point scale for this category of tasks.

Clinical nutrition managers rated educational needs being met for job tasks within the ensuring compliance with regulations and accreditation standards on average between 3.21 and 3.97 with the exception of two job tasks that scored below 3.00. These two job tasks were developing policies and procedures for optimal reimbursement of nutritional services (2.62 ± 1.30) and identifying regulations impacting coding and billing of nutritional services (2.69 ± 1.31). Level of educational needs met across demographic variable levels followed the same patterns as the overall sample means for this category of tasks.

The two tasks with the lowest levels of educational needs met were also the two job tasks that had the largest mean gap scores. These tasks were developing policies and procedures for optimal reimbursement of nutritional services (6.16 ± 2.08) and identifying regulations impacting coding and billing of nutritional services (6.14 ± 2.08). Other tasks that were

considered to be high priority for educational efforts included identifying nutrition-related standards and regulations (5.71 ± 1.42) and creating and maintaining nutrition-related standards and regulations (5.68 ± 1.48). The two job tasks with the smallest mean gap scores included reviewing and approving the diet manual (4.42 ± 1.58) and reviewing and approving patient menus (4.71 ± 1.39).

Communicating with Others

Clinical nutrition managers rated importance of receiving education higher for the communicating with others category, with all tasks rated above 4.0 on a 5-point scale. The lowest rated task in regards to importance of receiving education was distributing pertinent nutrition-related information to the community (4.04 ± 1.04). The task that was rated highest in terms importance of receiving education was identifying and informing clinicians of current evidence-based nutrition knowledge (4.62 ± 0.67). Additionally, as perceived competency level increased, CNMs rated importance higher for a majority of the tasks in this category.

Clinical nutrition managers rated educational needs being met less than 4.0 on a 5-point scale for all job tasks. Clinical nutrition managers rated identifying and informing clinicians of current evidence-based nutrition knowledge highest in regards to educational needs being met (3.92 ± 0.98). They rated advocating the value of nutrition services to key stakeholders the lowest in regards to educational needs being met (3.37 ± 1.23). Level of educational needs met across demographic variable levels (perceived competency, education level, and length of time employed as a CNM) followed the same patterns as the overall sample means.

The task with the lowest level of educational needs being met also had the largest mean gap score [advocating the value of nutrition services to key stakeholders (5.72 ± 1.70)], indicating the highest opportunity to provide education to CNMs in this category of job tasks. The smallest mean gap score was in regards to distributing pertinent nutrition-related information to the community (4.46 ± 1.51).

Monitoring Quality Assurance and Performance Improvement

Importance of receiving education for tasks within the monitoring quality assurance and performance improvement was rated high (above a 4.0 on a 5-point scale). Identifying quality improvement issues was rated highest in terms of importance for receiving education (4.49 ± 0.71). Clinical nutrition managers rated importance of receiving education lowest for collecting

and analyzing data regarding patient/client satisfaction (4.09 ± 0.96). Additionally, CNMs rated level of importance higher as perceived competency level increased for a majority of the tasks in this category. Therefore, expert CNMs viewed these tasks more important than proficient or competent CNMs.

Additionally, CNMs rated the level of educational needs being met for all job tasks within this category less than 3.5 on a 5-point scale. Designing and implementing quality improvement initiatives was rated lowest in regards to educational needs being met (3.38 ± 1.13). No trends were found in regards to level in educational needs met across demographic variable levels; the means across demographic variable levels were consistent with the overall sample means.

The tasks with the lowest ratings for educational needs being met (designing and implementing quality improvement initiatives) also had the largest mean gap score (5.61 ± 1.65), indicating the highest opportunity to provide education in this category. Collecting and analyzing data regarding patient/client satisfaction (4.94 ± 1.75) had the smallest gap score.

Providing Clinical Expertise

Generally, importance for receiving education was rated high for tasks within the providing clinical expertise category (above 4.10 on a 5-point scale). Importance of receiving education for developing evidence-based standards of care for patient/client outcomes and intervention protocol was rated highest (4.61 ± 0.61). Receiving education was rated lowest for evaluating and selecting nutrition-related products (4.13 ± 0.95). For the two tasks related to research activities, importance level was rated higher among those who had advanced level education. For example, for designing and conducting clinical research studies, importance of education had a mean rating of 3.63, 4.38, and 4.54 by CNMs who had obtained bachelor's degrees, some graduate work, and master's degrees, respectively. Similarly, importance of receiving education was rated higher among those who held a master's degree (4.49) or some graduate work (4.38) compared with those who held a bachelor's degree (3.75) for analyzing and reporting clinical data of research studies.

Clinical nutrition managers rated the level of educational needs being met less than 4.0 on a 5-point scale for all job tasks with the exception of developing and providing evidenced based nutrition education (4.13 ± 0.94). Clinical nutrition managers rated the level of educational needs being met lowest for designing and conducting clinical research studies (2.98

± 1.38) and analyzing and reporting clinical data of research studies (3.11 ± 1.34). For several of the tasks in this category, the level of educational needs met increased as perceived competency levels increased. Specifically levels of educational needs met were higher for expert CNMs compared with proficient and competent CNMs for the following tasks: providing nutrition expertise for foodservice operations; advancing clinical practice through mentorship, coaching, and training; analyzing and reporting clinical data of research studies; designing and conducting clinical research studies; and ensuring the appropriate use of the nutrition care process.

The two job tasks that had the lowest level of educational needs met were also two of the three job tasks with the largest mean gap scores [designing and conducting clinical research studies (5.61 ± 2.18) and [analyzing and reporting clinical data of research studies (5.66 ± 2.05)]. The other high educational priority was for developing evidence-based standards of care for patient/client outcomes and intervention protocol (5.65 ± 1.44). In this category all mean gap scores were greater than 4.5.

Managing Human Resources

The level of importance for receiving education in the managing human resources category ranged between 3.73 and 4.53. The lowest rated task in regards to importance of receiving education was scheduling employees (3.73 ± 1.10) and the highest rated task was motivating staff to perform at their highest level (4.53 ± 0.70). Importance means across demographic variable levels followed the same patterns as the overall sample means, generally scoring above a 4.0 on a 5-point scale.

The level of educational needs being met for this category of job tasks ranged between 2.98 and 3.70. Clinical nutrition managers rated the level of educational needs being met the lowest for making salary decisions (2.98 ± 1.27), and the highest for conducting staff training (3.70 ± 1.08). For several of the tasks in this category, the level of educational needs met increased as perceived competency levels increased. Specifically levels of educational needs met were higher for expert CNMs compared with proficient and competent CNMs for the following tasks: performing on-going annual performance appraisals; developing performance standards; determining staffing needs; recruiting, selecting, and promoting staff; motivating staff; and initiating conflict resolution.

The smallest mean gap score was for scheduling employees (4.39 ± 1.86), while the job tasks with the largest mean gap scores and considered to be high educational priorities included

developing competency assessment systems for clinical staff (5.86 ± 1.87), determining staffing needs (5.76 ± 1.95), motivating staff (5.76 ± 1.67), developing performance standards for clinical staff (5.67 ± 1.75), and developing productivity standards for clinical staff (5.64 ± 1.89).

Managing Financial Resources

Importance of receiving education was generally rated high in the managing financial resources category (above a 4.0 on a 5-point scale). Clinical nutrition managers rated the importance of receiving education highest for developing and managing an operating budget for clinical services (4.46 ± 0.77), while the lowest rated task was securing financial resources and physical space (4.02 ± 0.92). Additionally, as perceived competency level increased, level of importance increased for all of these task statements.

Among the eight job categories, CNMs rated the level of educational needs being met lowest for the managing financial resources category, with all job tasks rated less than 3.1 on a 5-point scale. Clinical nutrition managers rated the level of educational needs being met highest for developing, justifying and implementing programs and services (3.08 ± 1.19), and lowest for negotiating contracts for nutrition support (2.72 ± 1.24). Additionally, as perceived competency levels increased, clinical nutrition managers perceived educational needs being met higher for all job tasks in this category.

Mean gap scores were generally greatest in this category with six of the eight tasks having a mean of 5.60 or higher. This finding indicated the greatest need for education for this category of job tasks. The smallest gap score was for securing financial resources and physical space (5.34 ± 2.07), while the largest gap score was for developing and managing the operating budget for clinical services (5.97 ± 1.89). Other high educational priorities were for assessing financial performance (5.86 ± 1.82), preparing financial reports (5.85 ± 1.96), developing strategies to control costs in clinical services (5.77 ± 1.95), identifying revenue sources (5.77 ± 1.95), and developing, justifying, and implementing programs and services (5.74 ± 1.77).

Managing Information Technology

Among the eight categories, importance of receiving education was rated the highest for the tasks in the managing information technology category (above a 4.25 on a 5-point scale). Clinical nutrition managers rated identifying, evaluating, and implementing technology systems for nutrition care highest in terms of importance of receiving education (4.52 ± 0.74), and

developing work flow procedures to implement when technology is non-functional was rated the lowest (4.26 ± 0.91). Importance means across demographic variable levels (perceived competency, education level, and length of time employed as a CNM) followed the same patterns as the sample means, generally scoring above a 4.0 on a 5-point scale.

Clinical nutrition managers rated the level of educational needs being met for the managing information technology job category between 3.34 and 3.74 for analyzing data from technology systems and utilizing technology to efficiently communicate with others, respectively. No trends were identified across demographic variable levels in regards to level of educational needs being met.

Mean gap scores were greater or equal to 5.25 in this category. The task with the smallest gap score was developing work flow procedures to implement when technology is non-functional (5.25 ± 1.77), and the task with the highest educational priorities was identifying, evaluating, and implementing technology systems for nutrition care (5.72 ± 1.71).

Insert Table 5.1

Self-Efficacy

Clinical nutrition managers' self-efficacy to perform job tasks was measured for each job category on a 5-point Likert scale (0=definitely cannot do; 4=highly certain can do). Results are summarized in Table 5.2. In general, CNMs rated their self-efficacy as being moderately to highly confident that they can do the tasks (between 3.0 and 4.0 on a 5-point Likert Scale ranging 0 to 4). Clinical nutrition managers had the lowest self-efficacy rating for managing financial resources (3.14 ± 0.83). All other categories' scores clustered around a mean of approximately 3.5. Overall self-efficacy was measured on a 5-point Scale (1=very low; 5=very high). Clinical nutrition managers rated their overall self-efficacy relatively high (4.25 ± 0.72).

Insert Table 5.2

Multiple regression analysis was conducted to evaluate the relationship between categorical self-efficacy and overall self-efficacy. The regression model was found to be significant *[R^2=0.374, F(8, 190) = 14.185, p<0.001]* and is summarized in Table 5.3.

Significant predictors for overall self-efficacy included the general category self-efficacy $(\beta = 0.203, p=0.007)$ and managing financial resources self-efficacy $(\beta = 0.178, p=0.014)$.

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Insert Table 5.3

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H1: The relationship between core role activities and educational preparation predicts self-efficacy to perform the activities of CNMs.

Hypothesis 1 was partially supported. Simple regression analysis was used to evaluate the relationship between categorical mean educational gap scores and self-efficacy. A total of eight regression models were performed, including one model per job task category. Of the eight models performed, four yielded significant relationships between categorical composite mean gap scores and self-efficacy to perform the tasks in those categories. Significant findings are summarized in Table 5.4. The categories that yielded significant relationships between categorical composite mean gap scores and categorical self-efficacy included monitoring quality assurance and performance improvement $[R^2 = 0.083, F(1, 187) = 16.995, p < 0.001]$, managing human resources $[R^2 = 0.050, F(1, 112) = 5.851, p=0.017]$, managing financial resources $[R^2=0.043, F(1, 121), = 5.437, p=0.021]$, and managing information technology $[R^2 = 0.034, F(1, 172) = 6.015, p=0.015]$. All relationships were inversely related; thus as composite mean gap scores increased, self-efficacy decreased for these categories.

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Insert Table 5.4

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H2: Overall educational preparedness predicts overall self-efficacy to perform the core role activities of CNMs.

Hypothesis 2 was also partially supported. Simple regression analysis was also used to examine the relationship between categorical composite mean educational preparedness and self-efficacy. Again, eight regression models were performed. Of the eight models performed, six categories yielded significant relationships. Significant findings are summarized in Table 5.5. The categories that did not produce significant relationships included the general category and managing human resources; thus, educational preparedness did not significantly impact self-

efficacy in those two categories. Of the remaining six categories that did yield significant relationships between educational preparedness and self-efficacy, five of them were positive relationships indicating that as educational preparedness increased, self-efficacy increased. These categories included ensuring compliance with regulations and accreditation standards $[R^2 = 0.067, F(1, 190) = 13.717, p<0.001]$, monitoring quality assurance and performance improvement $[R^2 = 0.083, F(1, 199) = 18.089, p<0.001]$, providing clinical expertise $[R^2 = 0.046, F(1, 148) = 7.108, p = 0.009]$, managing financial resources $[R^2 = 0.107, F(1, 130) = 15.610, p<0.001]$, and managing information technology $[R^2 = 0.133, F(1, 180) = 27.557, p<0.001]$. The category of communicating with others generated a significant negative relationship indicating as educational preparedness increased, self-efficacy decreased $[R^2 = 0.171, F(1, 176) = 36.415, p<0.001]$.

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Insert Table 5.5

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ANCOVA was used to determine if there were significant differences in self-efficacy between education levels once means had been adjusted for the covariate of overall composite gap in education. No statistically significant difference was found between self-efficacy and education levels (baccalaureate degree, some graduate work, master's degree, doctoral degree) when adjusted for the overall composite gap in education. ANCOVA was also used to evaluate significant differences in self-efficacy between employer type (contract management and self-operated organizations) once means had been adjusted for the overall composite gap in education. Again, no significant relationship was found. ANCOVA was used to determine significant differences in self-efficacy between categories of CNMs length of employment in the role adjusting for the overall composite mean gap in education. Results of self-efficacy were significant in terms of length of time employed as a CNM when means were adjusted for the overall composite gap in education $[R^2=0.254, F(4, 50) = 2.723, p=0.041]$. Therefore, self-efficacy was influenced by length of employment in the CNM role.

An independent sample t-test was conducted to evaluate differences in overall self-efficacy based on employer type. No significant differences were found in overall self-efficacy between CNMs employed by contract management companies and self-operated organizations $[t(211) = 0.358, p=0.721]$. ANOVA procedures were also used to determine differences in

overall self-efficacy between different demographic variables including education level and length of employment as CNM. Significant differences were found in overall self-efficacy based on education level $[F(3, 209) = 3.881, p=0.010]$ and length of employment as a CNM $[F(4, 208) = 7.517, p<0.001]$. ANOVA post hoc comparisons are presented in Table 5.6. Significant differences in overall self-efficacy were found between CNMs who held a baccalaureate degree (4.04 ± 0.76) and those who had a master's degree (4.36 ± 0.66). Significant differences in overall self-efficacy were also found between CNMs who had been in the role for less than three years (3.83 ± 0.59) and those who had been in the role for 11 to 15 years (4.40 ± 0.82), 16 to 25 years (4.54 ± 0.60), and greater than 25 years (4.57 ± 0.59). Significant differences were also found between CNMs who had been in the role three to ten years (4.18 ± 0.73) and those who had been in the role 16-25 years (4.54 ± 0.60).

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Insert Table 5.6

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Job Satisfaction

Overall job satisfaction was measured on a 5-point Likert scale (1=very dissatisfied, 5=very satisfied). Clinical nutrition managers were generally satisfied with their jobs (4.18 ± 0.95). The majority (82.4%) of CNMs rated their job satisfaction as either satisfied or very satisfied. The remaining respondents rated their satisfaction as neutral (9.7%) or dissatisfied or very dissatisfied (7.9%). A change in job satisfaction was also measured on a 5-point Likert scale (1=decreased significantly, 3=stayed the same, 5=increased significantly). In general, CNMs' job satisfaction stayed the same (3.07 ± 1.04). Many CNMs (35.3%) reported job satisfaction stayed the same, while the remaining respondents reported satisfaction as either decreasing (29.8%) or increasing (34.9%).

Multiple regression analysis was performed to evaluate the relationship of categorical composite gap means on overall job satisfaction. However, the relationship was not statistically significant. Multiple regression analysis was also performed to evaluate the relationship of categorical composite educational preparedness on overall job satisfaction. Again, the relationship was not statistically significant.

Discussion

The Academy encourages dietetic practitioners to expand their management, leadership, and business skills (Academy, 2014). These skills include managing financial resources, strategic planning, problem-solving, communicating effectively, marketing, managing human resources, monitoring quality assurance and improvement processes, and managing and utilizing technology (Academy, 2014). These skills were all included within the job tasks of CNMs in the current study. Clinical nutrition managers expressed that they required education for a majority of the tasks in the audit. However, specific educational resources to prepare practitioners for the CNM role are limited.

Level of Importance of Education

The importance of education measure was a paramount variable of interest in this study so that a theoretical gap in education and preparedness for CNMs could be determined. However, additional insight is gained from an examination of this data set in an isolated state. Nearly all importance of education indices were rated at 4.0 or higher, clearly indicating that CNMs felt that all job tasks required some form of education. However, the tendency of these data to cluster around a common mean value is also not surprising given the rigorous and comprehensive development and review processes that these particular task statements underwent. Specifically, previously utilized job tasks were used as a conceptual starting place, then further validated for relevance and importance through structured focus groups, cognitive interviews, and then underwent additional expert reviews. Thus, it is logical that the most remaining job tasks and importance of education were rated high by the sample given that various CNMs experts also deemed them important from the initial and developmental phases of the study. Previous researchers have also measured perceived job importance of selected CNM tasks (Pratt, Kwon, & Rew, 2005; Witte & Messersmith). Similarly, they found that ratings of importance for job tasks were clustered around a high mean indicating that CNMs found all of the tasks to be important. Results from the current study indicate CNMs perceive that all of their job responsibilities are important and require education in order to perform the tasks successfully.

Additional analysis was conducted to compare importance means across demographic variables. Importance of receiving education for research activities increased with advanced

levels of education. This finding may indicate that those who have more experience with research activities through their graduate work likely see the importance of education in order to perform those types of tasks successfully. Those who do not have advanced degrees may have not had experience in research activities and may not find education as important given they may not be as involved in those tasks.

Data were also analyzed for self-reported competency levels. Specifically, these competency levels have been defined for clinical nutrition management practice, allowing practitioners to determine their appropriate scope of practice based on their competency level (Clark et al., 2012). Importance to receive education increased as perceived competency levels advanced for a majority of the tasks in the categories of communication, monitoring quality assurance, and managing financial resources. This finding likely indicates that those CNMs who perceive their competency lower may not be as involved with these activities, given their scope of practice and therefore views importance of receiving education lower. By definition, competent practitioners are very task-oriented managers and benefit from clear guidance on tasks; they gain skill sets as they work (Clark et al., 2012). Proficient CNMs have developed "an intuitive understanding of the role" which helps them function at a higher managerial level. Expert CNMs have the highest level of skills and knowledge, functions autonomously in the role, and demonstrates leadership and vision (Clark et al., 2012). Given that competent CNMs are generally task oriented, they may feel that they are performing these tasks without needed education, whereas proficient and expert CNMs may see the need for additional education for certain tasks so they can perform the responsibilities at an advanced, organizational level beyond just completing the tasks.

No trends were identified related to length of time employed as a CNM. This result is different than previous research findings with healthcare managers. Researchers found that healthcare managers had differences in levels of importance related to some tasks based on longevity in the position. Specifically, healthcare regulations and audits for clinical compliance were rated lower among those who had been in the position for shorter periods of time (Stowe, Haefner, Behling, 2011).

Level of Educational Needs Met

Clinical nutrition managers' perceptions of the level that educational needs were met were variable with some tasks having mean scores lower than 3.0 on a 5-point scale. Often those categories with the lowest mean scores of educational needs being met included monitoring quality assurance, managing human resources, managing financial resources, and managing information technology, thus indicating a need for additional education in these areas, which is consistent with previous research findings (Pratt et al., 2005; Witte & Messersmith, 1995). In addition to those job categories, level of educational needs met was also rated lower for tasks related to marketing nutrition services. This finding is likely due to the facility having marketing professionals who perform these duties and there is relatively little to market for nutrition services.

Additional analysis shows that the level of educational needs met for several tasks improved as self-reported competency levels increased. Therefore, those CNMs who rated their competency as experts perceived that educational needs were more highly met than proficient or competent CNMs. Conceptually, there are not training programs specific to clinical nutrition managers; therefore, they likely gain skills and knowledge through on-the-job training. By definition, competent CNMs have little or no prior experience as a manager (Clark et al., 2012); thus, it is not surprising that they would perceive level of educational needs met lower than proficient or expert CNMs, given that they have less experience with managerial tasks compared with the other levels of competency. On the other hand, expert CNMs by definition have a sound knowledge base (Clark et al., 2012); therefore, they likely perceive that their educational needs have been met at higher levels given their experience and effort to obtain that sound knowledge base. No trends were found in regards to level of educational needs being met based on length of time employed as a CNM or educational status. Witte and Messersmith (1995) also found that although advanced degrees were a common strategy to prepare for the role, those degrees did not improve perceived competency to perform tasks. These findings likely suggest that the advanced education that CNMs are receiving may not be specific to the duties that they perform in their daily role.

Educational Gaps

Of the 84 job tasks, 80 of the tasks had gap scores of greater than 4.5. Therefore, it is evident that additional educational resources for developing management skills for current and future CNMs are warranted. Many of the highest educational needs were in the three categories of ensuring compliance with regulations and accreditation standards, managing human resources, and managing financial resources. Therefore, educational efforts should focus on meeting the needs of professionals in these practice areas. These results are similar to other studies that indicated CNMs may need additional education in financial management, human resource management, information technology management, and marketing (Pratt et al., 2005; Witte and Messersmith, 1995). Similar findings have been reported in the nursing literature. Researchers found that additional education was needed for human resource management, financial management, compliance with regulations, effective communication, and information technology management (Gould et al., 2001; Care & Udod, 2003). These findings support the proposition that clinical nurse managers and CNMs likely have similar educational needs.

Currently it is unclear why CNMs perceive a gap in education. Purcell and Milner (2002) found that many factors influenced nurse managers' perceived need for additional education. These factors included perceived few programs available for nurse management development, not being encouraged to develop management skills, expectations of clinical care and administration duties did not allow time for professional development, and perception that patient care was more important than their management functions. Given the similarities between nurse managers and CNMs, these factors may also be impacting CNMs' participation in professional development opportunities to gain or enhance managerial skills.

This research did not explain why managers continue to perceive additional educational needs for ensuring compliance with regulations and managing human and financial resources. Given that CNMs are typically managers that have been promoted into the role from clinical positions, they likely have little experience with some of the managerial tasks prior to becoming a CNM. On the other hand, CNMs may have had some experience (although likely limited at the advanced level) when functioning as clinicians with other tasks in the CNM role such as communicating with others, monitoring quality assurance and patient safety, and providing clinical expertise. These findings may also support the concept that CNMs lack training or orientation to the responsibilities once accepted into the managerial role, similar to findings from

research done with nurse managers (Sherman, Bishop, Eggenberger & Karden, 2007). Additionally, these results parallel the Academy's House of Delegates priorities for making current management and leadership resources readily available to Academy members and developing additional resources to promote management and leadership skills within all areas of practice in the dietetics profession (Academy, 2014).

Researchers have investigated factors that impact nurse managers' effectiveness in their role. Knowledge and experience, level of support from administration, on-going professional development and training, and other interpersonal factors were found to positively impact their effectiveness. However, the need for training and lack of support from management hindered nurse managers' effectiveness (McKenna, Richey, Keeney, Hasson, Poulton, & Sinclair, 2008). Given that CNMs perceive the need for education in several of the job categories, this need for training is likely influencing their potential at being the most effective manager possible, which could possibly impact subordinates, patient safety, fiscal resources, and the organization.

Self-Efficacy

Categorical and overall self-efficacy were rated by CNMs. Self-efficacy for the general and managing financial resources categories significantly impacted overall self-efficacy. For the general category, several of the tasks were related to leadership of different units within the organization (clinical, foodservice, multiple units, other departmental units, etc.). This finding may indicate that leadership self-efficacy significantly influences overall self-efficacy to perform in the CNM role. Additionally, those tasks within the managing financial resources category had the highest mean gap score ratings, indicating high opportunities to provide educational resources. Clinical nutrition managers may feel pressure to do these tasks effectively given the importance of the duties within the healthcare environment. The lack of education in this area of job functions may impact confidence level in performing them adequately; thus impacting categorical and overall self-efficacy.

Hypotheses 1 and 2 were partially supported. Self-efficacy decreased when composite mean gap scores increased for monitoring quality assurance and performance improvement, managing human resources, managing financial resources, and managing information technology. Therefore, self-efficacy decreased when CNMs perceived large educational gaps specifically in those categories. Higher gap scores indicate a higher need for education. These

findings indicate that self-efficacy for specific job tasks is correlated with higher needs for education in these areas. It remains unclear why mean gap scores impact self-efficacy for some categories and not for others. Findings may indicate that CNMs view tasks as more important or risker than tasks in other categories; therefore, performing these tasks poorly may have larger negative impacts on the patients they serve, the employees they supervise, and the organization. These potential consequences could lead to decreased confidence levels of performing tasks if they are not adequately prepared to do the activities.

Also, self-efficacy was positively correlated with educational preparedness for ensuring compliance with regulations and accreditation standards, monitoring quality assurance and performance improvement, providing clinical expertise, managing financial resources, and managing information technology. This finding indicates that the higher the perceptions of CNMs' educational preparedness, the higher their self-efficacy to perform the tasks in those categories. These findings are similar to other studies conducted outside the dietetics profession. For example, Bakken et al. (2010) found that self-efficacy significantly increased in researchers after educational interventions were given. Williams and Subich (2006) found that learning activities significantly predicted self-efficacy. Other researchers found that participating in training programs improved perceptions of competency level for performing management and leadership skills (Krejci & Malin, 1997; Martin, McCormack, Fitzsimons, & Spirig, 2012; Omoike, Stratton, Brooks, Ohlson, & Storfjell, 2011).

Additionally, researchers also found that participating in educational and professional development opportunities was a key factor in developing into a successful clinical nurse leader. They postulated that self-efficacy was an important component of this process (Adeniran, Bhattacharya, & Adeniran, 2012). Educational sessions have also been found to improve managerial knowledge and influence nurse managers' behaviors (Davies, 1996). Therefore, to enhance CNMs' self-efficacy, it may be important to provide additional educational resources in the areas with the largest gaps including ensuring compliance with regulations and accreditation standards, managing human resources, and managing financial resources. This enhanced self-efficacy will also likely promote transitioning into a more successful clinical leader and initiate more effective managerial behaviors.

Self-efficacy was impacted by the length of time that the CNM was in the role. Generally, those practitioners who were in the role longer than 10 years had higher self-efficacy

to perform responsibilities than those who were in the role for less than three years. Similarly, Bandura (1977) suggested that successes and personal accomplishments increase self-efficacy given that they indicate individuals becoming more proficient in skills. CNMs who are in the role longer may gain confidence in their ability to complete responsibilities successfully because they have had more opportunity to have completed those tasks successfully. They have also experienced more opportunity for more professional accomplishments given the length of time in the role. These findings are similar to results from Sherman, Bishop, Eggenberger, and Karden (2007) who reported that clinical nurse managers lacked training or orientation to the role when they first accept the managerial role. Clinical nutrition managers who have been in the role for less than three years are likely to still be sensitive to the impact of little training or orientation they received when starting in the role. The gap in education in some job categories is likely influencing perceived self-efficacy. Those CNMs who have been in the role longer may have gained on-the-job experience and professional continuing education that has increased their self-efficacy to perform in the role. This concept is similar to findings by Witte and Messersmith (1995) who reported that work experience was positively correlated with perceived improvements in competency in performing required responsibilities.

Clinical nutrition managers with master's degrees also had higher self-efficacy than those who held a baccalaureate degree. This result contradicts those of Witte and Messersmith (1995) who found that although gaining advanced degrees was a strategy used by CNMs for skill development, advanced degrees were not correlated with increased perceived competency levels. Advanced degrees may not necessarily teach specific skills directly related to CNM job tasks. Therefore, it may not impact perceived competency. However improved critical thinking and problem solving skills are often gained through advanced degrees, which are necessary skills for managers in all situations. Thus, these general skills gained through advanced degrees likely improve self-efficacy to perform in the CNM role.

Job Satisfaction

Clinical nutrition managers were generally satisfied with their jobs and their job satisfaction had not changed significantly in the last six months. These findings were similar to results of Sauer, Howells, and Shanklin (in press) and Sauer et al. (2010) who found that CNMs were generally satisfied with their jobs. However, Sauer et al. (2010) found that CNMs were

significantly less satisfied than other types of managers who were registered dietitians. Categorical educational preparedness and the educational gap did not significantly correlate with overall job satisfaction. This finding may indicate that CNMs have accepted that they are not completely prepared for the CNM role but must learn through on-the-job training and experience. The data may also suggest that there are factors that impact CNM job satisfaction other than educational preparedness. For example, Sauer et al. (in press) validated 24 factors that influenced CNM job satisfaction.

Conclusions and Future Research

This study was a first effort at exploring clinical nutrition management educational needs and priorities through a professional audit. The audit assessed CNMs perceptions of importance of education, level of educational preparedness and the gap between the two for CNMs job responsibilities. It also describes the relationships between educational preparedness and self-efficacy. Generally, CNMs found it important to receive education for all job tasks in order to perform them successfully. For the categories of communication, monitoring quality assurance, and managing financial resources, expert CNMs found receiving education to perform the tasks successfully more important compared with proficient and competent CNMs. Educational preparedness varied for job tasks. Level of educational needs met were rated higher by expert CNMs for several of the tasks within the categories of providing clinical expertise, managing human resources, and general, and all of the tasks in the managing financial resources category. The gap between importance and educational needs met indicated that CNMs found a need for education for a majority of the job tasks. The highest educational priorities were found in the categories of ensuring compliance with regulations and accreditations standards and managing human and financial resources. These findings indicate an opportunity for development of educational resources specifically for CNMs to better prepare them for the role and responsibilities.

These results can be applied directly to practice. Clinical nutrition managers can benchmark their professional development and determine knowledge and skills they need to improve upon. Aspiring CNMs may also use these results to determine continuing education strategies. Educators can use the results to develop professional continuing educational materials specific to CNMs, including graduate level coursework, certification programs, mentoring

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programs, and professional workshops or seminars for continuing education units. Online programs may best accommodate the busy work schedules of CNMs. It is also plausible that educational materials may improve self-efficacy of aspiring and current CNMs.

Given that there were some differences across pre-defined competency levels in both level of importance of education and level of educational needs met, it may be beneficial to establish an educational framework to accommodate different competency levels of CNMs. For example, a graduate certificate program could be established that provides base knowledge specifically for those who aspire to become a CNM and managers at the competent level. Graduate certificate programs through universities are typically 12-20 credit hours. Topic areas for the graduate certificate program would focus on categories that had the highest mean gap scores including ensuring compliance with regulations and accreditation standards and managing human and financial resources. Other areas of focus for the graduate certificate program would include those areas where competent managers rated the level of educational needs met lowest including providing clinical expertise and the general category. Given that the general category had many tasks that focused on providing leadership to various departments within healthcare, leadership may be the focus of that topic area. Research topics would be another area of importance for CNMs. The topics of designing and conducting clinical outcome studies and evaluating and interpreting results of clinical outcome studies would be included within the Advanced Clinical Dietetics course. Figure 5.1 outlines the potential coursework to earn a graduate certificate in clinical nutrition management.

Figure 5.1-Graduate Certificate Program in Clinical Nutrition Management

Graduate Certificate in Clinical Nutrition Management

15 Credit hours

Healthcare Administration (Regulations, Accreditation, and Reimbursement)

Financial Management in Dietetics

Human Resource Management

Advanced Clinical Dietetics

Leadership in Dietetics

For proficient and expert managers, educational modules for advanced-level knowledge and hands-on experiences for skill development could be developed. Modules could be developed focusing on the eight job categories of the CNM role. Clinical nutrition managers could evaluate their current scope of practice based on the Standards of Professional Performance for Clinical Nutrition Managers (Clark et al., 2012) to determine the modules they should complete for professional development. Figure 5.2 outlines eight modules for clinical nutrition managers.

Figure 5.2-Professional Continuing Education Series for Clinical Nutrition Managers
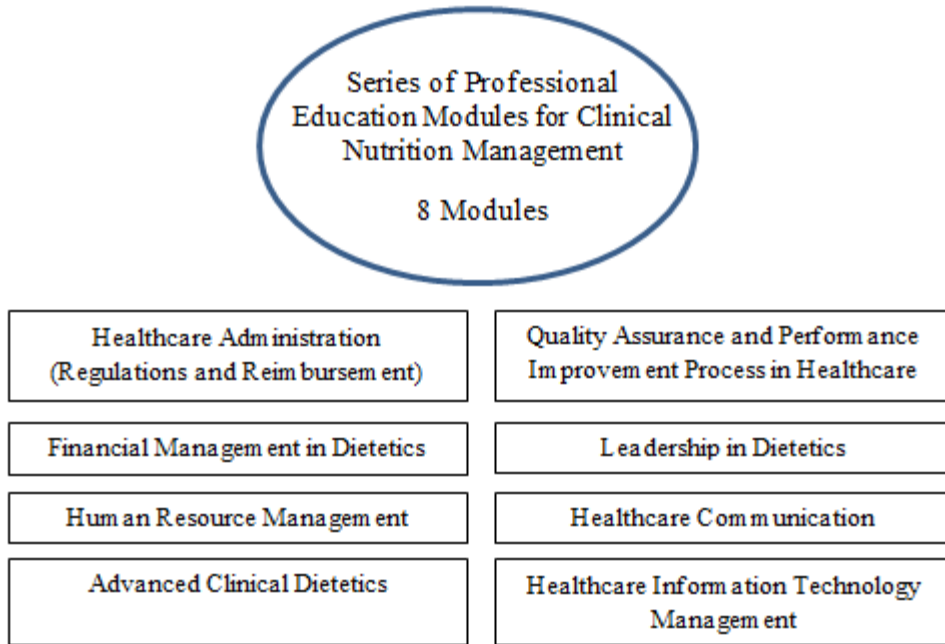
Additional research should be conducted to determine reasons CNMs perceive a gap in education for certain areas and educational programing and methods that CNMs would find the most beneficial. Research should also evaluate methods and specific strategies that enhance CNMs self-efficacy, factors that may impact self-efficacy to perform in the CNM role other than educational preparedness, and methods to enhance overall job satisfaction.

Limitations

The limitations of the current study include using the CNM DPG as the research population. Although it was requested that CNMs forward the survey to other CNMs who may not be members of the CNM DPG, only seven participants were not members of the DPG. There is likely a greater population of CNMs who are not members or adequately represented in this study. However, there is no known efficient and effective method for reaching those non-DPG members. Therefore, external validity was impacted and results cannot be generalized to those CNMs who are not members of the CNM DPG. Non-response bias is likely present. Those who participated in the survey may respond differently than those who chose not to participate. Another limitation was survey length and participant drop-out rate. Given that the survey was an audit of practice, it was essential for the instrument to be comprehensive; therefore, the survey

was quite extensive and may have led to the large drop-out rate. Additionally, given that the survey was lengthy, tasks were not explored that went beyond the scope of what is generally thought to be in the clinical nutrition management area of practice; therefore, it is unknown if there are subgroups in clinical nutrition management practice that are involved in tasks less frequently recognized as responsibilities in this role.

Table 5.1-Importance of Education, Level that Educational Needs were Met, and the Gap between Importance and the Level Needs were Met

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
General (α1=0.85; α2=0.90) [a]													
Develop clinical standards and procedures to apply current evidence-based nutrition knowledge (n=309)	0.0	1.3	5.5	22.3	70.9	4.63 ± 0.65	2.6	9.7	30.2	32.1	25.3	3.68 ± 1.04	5.65 ± 1.36
Provide leadership for clinical nutrition services (n=308)	0.6	0.3	6.2	31.2	61.7	4.53 ± 0.69	3.6	13.8	28.5	31.1	23.0	3.56 ± 1.10	5.57 ± 1.34
Manage all or some clinical operations (n=311)	0.3	1.0	8.4	32.2	58.2	4.47 ± 0.72	3.6	10.4	28.9	33.4	23.7	3.63 ± 1.06	5.39 ± 1.37
Develop strategic plans (n=309)	1.6	2.3	14.9	41.1	40.1	4.16 ± 0.87	8.3	22.1	35.3	23.4	10.9	3.07 ± 1.11	5.32 ± 1.72
Collaborate with others to develop and implement a marketing plan for nutrition services (n=284)	2.1	3.5	19.0	38.7	36.6	4.04 ± 0.94	15.5	19.4	36.4	17.0	11.7	2.90 ± 1.20	5.27 ± 1.94
Provide leadership for clinical programs across multiple organizational units (n=279)	2.5	2.9	16.8	36.6	41.2	4.11 ± 0.96	11.2	17.7	32.5	24.5	14.1	3.13 ± 1.19	5.16 ± 1.78
Identify market trends to implement and provide competitive services (n=287)	1.4	4.9	19.9	39.7	34.1	4.00 ± 0.93	13.4	22.3	33.2	18.4	12.7	2.95 ± 1.21	5.14 ± 1.83
Provide medical nutrition therapy to clients/patients (n=301)	2.3	1.0	5.6	14.0	77.1	4.62 ± 0.83	0.7	1.3	10.4	28.9	58.7	4.44 ± 0.79	4.98 ± 1.13
Manage all or some functional operations within foodservice operations (n=288)	2.8	4.5	16.0	31.9	44.8	4.11 ± 1.01	2.5	6.0	33.3	33.3	24.8	3.72 ± 0.99	4.73 ± 1.52
Provide leadership for functional areas within foodservice operations (n=277)	2.9	3.6	17.3	36.1	40.1	4.07 ± 0.99	2.6	6.6	39.7	28.3	22.8	3.62 ± 0.99	4.72 ± 1.49
Manage all or some functional areas within other organizational departments (n=238)	12.2	8.8	23.5	26.9	28.6	3.51 ± 1.32	13.6	17.4	35.3	16.6	17.0	3.06 ± 1.25	4.19 ± 1.97

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category

[b]Mean of a 5-point importance scale 1=Low importance; 5=High importance

[c]Mean of a 5-point scale 1=completely unmet; 5=completely met

[d]Mean Gap between importance of education and level that education was met; calculated using Ulwick (2002) opportunity algorithm = Importance + (Importance-Satisfaction) for each individual participant and mean was calculated; Value can be between 1 and 9

Table 5.1 (continued)—Importance of Education, Level that Educational Needs were Met, and the Gap between Importance and the Level that Needs were Met

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
Ensuring compliance with regulations and accreditation standards (α1=0.90; α2=0.93)[a]													
Develop policies and procedures for optimal reimbursement of nutrition services (n=230)	1.3	3.0	11.7	23.9	60.0	4.38 ± 0.90	25.2	23.5	26.1	14.3	10.9	2.62 ± 1.30	6.16 ± 2.08
Identify regulations impacting coding and billing of nutrition services (n=244)	1.2	2.9	12.3	22.1	61.5	4.40 ± 0.90	23.0	24.7	24.3	16.5	11.5	2.69 ± 1.31	6.14 ± 2.08
Identify nutrition-related standards and regulations (n=261)	0.0	0.0	5.4	29.1	65.5	4.60 ± 0.59	5.7	11.8	29.8	30.9	21.8	3.51 ± 1.13	5.71 ± 1.42
Create and maintain nutrition-related policies and procedures that are in compliance with accrediting agencies and state and federal regulations (n=261)	0.0	0.0	7.3	29.1	63.6	4.56 ± 0.63	5.8	12.7	31.3	29.7	20.5	3.46 ± 1.13	5.68 ± 1.48
Prepare regulatory reports for clinical services (n=249)	2.0	2.4	14.5	32.5	48.6	4.23 ± 0.93	10.5	10.5	37.2	23.9	17.8	3.28 ± 1.19	5.27 ± 1.76
Monitor staff compliance with organizational policies and procedures (n=258)	0.8	3.1	11.2	33.3	51.6	4.32 ± 0.85	4.2	11.5	31.4	32.6	20.3	3.53 ± 1.07	5.22 ± 1.64
Document and evaluate regulatory data required by organization (n=258)	1.2	2.7	15.5	31.8	48.8	4.24 ± 0.89	6.6	12.4	37.1	25.9	18.1	3.37 ± 1.11	5.21 ± 1.68
Assess the effectiveness of chart audits to ensure the appropriate utilization of the nutrition care process (n=259)	0.4	2.3	16.2	30.9	50.2	4.28 ± 0.85	7.7	10.0	29.7	28.6	23.9	3.51 ± 1.18	5.17 ± 1.68
Develop emergency and disaster policies and procedures (n=232)	0.9	5.2	21.6	25.0	47.4	4.13 ± 0.98	10.3	17.6	32.2	21.0	18.9	3.21 ± 1.23	5.15 ± 1.93
Review and approve patient menus (n=249)	1.6	3.6	14.9	29.3	50.6	4.24 ± 0.94	2.8	4.5	22.7	33.2	36.8	3.97 ± 1.02	4.71 ± 1.39
Review and approve diet manual (n=253)	4.0	6.7	19.0	28.5	41.9	3.98 ± 1.11	2.8	6.4	25.1	30.3	35.5	3.89 ± 1.05	4.42 ± 1.58

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category
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[d]Mean Gap between importance of education and level that education was met; calculated using Ulwick (2002) opportunity algorithm = Importance + (Importance-Satisfaction) for each individual participant and mean was calculated; Value can be between 1 and 9

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
Communicating (α1=0.88; α2=0.94)[a]													
Advocate the value of nutrition services to key stakeholders (n=228)	0.4	0.9	7.5	28.1	63.2	4.53 ± 0.71	9.3	14.5	27.8	27.3	21.1	3.37 ± 1.23	5.72 ± 1.70
Identify and inform clinicians of current evidence-based nutrition knowledge (n=237)	0.4	0.8	5.5	23.2	70.0	4.62 ± 0.67	2.5	3.8	25.6	35.3	32.8	3.92 ± 0.98	5.38 ± 1.28
Communicate nutrition information to healthcare stakeholders (n=230)	0.9	2.2	9.6	32.2	55.2	4.39 ± 0.82	6.1	9.6	28.1	32.5	23.7	3.58 ± 1.13	5.27 ± 1.60
Develop and maintain effective communication channels between clinical services and other healthcare professionals and departments (n=236)	1.3	0.4	13.1	28.0	57.2	4.39 ± 0.83	3.8	6.7	30.7	32.4	26.5	3.71 ± 1.05	5.21 ± 1.55
Inform clinicians of pertinent evidence-based information regarding the department and organization (n=235)	0.9	0.4	12.8	34.0	51.9	4.36 ± 0.78	3.4	4.7	33.5	31.3	27.0	3.74 ± 1.02	5.10 ± 1.43
Create and facilitate nutrition-related committee(s) (n=218)	0.9	2.3	19.3	37.2	40.4	4.14 ± 0.87	6.8	10.5	36.8	24.5	21.4	3.43 ± 1.14	4.98 ± 1.62
Serve as an interdisciplinary and interdepartmental liaison within the healthcare team (n=234)	1.3	1.7	15.8	31.6	49.6	4.26 ± 0.88	2.1	6.0	31.1	34.5	26.4	3.77 ± 0.98	4.95 ± 1.52
Distribute pertinent nutrition-related information to the community (n=216)	3.2	3.7	20.8	30.1	42.1	4.04 ± 1.04	2.3	6.0	27.2	32.7	31.8	3.86 ± 1.01	4.46 ± 1.51

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category
[b]Mean of a 5-point importance scale 1=Low importance; 5=High importance
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Table 5.1 (continued)—Importance of Education, Level that Educational Needs were Met, and the Gap between Importance and the Level that Needs were Met

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
Monitoring quality assurance/ performance improvement (α1=0.92; α2=0.97)[a]													
Design and implement quality improvement initiatives (n=225)	0.0	1.3	9.3	30.2	59.1	4.47 ± 0.72	7.4	12.2	33.2	29.7	17.5	3.38 ± 1.13	5.61 ± 1.65
Evaluate quality improvement data (n=224)	0.4	0.0	8.5	33.9	57.1	4.47 ± 0.69	5.7	12.8	33.9	30.0	17.6	3.41 ± 1.10	5.59 ± 1.62
Identify quality improvement issues (n=228)	0.4	0.0	9.6	30.3	59.6	4.49 ± 0.71	5.7	11.3	31.7	30.9	20.4	3.49 ± 1.11	5.57 ± 1.60
Identify process improvement opportunities (n=221)	0.5	0.0	8.6	36.7	54.3	4.44 ± 0.69	5.2	14.0	34.1	26.6	20.1	3.42 ± 1.12	5.52 ± 1.52
Report results of quality improvement activities (n=224)	0.9	0.4	10.3	34.4	54.0	4.40 ± 0.76	6.7	12.4	32.4	29.3	19.1	3.42 ± 1.13	5.49 ± 1.63
Develop, implement, and evaluate systems to ensure patient safety (n=219)	0.9	0.5	13.7	29.7	55.3	4.38 ± 0.81	6.3	9.9	34.5	27.8	21.5	3.48 ± 1.13	5.34 ± 1.63
Develop and implement action plans to maintain/improve patient/client satisfaction (n=215)	1.9	0.9	19.5	33.0	44.7	4.18 ± 0.91	6.0	10.6	38.1	26.6	18.8	3.42 ± 1.09	5.05 ± 1.71
Collect and analyze data regarding patient/client satisfaction (n=212)	1.9	2.8	22.2	30.2	42.9	4.09 ± 0.96	5.6	9.3	40.0	24.2	20.9	3.46 ± 1.09	4.94 ± 1.75

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category
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Table 5.1 (continued)—Importance of Education, Level that Educational Needs were Met, and the Gap between Importance and the Level that Needs were Met

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
Providing clinical expertise (α1=0.89; α2=0.92)[a]													
Analyze and report clinical data of research studies (n=171)	1.8	3.5	13.5	24.6	56.7	4.31 ± 0.95	17.9	12.1	29.5	22.0	18.5	3.11 ± 1.34	5.66 ± 2.05
Develop evidence-based standards of care for patient/client outcomes and intervention protocol (n=218)	0.0	0.0	6.9	24.8	68.3	4.61 ± 0.61	4.1	10.0	30.3	32.1	23.5	3.61 ± 1.08	5.65 ± 1.44
Design and conduct clinical research studies (n=166)	3.0	4.2	14.5	22.9	55.4	4.23 ± 1.04	22.4	11.2	30.0	19.4	17.1	2.98 ± 1.38	5.61 ± 2.18
Ensure the appropriate use of the nutrition care process (n=218)	0.0	0.0	7.8	26.6	65.6	4.58 ± 0.63	6.0	6.0	20.7	37.3	30.0	3.79 ± 1.12	5.43 ± 1.45
Provide nutrition expertise to other healthcare professionals, administration, and policy makers (n=219)	0.5	0.5	9.1	29.7	60.3	4.49 ± 0.72	5.9	5.5	27.3	35.9	25.5	3.70 ± 1.09	5.36 ± 1.48
Advance clinical practice through mentorship, coaching, and training of staff (n=220)	0.0	0.5	9.5	28.6	61.4	4.51 ± 0.69	5.0	5.5	31.8	32.3	25.5	3.68 ± 1.07	5.33 ± 1.63
Develop and provide evidence-based nutrition education (n=214)	0.0	0.9	8.4	25.2	65.4	4.55 ± 0.69	1.9	2.8	18.5	33.8	43.1	4.13 ± 0.94	5.06 ± 1.18
Provide clinical nutrition leadership on committees (n=221)	0.9	2.3	19.5	25.8	51.6	4.25 ± 0.91	3.7	3.2	31.0	31.5	32.4	3.66 ± 1.02	4.98 ± 1.58
Establish and manage facility's nutrition support formulary (n=213)	0.5	1.9	16.4	33.3	47.9	4.26 ± 0.83	3.2	5.1	28.2	26.4	37.0	3.89 ± 1.07	4.83 ± 1.41
Provide nutrition expertise for foodservice operations (n=212)	2.8	1.4	11.3	30.2	54.2	4.32 ± 0.93	2.8	1.9	25.5	35.8	34.0	3.96 ± 0.96	4.81 ± 1.37
Evaluate and select nutrition-related products (n=216)	0.9	4.6	20.4	29.2	44.9	4.13 ± 0.95	1.9	3.2	31.0	31.5	32.4	3.89 ± 0.96	4.64 ± 1.50

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category
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Table 5.1 (continued)—Importance of Education, Level that Educational Needs were Met, and the Gap between Importance and the Level that Needs were Met

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
Managing human resources (α1=0.97; α2=0.98)[a]													
Develop competency assessment systems (n=206)	0.5	1.9	10.7	27.7	59.2	4.43 ± 0.80	14.6	18.4	28.6	20.9	17.5	3.08 ± 1.30	5.86 ± 1.87
Determine staffing needs (n=205)	1.0	2.9	10.7	27.3	58.0	4.39 ± 0.87	16.4	15.9	25.6	23.7	18.4	3.12 ± 1.34	5.76 ± 1.95
Motivate staff (n=208)	0.0	1.0	9.1	26.0	63.9	4.53 ± 0.70	10.0	11.5	32.5	27.3	18.7	3.33 ± 1.20	5.76 ± 1.67
Develop performance standards for clinical staff (n=209)	0.0	1.0	12.0	29.7	57.4	4.44 ± 0.74	10.6	17.3	27.9	25.5	18.8	3.25 ± 1.24	5.67 ± 1.75
Develop productivity standards for clinical staff (n=207)	0.5	1.4	15.9	27.5	54.6	4.34 ± 0.83	13.6	16.5	28.2	25.2	16.5	3.15 ± 1.27	5.64 ± 1.89
Initiate conflict resolution (n=204)	0.0	1.5	13.2	29.4	55.9	4.40 ± 0.77	9.8	15.2	32.8	25.5	16.7	3.24 ± 1.19	5.59 ± 1.75
Recruit, select, and promote staff (n=209)	0.0	3.3	15.8	26.3	54.5	4.32 ± 0.86	10.5	12.9	30.0	24.3	22.4	3.35 ± 1.25	5.44 ± 1.83
Conduct productivity studies (n=196)	1.0	3.1	17.3	29.1	49.5	4.23 ± 0.91	13.4	17.0	26.3	25.8	17.5	3.17 ± 1.28	5.40 ± 1.96
Conduct on-going and annual performance appraisals (n=213)	0.0	1.9	16.0	29.6	52.6	4.33 ± 0.81	9.8	11.7	27.1	30.8	20.6	3.41 ± 1.22	5.39 ± 1.76
Administer discipline (n=209)	1.0	2.4	18.7	29.7	48.3	4.22 ± 0.90	10.0	17.7	30.6	23.0	18.7	3.22 ± 1.23	5.36 ± 1.89
Terminate staff (n=201)	0.5	4.0	23.9	26.4	45.3	4.12 ± 0.94	15.4	15.4	31.3	20.4	17.4	3.09 ± 1.29	5.28 ± 1.98
Identify noncompliant behavior (n=210)	0.5	2.4	20.5	29.5	47.1	4.20 ± 0.88	8.1	12.9	31.6	26.3	21.1	3.39 ± 1.19	5.16 ± 1.79
Develop job descriptions (n=206)	0.5	3.9	19.9	27.2	48.5	4.19 ± 0.92	8.2	13.0	29.5	31.4	17.9	3.38 ± 1.16	5.14 ± 1.85
Mentor dietetic interns (n=201)	0.0	0.5	15.9	37.3	46.3	4.29 ± 0.75	5.9	8.4	27.7	30.7	27.2	3.65 ± 1.14	5.09 ± 1.54
Foster career advancement plans (n=194)	1.5	3.1	23.7	29.9	41.8	4.07 ± 0.96	9.8	16.5	31.4	24.7	17.5	3.24 ± 1.21	5.08 ± 1.86
Conduct staff training (n=209)	1.0	1.4	12.9	35.9	48.8	4.30 ± 0.82	4.3	8.2	26.9	34.1	26.4	3.70 ± 1.08	5.00 ± 1.50
Develop and manage employee orientation for staff (n=209)	1.0	3.8	21.1	30.1	44.0	4.12 ± 0.94	9.2	10.1	30.4	29.0	21.3	3.43 ± 1.20	4.99 ± 1.75
Coordinate interns' supervised practice (n=199)	0.0	1.5	21.1	34.7	42.7	4.19 ± 0.82	6.0	10.9	28.9	29.9	24.4	3.56 ± 1.15	4.99 ± 1.57
Make salary decisions (n=171)	1.8	5.8	30.4	25.7	36.3	3.89 ± 1.03	17.0	15.8	35.1	17.0	15.2	2.98 ± 1.27	4.98 ± 2.00
Monitor labor relations (n=171)	2.3	4.7	26.3	23.4	43.3	4.01 ± 1.05	11.7	13.5	31.6	26.3	17.0	3.23 ± 1.22	4.95 ± 1.94
Schedule employees (n=208)	2.9	4.7	26.3	23.4	43.3	3.73 ± 1.10	5.8	9.2	35.3	25.1	24.6	3.54 ± 1.13	4.39 ± 1.86

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category
[b]Mean of a 5-point importance scale 1=Low importance; 5=High importance
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[d]Mean Gap between importance of education and level that education was met; calculated using Ulwick (2002) opportunity algorithm = Importance + (Importance-Satisfaction) for each individual participant and mean was calculated; Value can be between 1 and 9

Table 5.1 (continued)—Importance of Education, Level that Educational Needs were Met, and the Gap between Importance and the Level that Needs were Met

Activity	Importance of Education						Level Educational Needs Were Met						Gap Mean[d] ± SD
	% Low (1)	% (2)	% (3)	% (4)	% High (5)	Mean[b] ± SD	% Unmet (1)	% (2)	% (3)	% (4)	% Met (5)	Mean[c] ± SD	
Managing financial resources (α1=0.94; α2=0.97)[a]													
Develop and manage operating budget for clinical services (n=189)	0.0	2.1	10.6	26.5	60.8	4.46 ± 0.77	14.1	23.0	29.3	19.9	13.6	2.96 ± 1.24	5.97 ± 1.89
Assess financial performance of area of responsibility (n=181)	0.0	1.7	11.6	33.1	53.6	4.39 ± 0.76	12.8	23.9	30.6	18.3	14.4	2.98 ± 1.23	5.86 ± 1.82
Prepare financial reports (n=166)	0.6	1.2	15.1	30.1	53.0	4.34 ± 0.82	19.9	21.7	25.9	16.3	16.3	2.87 ± 1.35	5.85 ± 1.96
Develop strategies to control costs in clinical services (n=198)	0.0	1.5	14.1	29.3	55.1	4.38 ± 0.78	14.2	20.8	32.0	17.3	15.7	2.99 ± 1.26	5.77 ± 1.90
Identify revenue sources (n=192)	0.5	2.1	14.6	32.8	50.8	4.30 ± 0.83	18.3	20.4	31.4	17.8	12.0	2.85 ± 1.26	5.77 ± 1.95
Develop, justify, and implement programs and services (n=200)	0.0	1.5	12.0	30.0	56.5	4.42 ± 0.76	12.4	15.9	35.3	23.4	12.9	3.08 ± 1.19	5.74 ± 1.77
Negotiate contracts for nutrition support (n=151)	1.3	5.3	21.9	25.8	45.7	4.09 ± 1.00	21.6	20.3	32.7	15.7	9.8	2.72 ± 1.24	5.57 ± 2.17
Secure financial resources and physical space (n=164)	0.0	4.3	28.7	28.0	39.0	4.02 ± 0.92	18.8	19.4	35.2	16.4	10.3	2.80 ± 1.22	5.34 ± 2.07
Managing information technology (α1=0.89; α2=0.94)[a]													
Identify, evaluate, and implement technology systems for nutrition care (n=206)	0.0	1.0	11.7	21.8	65.5	4.52 ± 0.74	8.7	16.0	27.7	23.8	23.8	3.38 ± 1.25	5.72 ± 1.71
Analyze data from technology systems (n=198)	0.0	2.5	12.1	26.8	58.6	4.41 ± 0.80	9.5	16.0	27.5	25.0	22.0	3.34 ± 1.25	5.57 ± 1.74
Train staff on utilizing the electronic medical record (n=203)	0.0	2.0	15.3	27.1	55.7	4.36 ± 0.81	8.8	13.2	27.0	26.5	24.5	3.45 ± 1.24	5.43 ± 1.78
Utilize technology to disseminate nutrition information (n=203)	1.0	1.5	12.8	28.6	56.2	4.37 ± 0.84	7.0	9.5	29.0	30.0	24.5	3.56 ± 1.16	5.33 ± 1.61
Utilize technology to efficiently communicate with others (n=212)	0.9	1.4	14.2	22.2	61.3	4.42 ± 0.85	3.3	12.3	23.1	30.2	31.1	3.74 ± 1.13	5.29 ± 1.61
Develop work flow procedures to implement when technology is non-functional (n=202)	1.5	2.0	16.3	29.7	50.5	4.26 ± 0.91	7.4	13.7	31.4	25.0	22.5	3.42 ± 1.19	5.25 ± 1.77

[a]α1 is Cronbach's alpha of Importance of Education for the category; α2 is Cronbach's alpha of Educational Needs Met for the category

[b]Mean of a 5-point importance scale 1=Low importance; 5=High importance

[c]Mean of a 5-point scale 1=completely unmet; 5=completely met

[d]Mean Gap between importance of education and level that education was met; calculated using Ulwick (2002) opportunity algorithm = Importance + (Importance-Satisfaction) for each individual participant and mean was calculated; Value can be between 1 and 9

Table 5.2-Categorical and Overall Mean Self-Efficacy Scores of Clinical Nutrition Managers

Job Category	Mean ± SD[a]
Managing Human Resources (n=216)	3.63 ± 0.56
General (n=313)	3.62 ± 0.68
Providing Clinical Expertise (n=223)	3.58 ± 0.58
Monitoring Quality Assurance and Performance Improvement (n=232)	3.54 ± 0.66
Managing Information Technology (n=215)	3.54 ± 0.62
Communicating with Others (n=237)	3.53 ± 0.67
Ensuring Compliance with Regulations and Accreditation Standards (n=265)	3.44 ± 0.69
Managing Financial Resources (n=217)	3.14 ± 0.83
Overall Self-Efficacy[b] (n=216)	4.25 ± 0.72

[a]Self-Efficacy was measured on a 5-point scale (0=definitely cannot do; 4=highly certain can do)
[b]Overall Self-efficacy measured on a 5-point Likert Scale (1= very low; 5= very high)

Table 5.3-Regression Model of Categorical Self-Efficacy on Overall Self-Efficacy

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	37.701	8	4.713	14.185	.000
	Residual	63.123	190	.332		
	Total	100.824	198			

	Standardized Coefficients			
	Model	**Beta**	**t**	**Sig.**
1	Constant		2.889	.004
	General Self-Efficacy	.203	2.716	.007*
	Compliance with Regulations Self-Efficacy	.088	1.169	.244
	Communicating with Others Self-Efficacy	-.012	-.120	.905
	Monitoring Quality Assurance Self-Efficacy	.091	.999	.319
	Providing Clinical Expertise Self-Efficacy	.158	1.852	.066
	Managing Human Resources Self-Efficacy	.049	.631	.529
	Managing Financial Resources Self-Efficacy	.178	2.487	.014*
	Managing Information Technology Self-Efficacy	.083	1.099	.273

Note: R^2=.374; Adjusted R^2=.348

Table 5.4-Regression Model of Categorical Composite Gap Scores on Clinical Nutrition Managers' Categorical Self-Efficacy

Category: Monitoring Quality Assurance/Performance Improvement[a]

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	6.676	1	6.676	16.995	.000
	Residual	73.461	187	.393		
	Total	80.138	188			

	Standardized Coefficients		
	Model	**Beta**	**t**	**Sig.**
1	Constant		22.973	.000
	Quality Assurance Composite Mean Gap Score	-.289	-4.123	.000

Category: Managing Human Resources[b]

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	1.826	1	1.826	5.851	.017
	Residual	34.955	112	.312		
	Total	36.781	113			

	Standardized Coefficients		
	Model	**Beta**	**t**	**Sig.**
1	Constant		19.804	.000
	Ensuring Compliance Composite Mean Gap Score	-.223	-2.419	.017

Category: Managing Financial Resources[c]

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	2.981	1	2.981	5.437	.021
	Residual	66.336	121	.548		
	Total	69.317	122			

	Standardized Coefficients		
	Model	**Beta**	**t**	**Sig.**
1	Constant		15.660	.000
	Financial Resources Composite Mean Gap Score	-.207	-2.332	.021

Category: Managing Information Technology[d]

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	1.722	1	1.722	6.015	.015
	Residual	49.243	172	.286		
	Total	50.966	173			

	Standardized Coefficients		
	Model	**Beta**	**t**	**Sig.**
1	Constant		25.423	.000
	Information Technology Composite Mean Gap Score	-.184	-2.453	.015

[a]Model Summary: $R^2=0.083$; Adjusted $R^2=0.078$
[b]Model Summary: $R^2=0.050$; Adjusted $R^2=0.041$
[c]Model Summary: $R^2=0.043$; Adjusted $R^2=0.035$
[d]Model Summary: $R^2=0.034$; Adjusted $R^2=0.028$

Table 5.5-Regression Model of Categorical Educational Preparedness on Clinical Nutrition Managers' Categorical Self-Efficacy

Category: Ensuring Compliance with Regulations and Accreditation Standards[a]					
Model	Sum of Squares	df	Mean Square	F	Significance
1 Regression	7.078	1	7.078	13.717	.000
Residual	98.042	190	.516		
Total	105.120	191			
Standardized Coefficients					
Model			Beta	t	Sig.
1 Constant				13.440	.000
Compliance Educational Preparedness Composite			.259	3.704	.000

Category: Communicating with Others[b]					
Model	Sum of Squares	df	Mean Square	F	Significance
1 Regression	2617.944	1	2617.944	36.415	.000
Residual	12652.932	176	71.892		
Total	15270.876	177			
Standardized Coefficients					
Model			Beta	t	Sig.
1 Constant				21.423	.000
Communicating Educational Preparedness Composite			-.414	-6.034	.000

Category: Monitoring Quality Assurance/Performance Improvement[c]					
Model	Sum of Squares	df	Mean Square	F	Significance
1 Regression	6.893	1	6.893	18.089	.000
Residual	75.833	199	.381		
Total	82.726	200			
Standardized Coefficients					
Model			Beta	t	Sig.
1 Constant				18.771	.000
QA Educational Preparedness Composite			.289	4.253	.000

Category: Providing Clinical Expertise[d]					
Model	Sum of Squares	df	Mean Square	F	Significance
1 Regression	2.300	1	2.300	7.108	.009
Residual	47.893	148	.324		
Total	50.193	149			
Standardized Coefficients					
Model			Beta	t	Sig.
1 Constant				14.992	.000
Expertise Educational Preparedness Composite			.214	2.666	.009

[a]Model Summary: R^2=0.067; Adjusted R^2=0.062
[b]Model Summary: R^2=0.171; Adjusted R^2=0.167
[c]Model Summary: R^2=0.083; Adjusted R^2=0.079
[d]Model Summary: R^2=0.046; Adjusted R^2=0.039

Table 5.5—Regression Model of Categorical Educational Preparedness on Clinical Nutrition Managers' Categorical Self-Efficacy (continued)

Category: Managing Financial Resources[e]

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	7.903	1	7.903	15.610	.000
	Residual	65.817	130	.506		
	Total	73.720	131			

	Standardized Coefficients			
	Model	**Beta**	**t**	**Sig.**
1	Constant		14.978	.000
	Financial Educational Preparedness Composite	.327	3.951	.000

Category: Managing Information Technology[f]

	Model	Sum of Squares	df	Mean Square	F	Significance
1	Regression	6.983	1	6.983	27.557	.000
	Residual	45.611	180	.253		
	Total	52.593	181			

	Standardized Coefficients			
	Model	**Beta**	**t**	**Sig.**
1	Constant		22.878	.000
	IT Educational Preparedness Composite	.364	5.249	.000

[e]Model Summary: $R^2=0.107$; Adjusted $R^2=0.100$
[f]Model Summary: $R^2=0.133$; Adjusted $R^2=0.128$

Table 5.6-ANOVA Post Hoc Comparisons of Overall Self-Efficacy between Demographic Variables of Clinical Nutrition Managers

Overall Self-Efficacy Mean ± SD				
Education Level				
Baccalaureate Degree	**Some Graduate Coursework Completed**	**Master's Degree**	**Doctoral Degree**	
4.04 ± 0.76^x	4.07 ± 0.78^{xy}	4.36 ± 0.66^y	4.75 ± 0.50^{xy}	
Length of Time Employed as a CNM				
< 3 years	**3-10 years**	**11-15 years**	**16-25 years**	**>25 years**
3.83 ± 0.59^x	4.18 ± 0.73^{xy}	4.40 ± 0.82^{yz}	4.54 ± 0.60^z	4.57 ± 0.59^{yz}

[a]Means based on a 5-point Likert scale (1 = very low; 5 = very high)

Note: Means with different superscripts (x, y, z) differ significantly (p<0.05) by Tukey's Post-Hoc test

Chapter 6 - Additional Findings, Summary and Conclusions

The primary intent of this chapter is to report additional findings not previously presented. Supplementary findings include summaries of qualitative data and additional quantitative data from the survey. Additionally, this chapter provides a summary of major findings, limitations, and conclusions.

This exploratory study described clinical nutrition management practice, identified educational opportunities for clinical nutrition managers (CNMs), and determined the impact of educational preparedness on self-efficacy and job satisfaction. The Academy of Nutrition and Dietetics (Academy) regularly audits entry-level practice; however, previous audits have not focused on clinical nutrition management practice. Therefore, methods were adapted from the Academy's entry-level practice audits and other previously validated research to create an audit specific to clinical nutrition management practice and to assess the current research questions.

Specific job tasks of CNMs were an important measure of this study. Therefore, focus groups were conducted to identify job tasks performed by CNMs. Additionally, cognitive interviewing was used to improve the face validity of the job tasks. Past executive board members of the clinical nutrition management dietetic practice group (CNM DPG) were invited to participate in the focus groups. Tasks identified in the focus groups were further refined and included into the final practice audit instrument that consisted of eight categories with 84 overall job tasks.

The survey asked about involvement and frequency of involvement with each task, similar to the Academy's entry-level practice audit. These two questions described practice that is not currently defined in the current literature. Given that educational preparedness was a topic of interest, methods adapted from Watts, Foley, Hutchinson, Pascoe, Whitecross, and Snowdon (2004) were used to explore educational gaps in the nursing sector. Specifically, they used the "opportunity algorithm" [Importance + (Importance-Satisfaction)] developed by Ulwick (2002) to determine opportunity for further education for nurses (Watts et al., 2004). Therefore, importance of receiving education and how well educational needs were met were asked for each task in the current study to identify educational needs for CNMs.

Additionally, CNMs were asked about their perceived level of self-efficacy for each category of job tasks, overall self-efficacy, and overall job satisfaction to determine the

relationship between educational preparedness and the constructs of self-efficacy and job satisfaction.

The survey instrument was pilot tested with CNMs (n=26) and revised. The CNM DPG was used to distribute the final practice audit to CNMs through their electronic mailing list. The protocol was approved by the university's institution review board for the use of human subjects, and the survey was approved by the Academy and the CNM DPG's executive council.

A variety of statistical procedures were conducted using the Statistical Package for the Social Sciences (SPSS). Cronbach's alpha was used to examine the reliability of the instrument and the internal consistency of job task categories. Descriptive analyses were conducted to profile the sample. Additionally, regression and ANCOVA analyses were used to assess relationships between variables, and t-tests and ANOVA were utilized to compare variables between different demographic groups.

Focus Group Process and Findings

This study is the first known audit of clinical nutrition management practice and educational needs. Therefore, focus groups were essential to determine the work-related activities of CNMs. Specifically, results from focus groups, duties validated by Witte and Messersmith (1995), and the competency statements included in the CNM standards of Professional Practice (Clark, Moore, Skates, Rogalski, Schofield, & Welch, 2012) were used to develop task statements to be included in the audit.

Of the 52 CNMs who were invited to participate in the focus groups, 27 volunteered to participate in the discussions, one email was undeliverable, 23 did not respond to the email invitation, and one declined participation. Of the 27 CNMs who volunteered to participate, seven CNMs were either unable to schedule a time to join or attend on the actual day. Therefore, 20 CNMs participated in the four focus groups, ranging from four to eight participants in each discussion.

Tables 6.1 and 6.2 illustrate the demographic profile of the focus group participants. A majority of the participants held the title, clinical nutrition manager. Of the 22 original participants, seven recorded "other" when asked about position title. Other titles held by participants included regional director of operations; regional clinical nutrition manager; director of clinical nutrition, metabolic support, and in-patient wound care; supervisor of clinical

nutrition; improvement specialist; and director of operations. All participants held the RD/RDN credential, were employed full-time, and female. A majority of participants had their master's degree. The average age of the participants was 45, average length employed as a CNM was 10.85 years, and average length employed in their current job was 10.23 years. Most of the participants worked in a medical center or hospital and a balanced representation of CNMs employed by contract management companies and self-operated organizations. A majority of participants reported to a non-RD supervisor. Half of the participants reported to a foodservice director and 10 participants stated "other" for primary supervisor. Other individuals that CNMs reported to included director of nursing or nursing administrator, chief operating officer or vice president of operations, director of primary care, regional vice president, and regional director of operations. This demographic profile of the focus group participants matched the profile of the final survey.

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Insert Table 6.1
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Insert Table 6.2
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Focus group participants were provided a list of categorized duties previously validated by Witte and Messersmith in 1995 (Appendix G) as a reference during this phase. For each category, focus group participants were asked to discuss if any of the duties should be eliminated or added. Focus group participants also included tasks that were not represented (Table 6.3).

Following is a summary of the key changes to the tasks for this study previously validated by Witte and Messersmith (1995). In general, there were very few comments in regards to eliminating job task statements; however, participants in all focus groups encouraged the change of verb language from passive verbs to action verbs. For example, instead of "maintain," participants encouraged the use of "identify, create, assess, implement, and evaluate" to demonstrate that CNMs are involved in the entire system of a specific task. Participants also encouraged updating the healthcare and professional language within the task statements such as changing American Dietetic Association to The Academy of Nutrition and Dietetics, including multiple accrediting agencies, and using the terms evidenced-based when referring to nutrition

expertise. Many participants agreed that the term "leadership" was missing throughout the list of job duties.

Many of the categories were expanded to incorporate current responsibilities. Specifically, CNMs' comments warranted the extension of the following categories: monitoring quality assurance and performance improvement, managing human resources, and managing financial resources. Additionally, a majority of the focus groups agreed that a new category was relevant for management of information technology. These findings suggest that the role of the CNM has evolved to include more management functions over the last 20 years. These findings also support the Academy's (2014) emphasis on providing resources that further develop management and leadership skills across all areas of dietetics practice.

Additionally, the professional development category was another domain with many common themes and suggestions. However, this category was deemed unnecessary, given that all registered dietitians are required to participate in continuing professional development to maintain their credential. Therefore, it was determined that this category was not unique to clinical nutrition management practice and deleted.

The focus group participants also identified several activities that were not a part of the original eight categories. A general category was developed to include these tasks. These tasks were not necessarily related to one another. Table 6.3 summarizes comments gathered during the four focus groups.

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Insert Table 6.3

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The additions and modifications to the job responsibilities indicate that changes have occurred in the healthcare environment and have impacted the role and function CNMs. The role and responsibilities of CNMs has increased and includes more management and leadership and fewer basic supervisory responsibilities.

Focus group participants were also asked about the relevance of the role preparedness and self-efficacy to perform in the CNM role to determine the validity of additional topics to include in the online survey. Table 6.4 summarizes these comments. Many managers stated that they were not prepared well for the role and that they had been promoted into the role with less than adequate preparation for communication and business skills. Resources that they used to

prepare for the role included career mentor, contract management resources, experience through on-the-job training, additional training, and networking with others. Many of them stated that self-efficacy improved over the years with more experience, and factors that influenced the change in self-efficacy included leadership resources from the Academy of Nutrition and Dietetics and more work experience. These results validated information gained through personal conversations with several key leaders about this segment of the dietetics profession. Given the rich discussion, these topics were considered relevant for further exploration among the larger sample.

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Insert Table 6.4

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Using Technology for Online Focus Groups

The following section will briefly describe the use of technology to conduct focus groups and the advantages and disadvantages of this methodology. This method has not been widely used in the dietetics profession. Therefore, it was important to explore the viability of this methodology to provide insight for future research.

There were three options within the technology to join the online focus group discussion including webcam and microphone, webcam only, and telephone. Researchers consistently used the webcam and microphone option. The methods used by focus group participants varied and are presented below. The telephone option was most popular among CNMs and was used by 13 participants. The webcam and microphone option and the microphone option were used by five and two participants, respectively.

Method	Focus Group 1 (n=8)	Focus Group 2 (n=4)	Focus Group 3 (n=6)	Focus Group 4 (n=2)
Webcam and Microphone	2	1	1	1
Microphone Only	1	0	0	1
Telephone	5	3	5	0

Focus groups were conducted during business hours with the most preferred times being mid-day (12:00 PM to 1:00 PM Central time) or late in the afternoon (3:00 PM to 4:00 PM Central Time). Therefore, a majority of CNMs participated during work hours and thus used the equipment available to them at their place of work. Many of those who used the telephone

option stated they did not have a webcam and microphone available at work and some stated they were not comfortable utilizing the webcam and microphone technology. Reminders were sent to participants that a majority of laptops and mobile devices were pre-equipped with webcams and microphones, but many of the participants did not have these available at their worksite.

Given that this technology was new to most participants, researchers offered the option of practicing the online videoconferencing platform prior to the scheduled focus group to increase their comfort level. Of the 20 participants, two CNMs chose to practice with the technology with researchers prior to their scheduled focus group date. In one case, the online videoconferencing platform and equipment worked well. However, in the other practice session, the healthcare network blocked the platform if the webcam and microphone were used; therefore, this participant could only use the telephone option. During the actual focus groups, only one participant had technical issues (a poor network connection), which made her comments inaudible. The online videoconferencing platform allows for live chat so that participants to could type their comment for other participants to view during the discussion. Therefore, researchers encouraged the participant to add feedback via the live chat; the moderator often re-stated the chat feedback to remind participants to review comments posted in the live chat and generate discussion based on the feedback.

Group Dynamics

The group dynamics did not differ significantly from traditional face-to-face focus groups. All participants were polite and courteous to one another. Participants followed ground rules established at the beginning of the session. Occasionally two CNMs would begin commenting on a particular issue at the same time and the moderator would call on one participant to comment and then ask the other to make comments when ready. Occasionally, cross-talk made parts of the transcription inaudible and researchers had to rely on handwritten notes that were taken during the discussions. All CNMs were respectful of differing opinions and often made positive affirmative statements when they agreed with other participants.

Group size impacted the discussions. In the groups with six and eight participants, a lengthy discussion followed each question asked. In the group with eight participants, the moderator often had to facilitate the discussion to stay on track with the original timeline and ensure that all questions were addressed. The group with two participants did not generate as

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much discussion as the other groups. However, the group with two participants experienced less cross-talk and was easier for the moderator to ask each participant to contribute to each question. In larger groups, some participants would not contribute to each question specifically nor did the moderator ask each participant for their opinion on each question given the time restraint.

Best Practices and Advantages

Although basic guidelines were available for the videoconference system, creating step-by-step, detailed instructions for utilizing the videoconferencing platform was essential in this study. The online videoconferencing platform is relatively new and has not been used for online focus groups for research purposes. Therefore, participants were likely unfamiliar with the program. Some participants were uncomfortable utilizing technology and equipment for focus group; therefore, the specific instructions were created to ease the participants' anxiety about unfamiliar technology. Given that there were no apparent technical issues regarding participant login, the instructions were likely beneficial for participants to join the online meeting.

Practice sessions conducted prior to the focus groups were extremely helpful. These sessions allowed researchers to become more comfortable with the technology and ensure that all equipment was functioning properly prior to the actual focus groups. The practice sessions also helped the researchers develop detailed instructions that could be given to participants who had not used the platform prior to the focus group. Ground rules were established as a result of these practice sessions and helped reduce the amount of cross-talk experienced in the focus groups.

One of the most important instructions for participants was to speak at a sufficient level and wait for other participants to be finished speaking before others contributed to the topic. This instruction was especially important given that focus groups were online, and it was more difficult to be attentive to non-verbal communication. Focus groups were also audio-recorded; therefore, it was important to reduce interruption among participants so that the conversation would be clearly audible for transcription and ideas would be complete from each participant during transcription and review.

One key advantage to utilizing online focus groups was successful recruitment of participants. Online focus groups eased the burden of participation by allowing CNMs to join the discussion from various locations. Online focus groups created a more convenient way for CNMs to participate, and the researchers were also able to effectively recruit CNMs from a broad geographical region to improve generalizability of results.

Online focus groups were also more cost efficient compared to traditional focus groups, given that no travel was involved. Since the researchers already had a computer, the approximate cost to conduct the online focus groups was $1000 which included the cost of a webcam with a built in microphone, participant incentives, and transcriptions of the focus group discussions. The researchers estimated the cost to conduct the same focus groups face-to-face at four centralized locations would have conservatively been approximately $8,000. Researchers' time related to conducting the focus groups was also significantly reduced by using online focus groups. Researchers diligently stayed within the one hour scheduled timeframe so that the busy professionals could resume their normal workday. The four focus group discussions were also completed during a two week period; therefore, online focus groups required less time to complete than traditional focus groups.

Another advantage to using the online videoconferencing system was having the video, telephone, and live chat option combined into one program. The live video feed was shown for those who used the video option, while a graphical "green telephone" was shown for those who used the telephone option. Each participant was represented on-screen within a screen matrix on the monitor. The live video feed boxes on the screen were labeled with the participants' names, while the individual telephone participants were labeled as user 1, user 2, etc. When participants began speaking, their screen would be highlighted in the screen matrix so that participants who were not using the telephone option knew who was speaking. Those using the telephone option did not see the live feed of the discussion; therefore, this option was advantageous over a normal conference call given that the moderator could tell which participant was speaking at any given time. The live chat was a good substitute for participants to add to the discussion if the network connection was causing unclear audio.

Another benefit of utilizing the online videoconferencing software was the ease of video and audio recording. A recording feature allowed the moderator to start and stop the recording at any given time throughout the meeting. The system automatically generated audio and video files in MP3 and MP4 formats, respectively.

Limitations

The goal of utilizing an online videoconferencing rather than a teleconference was to better mirror a more traditional face-to-face focus group, while minimizing costs and burden to others. However, the equipment that was required for the video option was a limitation given

that many of the CNM participants did not have access to a computer with a webcam and microphone. Therefore, the telephone option was used so that participants could engage in the discussions. Allowing participants to use the telephone option decreased the non-verbal communication that typically occurs in traditional focus groups. Researchers had to develop additional ground rules so that participants were not speaking over each other due to not being able to see one another.

The online videoconferencing system did not label the telephone participants with a name; they were only identified by user 1, user 2, etc. Therefore, when the telephone participants first entered the chat and introduced themselves, the moderator had to match names with user numbers to keep track of who was speaking at any given time.

Cognitive Interview Process and Findings

Cognitive interviews were conducted to improve the face validity of the job task statements to be included in the practice audit tool. Participants were asked to describe in their own words what the task statement meant to them. This process assisted researchers in identifying confusion of the statements among participants.

After each focus group, participants were asked to participate in cognitive interviews. Of the 15 volunteers, six participants were randomly selected using a random number generator. Cognitive interviews were conducted using the online video-conferencing system, audio-recorded, and transcribed. Transcriptions were reviewed by three researchers independently, and comments were discussed among the researchers. Wording of the task statements were negotiated until a consensus was reached.

The cognitive interviews proved useful, as three job task statements were eliminated due to similarities between statements. Therefore, the 87 statements were condensed to 84 job task statements in eight categories for the final practice audit (Appendix L). Of the remaining statements, 12 statements were slightly reworded based on the comments provided in the cognitive interviews to improve clarity. Cognitive interviews also helped to establish relationship with the CNM network and encourage further participation.

Qualitative Survey Findings

Qualitative data were also gathered from CNMs regarding strategies that would be most beneficial to prepare individuals for the role, factors that impact CNMs' self-efficacy and

strategies that would be the most beneficial to enhance CNMs' self-efficacy. These questions yielded over 170 responses each. A summary of some of the common themes are reported below.

Beneficial Strategies to Prepare for the CNM Role

- Mentorship from experienced CNMs
- Networking and job shadowing with experienced CNMs
- Work experience as an interdisciplinary committee member
- Development of a career advancement plan by the Academy of Nutrition and Dietetics
- Certification programs for CNMs
- Continuing educational opportunities including workshops and seminars
- Coursework in management and leadership
- Additional training in all job task categories (specifically human resource management, financial resource management, regulatory issues, communication with others, leadership, and technology)
- Membership in the CNM dietetic practice group and attendance of the symposiums

Factors impacting CNMs' Self-Efficacy

- Self-confidence and internal drive
- Clinical, managerial and leadership competence
- Availability of management educational and training resources
- Support from supervisors and administration
- Progression on departmental goals
- Work ethic
- Work experience
- Feedback from peers and networking with other CNMs
- Organizational culture, mission, and vision and the respect that is given to the department
- Trust from the team
- Having a mentor and level of mentorship provided
- Availability of operational resources (time, staffing, and money)
- Opportunities to gain exposure to management functions prior to the CNM role

Beneficial Strategies to Enhance CNMs' Self-Efficacy

- Attending educational opportunities (workshops, seminars, self-study tools)

- Having access to educational modules on management and leadership

- Learning through on-the-job training

- Participating in the CNM dietetic practice group annual symposium and listserv

- Having access to a website with resources and best practices

- Staying current with literature and trends in the healthcare environment

- Networking with other CNMs

- Having a mentor who provides appropriate coaching

- Gaining support from supervisors and administration

- Gaining support from the Academy of Nutrition and Dietetics

Summary of Major Findings

A total of 614 CNM DPG members initially responded to the survey, with 214 participants completing the survey yielding a 13% response rate. The demographic profile of the current study was similar to that found in Bange (2014). A majority of the participants (66%) reported Clinical Nutrition Manager as their position title, most (98.6%) reported their primary credential as RD/RDN, and a majority of respondents (60%) held a master's degree. A majority (66.5%) described their employer as a self-operated organization versus a contract management company. The average length of being a CNM and length in current job was 11.3 years and 10.5 years, respectively.

The purposes of the research were to identify and validate current job tasks of CNMs, determine CNM perceptions of educational preparedness, and evaluate the impact of educational preparedness on CNMs' self-efficacy and job satisfaction. The following research questions and hypotheses were considered in the current research.

Research Question 1: What are the core role activities of CNMs?

Clinical nutrition managers validated 84 job tasks through focus groups and cognitive interviews. These 84 job tasks were grouped into eight categories including general responsibilities, ensuring compliance with regulations and accreditation standards, communicating with others, monitoring quality assurance and performance improvement,

providing clinical expertise, managing human resources, managing financial resources, and managing information technology. The eight job task categories were slightly different than the six domains that were developed by Witte, Escott-Stump, Fairchild, and Papp (1997). Due to the many changes in healthcare within the last 20 years, managing resources effectively was found to be a large enough domain for three distinct categories for the current study: managing human resources, managing financial resources, and managing information technology. Managing information technology was validated in the current study, but not included in the Witte et al. (1997) domains. Information technology within the current healthcare environment is obviously more prevalent given the use of electronic mail, electronic medical records, and other electronic healthcare management systems today.

Witte and Messermith (1995) validated 54 job duties previously. The difference in the number of job tasks between current and previous studies suggests that CNMs scope of responsibility has changed in recent years. For example, several job tasks were added due to the expansion of resource management to include human resource, financial resource, and information technology.

In the current study, 73 of the 84 job tasks were categorized as core using the following criteria: at least 80% of CNMs indicated they were involved in the activity in some capacity (assisting others, performing themselves, or supervising/managing others performing the task). The categories in which all of the tasks were core activities included the following:

- Communicating with others (eight tasks)
- Monitoring quality assurance and performance improvement (eight tasks)
- Managing information technology (six tasks)

Table 6.5 includes the categories in which a majority of the tasks were core activities and those categories that were not core tasks in those categories. These current findings suggest that CNMs are involved in many managerial job tasks. Thus, it is important that CNMs develop management and leadership skills prior to being promoted to that managerial role. For example, the majority of participants were involved in some way in managing and leading clinical operations nearly daily and many were involved in managing and providing leadership to foodservice operations. These findings are consistent with other researchers' and the Academy's views that management and leadership skills are important in all areas of dietetics practice (Canter, Sauer, & Shanklin, 2012; Academy, 2014). Specifically, financial resource

management, strategic planning, problem-solving, decision-making, effective communication, human resource management, quality assurance and process improvement, technology and negotiation ability are skills that are important across all areas of practice within the profession (Academy, 2014).

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Insert Table 6.5

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Research Question 2: What are CNMs' perceptions regarding their education preparedness for core role activities?

The level that educational needs were met was measured on a 5-point Likert scale (1=completely unmet; 5=completely met). The results for the level that educational needs have been met were variable with means ranging from 2.62 to 4.44. Clinical nutrition managers reported that their educational needs were neither met nor unmet for 69 of the 84 tasks that were rated between 3.0 and 4.0. Of the 84 tasks, CNMs rated education preparation less than 3.0 for 13 tasks, indicating they perceived educational needs were unmet for those particular tasks. Clinical nutrition managers perceived educational needs were met (greater than 4.0) for only two of the 84 tasks. The highest and lowest educational preparedness scores in each of the job categories are summarized in Table 6.6.

Educational preparation was rated lowest for the tasks in the categories of managing financial resources, managing human resources, providing clinical expertise, ensuring compliance with regulations and accreditation standards and general. Therefore, clinical nutrition managers perceive a need for additional education in these areas, which is consistent with previous research findings (Pratt et al., 2005; Witte & Messersmith, 1995). It remains unclear why educational needs are not completely met for these areas of practice. Clinical nutrition managers are typically clinicians that have been promoted into the managerial role, and this role is generally not an entry-level position. Conceptually, management education is provided in undergraduate programs as part of educational standards for dietitians. It is unclear if additional management education is provided after the baccalaureate degree. Additionally, the nursing literature explored factors that increased the perceived need for additional education of nurse managers (Purcell & Milner, 2002). The factors that increased the need for nurse education included perceived limited availability of development programs, limited

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encouragement to develop management skills, limited time for professional development, and low importance of management functions compared with patient care duties (Purcell & Milner, 2002). Given the similarities between nurse managers and CNMs, these factors may also be impacting CNMs' participation in professional development opportunities. It may be beneficial to ensure that adequate educational programs are developed specific to clinical nutrition management practice so that CNMs have the opportunity to improve knowledge and skills related to their daily responsibilities. It is also important that CNMs' supervisors understand the importance and benefits of allowing CNMs to pursue additional educational opportunities for continued professional development and encourage CNMs to participate in these experiences.

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Insert Table 6.6

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Research Question 3: Does a gap exist between core role activities and perceived educational preparedness for CNMs?

A gap analysis was conducted using the opportunity algorithm [Importance + (Importance – Needs Met)]. A mean gap score was calculated for each job task that indicates the level of need for education for job tasks. A higher mean gap score indicated a larger need for education in that area. Lower mean gap scores indicated that CNMs did not perceive the educational need for the task to be high, the educational need was met for that job task, or a combination of both low importance and educational needs being met. The potential mean gap scores could range between one and nine, with nine indicating the highest need or opportunity for educational resources being developed. The midpoint of the possible gap score range was used to determine the highest needs for education. Therefore, those job tasks with mean gap scores of 4.5 or higher were considered areas that education was needed. The mean gap score ranged between 4.19 and 6.16. Of the 84 job tasks, 80 had mean gap scores greater than 4.5, indicating that CNMs perceived a gap between the importance of receiving education and the educational needs being met for a majority of the job tasks. Of the 84 tasks, those categories that had the tasks with the highest mean gap scores included ensuring compliance with regulations and accreditation standards and managing human and financial resources. These results are similar to other studies that indicated CNMs may need additional education in financial

management, human resource management, information technology management, and marketing (Pratt et al., 2005; Witte and Messersmith, 1995). Similar findings have been found in the nursing literature. Researchers found that additional education was needed for human resource management, financial management, compliance with regulations, effective communication, and information technology management (Gould et al., 2001; Care & Udod, 2003). These results support the proposition that nurse managers and CNMs likely have similar educational needs.

It is unclear why managers perceive additional educational needs for ensuring compliance with regulations and managing human and financial resources. However, it is likely due to the type of work experiences they have had leading up to the clinical nutrition management role. Findings may also support the concept that CNMs lack training or orientation to the responsibilities once accepted into the managerial role, similar to findings from research done with nurse managers (Sherman, Bishop, Eggenberger & Karden, 2007).

Interestingly, CNMs rated the tasks in the category of managing financial resources lowest in regards to educational preparedness, while this category had the lowest levels of involvement (only four of the eight categories were considered core activities), and they also had low frequency of involvement with CNMs performing these duties on a monthly or less than monthly basis. They most often performed these duties themselves in this category.

These managers may not be frequently involved with managing financial resources for various reasons. Typically, the clinical nutrition services department is considered a cost center, not a revenue center. However, it continues to be extremely important to understand fiscal responsibility to keep costs low in the healthcare environment. They may also have lower levels of involvement if clinical services fall under the umbrella of the food and nutrition services department given that the director of the department most likely would be responsible for those financial duties. However, it would continue to be important for the CNM to be involved in the activities, advising and assisting the food and nutrition services director on financial issues related to clinical services. Additionally, CNMs may avoid becoming involved in tasks if they feel underprepared.

Clinical nutrition managers also perceived the need for additional education for the tasks in the ensuring compliance with regulations and accreditation standards category. Additionally, a majority of these tasks were core activities. Clinical nutrition managers were consistently involved in these activities on a monthly basis or more often. Healthcare is an extremely

regulated environment to ensure patient safety, to follow policies regarding billing and reimbursement, and to adhere to accreditation standards. Therefore, it is essential that CNMs are actively involved in ensuring compliance with regulations to positively impact the organization and the patients that they serve. The many regulations, policies and procedures, and accreditation standards in the healthcare environment are not generally intuitive. Likely, CNMs are learning about these topics through on-the-job training; they may perceive themselves better prepared to perform these tasks if they had opportunities for professional development regarding these tasks.

Clinical nutrition managers perceived a need for additional education for the tasks related to managing human resources. Additionally, a majority of these tasks were core activities and performed on a consistent basis. Clinical nutrition managers most likely have limited experience with managing human resources in their clinical positions prior to the managerial role. Therefore, they likely perceive the need for additional education to gain the skills to adequately perform these tasks.

The nursing literature has investigated factors impacting nurse managers' effectiveness (McKenna, Richey, Keeney, Hasson, Poulton, & Sinclair, 2008). Need for training was considered a factor that negatively impacted nurse managers' effectiveness in their role. Given that CNMs perceive the need for education in several of their job categories, this need for training is likely influencing their potential at being the most effective manager possible, which could possibly negatively impact subordinates, patient safety, fiscal resources, and the organization.

Those tasks that had gap scores less than 4.5 typically resulted from low importance ratings, high levels of educational needs met, or a combination of both. There were four tasks that had mean gap scores less than 4.5 on a 9-point scale. Managing all or some functional areas within other organizational departments (4.19 ± 1.97) had low mean gap scores resulting from both lower levels of importance and high levels of educational needs met. Low importance of receiving education for this task was likely due to reported low levels of involvement in this activity. Scheduling employees (4.39 ± 1.86) and reviewing and approving the diet manual (4.42 ± 1.58), and distributing pertinent nutrition related information to the community (4.46 ± 1.51) had low mean gap scores resulting mostly from low levels of importance to receive education. Low levels of importance for reviewing and approving the diet manual and distributing pertinent

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nutrition related information to the community is likely due to low frequency of involvement. Therefore, those tasks that had low educational priorities also had low levels of involvement or low levels of frequency of involvement.

Research Question 4: Does a relationship exist between self-efficacy and the gap between core role activities and educational preparedness?

Gap analysis was conducted using the opportunity algorithm as discussed above in the previous section. Self-efficacy was measured for each category of job tasks using a 5-point Likert scale (0 = definitely cannot do; 4 = highly certain can do). In general, CNMs rated their self-efficacy as being between moderately certain they could do the tasks and highly certain they could do the tasks (between 3.0 and 4.0). Clinical nutrition managers had the lowest self-efficacy rating for managing financial resources (3.14 ± 0.83). All other categories' ratings clustered around a mean of approximately 3.5. However, CNMs rated their overall self-efficacy higher than any one category of job tasks (4.25 ± 0.72). Overall self-efficacy was measured on a 5-point Scale (1=very low; 5=very high). The lower levels of categorical self-efficacy for managing financial resources also influenced overall self-efficacy. Futhermore, the tasks in the category of managing financial resources had the highest educational opportunities. Researchers have suggested that educational interventions and learning activities promote self-efficacy (Bakken, Byars-Winston, Gundermann, Ward, Slattery, King, Scott, & Taylor, 2010; Williams and Subich, 2006); therefore, educational preparedness for managing financial resources is likely impacting overall self-efficacy to perform in the CNM role.

There were significant relationships between categorical composite mean gap scores and self-efficacy for some of the categories, indicating that perceived gap in education predicted self-efficacy to perform those tasks in those categories. Other categories did not yield a significant relationship between composite mean gap scores and categorical self-efficacy. Significant relationships are further explained below in the hypotheses discussion.

Hypothesis 1: The relationship between core role activities and educational preparation predicts self-efficacy to perform the role activities of clinical nutrition managers.

Hypothesis 1 was partially supported. Simple regression analysis was used to evaluate the relationship between composite mean educational gap scores and self-efficacy for each

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category. A total of eight regression models were performed, including one model per job task category. Of the eight models performed, four yielded significant relationships between composite mean gap scores and self-efficacy to perform the tasks in those categories. The categories that yielded significant relationships included monitoring quality assurance and performance improvement $[R^2 = 0.083, F(1, 187) = 16.995, p < 0.001]$, managing human resources $[R^2 = 0.050, F(1, 112) = 5.851, p=0.017]$, managing financial resources $[R^2=0.043, F(1, 121), = 5.437, p=0.021]$, and managing information technology $[R^2 = 0.034, F(1, 172) = 6.015, p=0.015]$. All relationships were inversely related; thus as composite mean gap scores increased, self-efficacy decreased for these categories.

It is unclear why mean gap scores impact self-efficacy for some categories and not for others. Findings may indicate that CNMs view tasks as more important or risker than tasks in other categories; therefore, performing these tasks poorly may have larger negative impacts on the patients they serve, the employees they supervise, and the organization. These potential consequences could lead to decreased confidence levels of performing tasks if they are not adequately prepared to do the activities.

Hypothesis 2: Overall educational preparedness predicts overall self-efficacy to perform the core role activities of clinical nutrition managers.

Hypothesis 2 was also partially supported. Simple regression analysis was also used to examine the relationship between composite mean educational preparedness and self-efficacy for each category. Eight regression models were performed. Of the eight models performed, six categories yielded significant relationships. The categories that did not produce significant relationships included the general category and managing human resources; thus, educational preparedness did not significantly impact self-efficacy in those two categories. Further research is warranted to determine the reasons that self-efficacy was not correlated with educational preparedness for these two categories. Self-efficacy may be more correlated with the frequency of involvement in these tasks. Tasks in the general category were frequently performed. The managing human resource category consists of tasks that may be performed by others in the organization. For example, some healthcare facilities have a human resource department that performs the some of these tasks. Therefore, CNMs may not perform these tasks frequently. Bandura (1977) suggested that personal accomplishments indicate proficiency at certain tasks

and thus improves self-efficacy. Therefore, to improve self-efficacy related to the general and managing human resource tasks, it may be necessary for CNMs to successfully accomplish them consistently.

Of the remaining six categories that did yield significant relationships between educational preparedness and self-efficacy, five of them were positive relationships indicating that as educational preparedness increased, self-efficacy increased. These categories included ensuring compliance with regulations and accreditation standards *[R² = 0.067, F(1, 190) = 13.717, p<0.001]*, monitoring quality assurance and performance improvement *[R² = 0.083, F(1, 199) = 18.089, p<0.001]*, providing clinical expertise *[R² = 0.046, F(1, 148) = 7.108, p = 0.009]* , managing financial resources *[R² = 0.107, F(1, 130) = 15.610, p<0.001]*, and managing information technology *[R² = 0.133, F(1, 180) = 27.557, p<0.001]* . Findings suggest that CNMs may believe that educational interventions related to these tasks may be beneficial in improving confidence level in performing them successfully. These results are similar to other findings that suggest educational interventions and learning activities positively influence self-efficacy (Bakken et al., 2010; Williams & Subich, 2006). The category of communicating with others generated a significant negative relationship indicating as educational preparedness increased, self-efficacy decreased *[R² = 0.171, F(1, 176) = 36.415, p<0.001]*. This finding is unclear and should be further investigated with future research. It may indicate that current educational interventions focusing on communication with others in healthcare is not effective in skill development for CNMs' daily communication activities.

Summary of CNM Job Tasks

Table 6.7 summarizes the top 10% of tasks in which CNMs are most frequently involved. Frequency of involvement, level of involvement, and educational gaps are also compared among these tasks. A majority of the tasks in which CNMs are most frequently involved are in the general category. All of the tasks were deemed core activities with 80% of CNMs being involved in some capacity with the exception of providing leadership to foodservice operations. Only one of the tasks in which CNMs are most frequently involved was considered one of the highest educational priorities. Given that CNMs perform these tasks frequently, they likely believe that they have received enough on-the-job training, and therefore, do not need additional formal education. They likely perceive that they are less prepared for those activities they don't

perform frequently even if they are considered core activities. Interestingly, this finding may also help explain why CNMs conceptually have many educational needs, yet continue to perceive their overall self-efficacy quite high. Clinical nutrition managers likely have more personal successes in performing the tasks that they complete frequently, thus building self-efficacy in performing in the role. Also, it was determined that the general categorical self-efficacy influenced overall self-efficacy. The tasks in which CNMs were most frequently involved included mostly tasks from the general category. Therefore, given that they perform those tasks frequently, they most likely have higher confidence in performing those tasks, which likely positively impacts overall self-efficacy.

Additional Relevant Findings

Size of Facility

Size of the healthcare facility was considered to be an important demographic variable to evaluate given that it can impact the role and responsibilities of a manager. Conceptually, for example, managers likely have a differing level and frequency of involvement due to size of the facility in which they manage. Size of facility was measured by the number of patient beds that CNMs managed. ANOVA was used to determine significant differences based on size of facility. Clinical nutrition managers who worked in smaller facilities (less than 100 patient beds and 100 to 350 patient beds) were significantly more frequently involved in managing foodservice operations and providing leadership to foodservice operations than CNMs who worked in facilities with greater than 1000 patient beds. Also, CNMs who worked in facilities with less than 100 patient beds were significantly more involved in developing emergency and disaster policies and procedures than those who worked in any other sized facility. Given that size of facility was measured in number of patient beds managed, these findings suggest that CNMs who do not have to manage as many patient beds may have broader scopes of responsibility, including both clinical and foodservice duties, whereas CNMs in larger facilities tend to manage more patient beds, are more involved in managing clinical operations, and less involved in foodservice operations and developing disaster policies and procedures. On the other hand, CNMs who worked in facilities with greater than 1000 patient beds were significantly more involved in providing leadership to programs across multiple organizations than those who worked in smaller facilities (100-350 patient beds). These CNMs may work in larger healthcare

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systems where they are the regional CNM and manage clinical operations for several facilities within the system.

Employer Type

In healthcare, 20-30% of food and nutrition services departments are outsourced to contract management companies (Minasian, 2012). Many dietetics professionals are employed by both self-operated organizations and contract management companies. Previous research has not yet investigated the differences among staff employed by contract management companies versus self-operated organizations. Therefore, employer type was considered an important variable to evaluate to continue exploring differences between these two subgroups within the dietetics profession.

Independent sample t-tests were conducted to evaluate differences in frequency of involvement based on employer type. Clinical nutrition managers who were employed by contract management companies were significantly more involved in managing foodservice operations, providing leadership to foodservice operations, and mentoring dietetic students and interns than CNMs who were employed by self-operated organizations. Contract management companies often outsource patient feeding, cafeteria foodservice, and clinical nutrition services to help make the management functions efficient and effective (Kwon and Yoon, 2003). Therefore, to improve efficiency, CNMs who are employed by contract management companies are likely to have responsibilities in both foodservice and clinical services within those facilities. Additionally, many of the large contract management companies have large accredited dietetic internship programs where they have developed educational resources to assist with mentoring students and can accept a large number of interns to place in various facilities across the United States. Contract management companies may also be more likely to mentor dietetic students and interns given that it can be used as a recruitment tool for future employees.

On the other hand, CNMs who were employed by self-operated organizations were more frequently involved with identifying process improvement opportunities, designing and implementing quality improvement initiatives, developing job descriptions for clinical staff, conducting performance appraisals, and scheduling employees. In hospitals that outsource their food and nutrition services department, contract management companies often provide services, such as recruiting skilled management, training, and increasing purchasing power (Minasian, 2012). Given that many of the contract management companies are nationwide, the corporate

office provides training resources, performance standards, and systems that can be distributed nationally.

An independent sample t-test showed no significant differences in self-efficacy between CNMs who worked for self-operated organizations and contract management companies. Perceived competence level was also similar between those employed by self-operated organizations and contract management companies.

Length of Time Employed as a CNM

Self-efficacy was an important construct evaluated in this study. Previous nursing literature identified years of service and number of years caring for patients as a factor that positively correlated with self-efficacy (Wu, Lee, Liang, Chuang, Lu, & Wu, 2012). Therefore, length of time employed as a CNM was an important variable to investigate this theory within clinical nutrition management practice. Conceptually, length of time in a role would likely impact perceived competency in that role.

Perceived competence level was compared across categories of CNMs employed in their role. Those who were employed in their role for less than three years were more likely to perceive themselves as competent managers (61.5%) rather than proficient or expert managers. Those who were in the role for 11-15 years or 16-25 years were more likely to perceive themselves as either proficient or expert managers. Those who were in the role for longer than 25 years were more likely to perceive themselves as expert managers (48.8%). These results likely indicate that the longer the CNM is in the role, the more opportunity that manager has to gain experience and obtain knowledge to build skill and competence level in the role. Other researchers also found that participating in training programs improved perceptions of competency level for performing management and leadership skills (Krejci & Malin, 1997; Martin, McCormack, Fitzsimons, & Spirig, 2012; Omoike, Stratton, Brooks, Ohlson, & Storfjell, 2011).

ANCOVA was used to determine significant differences in self-efficacy between categories of CNMs length in the role adjusting for the overall composite mean gap in education. Results of self-efficacy were significant in terms of length of employment as a CNM when means were adjusted for the overall composite gap in education *[R^2=0.254, F(4, 50) = 2.723, p=0.041]*. Therefore, self-efficacy was influenced by length of employment in the CNM role. ANOVA analysis also found significant differences in overall self-efficacy based on length of

being a CNM *[F(4, 208) = 7.517, p<0.001]*. Significant differences in overall self-efficacy were found between CNMs who had been in the role for less than three years (3.83 ± 0.59) and those who had been in the role for 11 to 15 years (4.40 ± 0.82), 16 to 25 years (4.54 ± 0.60), and greater than 25 years (4.57 ± 0.59). Significant differences were also found between CNMs who had been in the role three to ten years (4.18 ± 0.73) and those who had been in the role 16-25 years (4.54 ± 0.59). Researchers have suggested that educational interventions, learning activities, and professional accomplishments completing tasks likely lead to increased self-efficacy (Bakken et al., 2010; Williams & Subich, 2006; Bandura, 1977). Given that managers who have been in the role longer likely had more opportunities to be involved in educational activities and successfully performing tasks, self-efficacy is likely positively impacted more for those managers than those who have been in the role for shorter periods of time.

Education Level

Other studies have found that many CNMs have obtained advanced level education (Bange, 2014; Witte & Messersmith, 1995). Witte and Messersmith found that CNMs often used this method of professional development to prepare for the CNM role; however, this method was not associated with an increased level of perceived competency. The current study evaluated education level to validate previous research and to investigate if advanced level education impacted self-efficacy to perform in the role.

Importance of receiving education increased with education level for the two tasks related to research activities within the providing clinical expertise category. Therefore, those with a bachelor's degree rated importance lower for these two tasks than those with a master's degree. This finding may indicate that those who have more experience with research activities through their graduate work likely see the importance of education in order to perform those types of tasks successfully. Those who do not have advanced degrees may have not had experience in research activities and may not find education as important given they may not be as involved in those tasks.

The current study's results were inconsistent with Witte and Messersmith's (1995) findings in that advanced degrees did not improve levels of perceived competence. In the current study, competency levels increased with advanced degrees. Those CNMs who had obtained a bachelor's degree were more likely to perceive themselves as competent managers (45.3%) rather than proficient or expert. A majority of those who had received some graduate work

perceived themselves as proficient managers (59.3%). Also, a majority of CNMs who obtained a master's degree viewed themselves as either proficient (48.4%) or expert (36.7%) managers, while most CNMs who had obtained a doctoral degree viewed themselves as experts (75.0%).

ANOVA was used to determine differences in overall self-efficacy based on education level. Significant differences in overall self-efficacy were found between CNMs who held a baccalaureate degree (4.04 ± 0.76) and those who had a master's degree (4.36 ± 0.66). Formal education may build general skills such as critical thinking and problem-solving skills or knowledge directly related to tasks required in the CNM role. Findings suggest that knowledge and skills gained in the advanced degrees are perceived as beneficial for performing tasks in CNMs'current role and improving their self-efficacy levels.

Mentorship

Generally, healthcare facilities employ only one CNM. Therefore, CNMs likely experience more difficulty in receiving help from others compared with other healthcare professionals, such as nurse managers who usually have colleagues in similar roles within the facility. Having a mentor is important for any practitioner to develop professionally. It is currently unclear who CNMs are identifying as their mentors. Conceptually, level of mentorship may impact a CNMs perceived level of educational preparedness and self-efficacy in the role. Therefore, mentorship is an important variable to explore in the current study.

Clinical nutrition managers reported a variety of primary mentors. The survey provided four options including foodservice director who is an RD, a foodservice director who is not an RD, a clinical director, and other. Given that several participants selected other, and wrote in other mentors, those mentors were coded. Clinical nutrition managers (n=210) identified 10 categories of primary mentors including a clinical director (18.2%), a foodservice director who is not an RD (17.6%), a foodservice director, who is an RD (16.2%), none (12.4%), other CNMs (10.5%), hospital administrators (10.5%), regional director (5.2%), other RDs (4.3%), physician (1.9%), and other (3.3%). Clinical nutrition managers rated mentoring on their success on a 5-point Likert scale (1=strongly disagree; 5=strongly agree). On average, CNMs rated their level of mentoring at the neutral level (3.57 ± 1.10). This finding may indicate that CNMs are not fully satisfied with the mentoring that they have received. It also is likely due to the large percentage of CNMs who reported that they currently do not have a mentor. ANOVA procedures were conducted to determine if there were significant differences in the perceived

level of mentoring based on mentor type, and there were significant differences found [$F(9, 197)$ = 4.263, p<0.001]. Tukey's post hoc analysis indicated that significant differences were found between no mentor (2.50 ± 0.98) and all other categories of mentors except the physician and the other categories. It is clear that participants believed that mentoring is a strategy that assists in developing into a successful CNM and that mentors of all categories were equally more helpful than not identifying a mentor.

ANCOVA was used to determine significant differences in self-efficacy between categories of CNMs' mentor type adjusting for the overall composite mean gap in education. Results of self-efficacy were not significant in terms of mentor type. Additionally, ANOVA analysis was conducted to determine significant differences in self-efficacy based on mentor type. There were no significant differences found based on mentor type. Therefore, mentor type did not influence self-efficacy in this sample. Additionally, ANOVA analysis was conducted to determine significant differences in job satisfaction based on mentor type. No significant differences were found based on mentor type. Therefore, it is evident that mentor type did not impact CNMs' job satisfaction.

Regression analysis was conducted to determine the relationship between the perceived level of mentoring received and self-efficacy. This relationship was not significant. Regression analysis was also conducted to determine the relationship between the perceived level of mentoring received and job satisfaction. This relationship was a significant, positive relationship [R^2=0.044, $F(1, 211)$ = 9.805, p=0.002], indicating that as the perceived level of mentoring increased, job satisfaction increased (β=0.211, p=0.002). Appropriate mentoring helps professionals develop because the individuals feel supported, has someone who has an interest in their success, has someone to go to when questions arise, and are held accountable in a non-punitive fashion. All of these factors would likely improve job satisfaction.

In summary, it is evident that mentor type impacts CNMs' perceived level of mentoring. However, mentor type did not influence self-efficacy or job satisfaction. The perceived level of mentoring predicted job satisfaction, but did not predict self-efficacy to perform in the role. Thus, a correlation between job satisfaction and level of mentoring existed with this sample of CNMs. Therefore, it may be useful to develop mentoring programs within the CNM community to ensure job satisfaction.

Competence Level

The Academy has developed Standards of Professional performance for Clinical Nutrition Managers (Clark et al., 2012) to help CNMs determine their competence level and appropriate scope of responsibility to ensure safe and effective care. Clinical nutrition managers should regularly use this resource to determine areas for improvement in regards to competent practice.

Clinical nutrition managers rated their perceived competence level based on the Academy's Standards of Professional Performance to evaluate in general terms a need for improved competency within clinical nutrition management area of practice. A majority of CNMs rated themselves as proficient (46.5%) while 23.7% and 29.8% rated themselves as competent and expert CNMs, respectively. ANOVA analysis was conducted to determine differences in self-efficacy based on perceived competence level and significant differences were found *[F(2, 212) = 58.622, p<0.001]*. Tukey's post hoc analysis demonstrated significant difference in self-efficacy between all levels of perceived competence. By definition, competent practitioners are very task-oriented managers and benefit from clear guidance on tasks; they gain skill sets as they work (Clark et al., 2012). Proficient CNMs have developed "an intuitive understanding of the role" which helps them function at a higher managerial level. Expert CNMs have the highest level of skills and knowledge, functions autonomously in the role, and demonstrates leadership and vision (Clark et al., 2012). Therefore, in order to become an expert manager, CNMs most likely would have had to participate in professional development and educational opportunities. These educational and professional development experiences likely have positively impacted self-efficacy to perform in the role.

Job Satisfaction

Previous research has shown that CNMs are generally satisfied with their jobs (Sauer, Canter, & Shanklin, 2010; Sauer, Howells, & Shanklin, in press). However, CNMs were less satisfied with their jobs than other managerial RDs, and reasons were unclear (Sauer et al., 2010). Therefore, job satisfaction was investigated to determine if variables within this study could help further explain the lower levels of satisfaction found in previous research. Results in this study also demonstrated that CNMs were generally satisfied with their jobs (4.18 ± 0.95), and their job satisfaction on average stayed the same over the last 6 months (3.07 ± 1.04). Multiple regression analysis was performed to evaluate the relationship of categorical composite

gap means on overall job satisfaction and to assess the relationship of categorical composite educational preparedness on overall job satisfaction. However, neither of these relationships was significant. Therefore, gaps in education and educational preparedness did not predict overall job satisfaction in this study.

Limitations

The limitations of the study include using the CNM DPG as the research population. Although it was requested that CNMs forward the survey to other CNMs who may not be members of the CNM DPG, only seven participants were not members of the DPG. There is likely a greater population of CNMs who are not members who were not adequately represented in this study. However, there is no known efficient and effective method for reaching non-DPG members. Therefore, external validity was impacted and results cannot be generalized to those CNMs who are not members of the CNM DPG. Additionally, non-response bias is likely a limitation of this study. Those who participated in the survey may respond differently than those who chose not to participate.

Another limitation was survey length and participant drop-out rate. Given that the survey was an audit of practice, it was essential for the instrument to be comprehensive; therefore, the survey was quite extensive and may have led to the large drop-out rate. Additionally, given that the survey was lengthy, tasks were not explored that went beyond the scope of what is generally thought to be in the clinical nutrition management area of practice; therefore, it is unknown if there are subgroups in clinical nutrition management practice that are involved in tasks less frequently recognized as responsibilities in this role.

Implications and Future Research

This study defined and described the current status of clinical nutrition management practice and the educational needs and priorities of CNMs. It is clear that CNMs perform a variety of tasks. It is also evident that CNMs perceive the importance of education high in all areas of responsibilities in order to perform them successfully. However, there is a perceived gap in education for a majority of the responsibilities, indicating an opportunity to develop educational resources specific to CNMs to better prepare them for their role. For some areas of practice, this impacts CNMs self-efficacy to perform those tasks.

Practice

Current CNMs can use the results to benchmark their current practice and determine areas for continued professional development. Practitioners who aspire to become CNMs can use the results to identify areas to pursue additional training to better prepare for the role. For example, dietitians aspiring to promote into the role can use the results of the practice audit to explore the responsibilities of the CNM. They can use the results to determine areas where they lack experience and explore opportunities for skill development in those areas of practice. Administrators may find the results useful in writing job descriptions for CNMs, determining their scope of responsibilities, and areas of the job that the CNM may require additional support to perform successfully.

Education

Qualitative data suggests that CNMs perceive that a variety of educational strategies would be beneficial to prepare them for this unique role. For example, CNMs identified mentoring programs, certificate programs, workshops, seminars, among other options for continuing education strategies. Educators can use the results of this study to determine priorities for education resource development. For example, a graduate certificate program could be developed for those who aspire to become CNMs or those just starting in the role. The graduate certificate degree could focus on categories that had the highest mean gap scores including ensuring compliance with regulations and accreditation standards and managing human and financial resources. Other areas of focus for the graduate certificate program would include those areas where competent managers rated the level of educational needs met lowest including providing clinical expertise and the general management and leadership activities. Additionally, to accommodate the proficient and expert managers, educational modules could provide advanced level knowledge and hands-on experiences for skill development. Modules could focus on the eight job categories of the CNM role. Clinical nutrition managers could evaluate their current scope of practice based on the Standards of Professional Performance for Clinical Nutrition Managers (Clark et al., 2012) to determine the modules they should complete for continued professional development.

Further research should focus on determining appropriate educational delivery methods for this unique group of practitioners. Clinical nutrition managers are busy and dispersed across

the United States, making it difficult for them to travel to locations to attend multiple educational programs. Therefore, it would be beneficial to determine CNMs' attitudes about distance education, self-study methods, mentoring programs, certification programs, and other educational strategies to determine strategies that would be the most successful and convenient for them.

Professional practice audits should continue to be conducted with this area of practice to validate current results, determine changes in educational priorities, and identify the success of implemented educational strategies. Furthermore, researchers could measure the impact of targeted educational programs on CNM self-efficacy to perform in the role. Additionally, other healthcare professions could use the methodologies to determine areas of practice within a field and highest priorities to focus educational strategies in order to better prepare practitioners for the various roles.

Self-Efficacy

Qualitative evidence suggests that there are multiple factors other than educational preparedness that impact CNMs' self-efficacy such as self-confidence, organizational culture, support from administrators and supervisors, and work experience. Additional research should identify how these factors influence self-efficacy and those that are the greatest predictors in determining self-efficacy. Strategies could target enhancing CNMs' self-efficacy to perform in the role.

Additionally, CNMs' career paths should be investigated and if perceived educational preparedness, self-efficacy, and job satisfaction impacted decisions to promote into the CNM role. It is also important to examine career paths of these practitioners prior to the CNM role, advancement possibilities beyond the CNM role, and factors that influence CNMs advancing their careers.

Table 6.1-Demographic Profile of Focus Group Participants (n=22)

Characteristic	n	Characteristic	n
Position Title		*Primary Place of Employment*	
Clinical Nutrition Manager	14	Hospital or Medical Center	20
Chief Clinical Dietitian	0	Other Healthcare Facility	0
Director of Food and Nutrition Services	1	Long-Term Care Facility	1
Other	7	Other	0
Primary Dietetic Credential		*Employer Description*	
RD/RDN	22	Contract Management Company	9
		Self-Operated Organization	13
Employment Status		Self-Employed	0
Full-Time (32 or more hours/week)	22		
Highest Level of Education		*Facility Location*	
Baccalaureate Degree	3	Rural (<2,500)	0
Some Graduate Work	3	Suburban (2,500-50,000)	4
Master's Degree	15	Small Metropolitan (50,001-500,000)	9
Doctoral Degree	1	Medium Metropolitan (500,001-1 million)	2
		Large Metropolitan (>1 million)	7
Competence Level		*Primary Person Report To*	
Competent	4	Foodservice Director	11
Proficient	9	Clinical Director	1
Expert	9	Other	10
Gender		*Supervisor is an RD*	
Female	22	Yes	1
Male	0	No	21

Table 6.2-Additional Demographics of Focus Group Participants (n=22)

Characteristic	Average	Mean	Range
Age	45	45.5	24-61
Length of time employed as a CNM—years	10.85	8.75	0.08-29
Length of time in Current Job—years	10.23	5	1-39
Number of Employees Supervised	22.86	15	0-77
Size of Facility—number of patient beds	390	450	60-750
Percentage of Time Spent in Activity			
Managing Clinical Services	50.87		0-100
Managing Foodservice Operations	20.43		0-95
Other Work Responsibilities	24.35		0-100

Table 6.3-Comments and Themes of Clinical Nutrition Managers' Job Duties Discussed in Focus Groups

Categories and Common Themes	Focus Group 1	Focus Group 2	Focus Group 3	Focus Group 4
Communication				
Communicate nutrition issues to healthcare stakeholders through the Performance Improvement Patient Satisfaction Committee	X			
Identify new nutrition information and communicate that to others		X	X	
Provide clinical leadership on interdepartmental and interdisciplinary meetings	X	X		
Create and coordinate/facilitate nutrition-related organizational committees and maintain information exchange with health professions		X	X	
Communicate nutrition related issues and regulations between the clinical staff and foodservice director	X	X	X	
Adjust communication style to target audience within the politics of the environment			X	
Ensure Accreditation and Regulations				
Review and approve patient menus and diet manual instead of assess compliance with diet manual	X			
Ensure HIPAA regulations are being followed and staff understands how HIPAA regulations impacts them			X	
Ensure nutrient analysis on patient menus is conducted to meet required regulations	X			
Identify nutrition-related standards and regulations and create organizational policies to ensure standards and regulations are being met		X	X	
Quality Assurance Performance Improvement				
Identify quality issues within the organization	X	X	X	
Advocate for the appropriateness of nutrition regulations for patients/clients		X		
Identify process improvement opportunities	X	X	X	
Identify patient safety issues, develop, implement, and evaluate systems to ensure patient safety	X	X	X	
Design quality improvement initiatives and implement initiatives	X	X	X	
Foster a quality culture and motivate staff at all levels of organization to embrace quality concepts	X	X		
Measure patient satisfaction and develop strategies to improve patient satisfaction	X	X	X	
Understand the HCAHPS system and tools used to measure quality and satisfaction used in organization and the impact on the organization	X			

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Table 6.3--Comments and Themes Related to Clinical Nutrition Manager Job Duties Discussed in Focus Groups (continued)

Categories and Common Themes	Focus Group 1	Focus Group 2	Focus Group 3	Focus Group 4
Clinical Expertise				
Provide clinical expertise to policy makers within the organization		X		
Provide leadership skills to clinical nutrition staff and organization	X		X	
Human Resource Management				
Train, re-train, and coach employees	X	X	X	X
Hold employees accountable and perform corrective action when needed	X		X	
Understand union contract, roles of the individuals and manager within a union environment	X			
Develop competency assessment systems and to ensure ongoing competency of staff	X	X	X	
Hire and fire employees	X		X	
Verify proper credentials of staff				X
Professional Development				
Identify training needs and develop training for dietitian's career advancement and specialization	X	X	X	X
Develop pay grade and career advancement standards for RDs within the organization	X	X		
Manage and coordinate the learning experience for dietetic students and interns	X	X	X	
Mentor staff to foster leadership and management skills	X	X	X	X
Provide leadership to staff to ensure they are functioning at highest level of scope of practice, within the standards of professional performance, and complying with ethical regulations of the profession	X	X	X	
Develop and implement staff engagement, motivation, and development strategies	X	X	X	
Maintain membership in other organizations pertinent to one's professional goals and role		X	X	
Participate in CDR professional portfolio, identify professional goals, implement plan to meet goals			X	
Financial Management				
Control cost to ensure effective use of resources	X	X		
Develop, implement, and monitor budget	X	X	X	
Establish productivity standards and evaluate productivity to ensure meeting standards	X	X	X	
Develop solutions to productivity issues	X		X	
Negotiate and advocate within the political climate to obtain needed resources and physical space to provide optimal service	X	X	X	
Determine appropriate FTEs	X			
Establish billing systems to ensure optimal reimbursement for appropriate diagnoses	X		X	

Table 6.3--Comments and Themes Related to Clinical Nutrition Manager Job Duties Discussed in Focus Groups (continued)

Categories and Common Themes	Focus Group 1	Focus Group 2	Focus Group 3	Focus Group 4
Other				
Demonstrate, market and communicate services and outcomes so that others understand the value of nutrition services to key stakeholders to show how nutrition can positively impact the organization's costs, patient satisfaction, etc.	X	X	X	
Develop, justify, implement and evaluate new programs and services	X	X	X	
Advocate for clinical staff and the profession to ensure others understand the value of dietitians	X		X	
Lead strategic planning for department and organization	X		X	
Ensure staff is applying the nutrition care process appropriately to ensure positive patient outcomes	X		X	
Establish standards for patient outcomes and intervention protocol	X		X	
Negotiate contracts for nutrition support and manage the facility's formulary		X	X	
Develop procedures related to emergency and disaster planning			X	
Lead clinical programs across multi sites			X	X
General Comments				
Possibly delete the community aspect of communication	X			X
Update language such as AND and Joint Commission	X			X
Add other accrediting agencies and include CMS	X			X
Change Quality assurance to Quality Assurance Performance Improvement (QAPI)	X			X
Include the word evidenced-based when talking about clinical expertise	X			
Add section on information technology	X	X	X	
--utilize technology to efficiently communicate with staff, administration, and other hospitals				
--identify technology systems, determine how those systems may impact the department and organization, implement new systems				
--identify electronic medical record systems available, train staff to effectively and efficiently utilize the EMR, extract and analyze data from EMR				
--Utilize technology to disseminate nutrition expertise to others				
Combining maintaining credentials and membership to professional organization to one bullet	X			
The term "leadership" is missing throughout	X		X	X
More action type words such as identify, establish, assess, evaluate, develop	X	X	X	X

Table 6.4--Common Themes Related to Clinical Nutrition Manager Role Preparedness and Self-Efficacy

Category and Common Themes	Focus Group 1	Focus Group 2	Focus Group 3	Focus Group 4
How prepared did you feel to function as a CNM when you first started in the role?				
Very little training to prepare	X	X		
Not prepared at all	X	X	X	X
Promoted into role as a clinician	X			
Felt clinically competent but not prepared for communication or business skills	X	X	X	
Felt ready but then realized from a regulatory standpoint was not ready (after CMS survey)	X			
What has helped you prepare for the role?				
Mentor	X		X	X
Contract management training resources and network	X			X
Experience from other management roles	X			X
Great director as a resource	X			
Experience through on-the-job training	X	X	X	
Sought out additional training		X	X	X
Education		X		
Networking with peers (CNM DPG)		X	X	
How has your self-efficacy changed from when you first entered the role to currently?				
Improved with experience	X	X	X	X
More comfortable and willing to take risks	X			
Improved political and strategic astuteness	X			
What factors has caused a change in your self-efficacy?				
Mentoring	X			
Leadership resources from The Academy (i.e. Leadership Development Institute)	X		X	
Graduate School	X			
More Experience		X		X
Feedback and affirmation from others			X	
Networking with other CNMs			X	

Table 6.5--Clinical Nutrition Manager Job Categories that Consisted of a Majority of Core Tasks and those that were Non-Core Tasks

Category/Non-Core Activities	% Involved[a]
General	
Providing leadership for functional areas of the foodservice operations	79.0
Managing all or some functional areas of other organizational departments	49.8
Ensuring Compliance with Regulations and Accreditation Standards	
Developing policies and procedures for optimal reimbursement of nutritional services	71.6
Providing Clinical Expertise	
Analyzing and reporting clinical data from research studies	47.5
Designing and conducting clinical research studies	42.1
Managing Human Resources	
Monitoring federal employment regulations and labor relations	65.6
Making salary decisions	59.3
Managing Financial Resources	
Assessing financial performance of their area of responsibility	76.6
Securing financial resources and physical space for nutritional services	61.9
Preparing financial reports	57.7
Negotiating contracts for nutrition support	45.6

[a]Percent Involved in some capacity

Table 6.6-Highest and Lowest Educational Preparedness Scores in Clinical Nutrition Managers' Job Tasks by Category

Category	Task with Highest Score	Mean ± SD	Task with Lowest Score	Mean ± SD
General	Providing medical nutrition therapy to patients and clients	4.44 ± 0.79	Collaborating with others to develop and implement a marketing plan for nutritional services	2.90 ± 1.20
Ensuring compliance with regulations	Reviewing and approving patient menus	3.97 ± 1.02	Developing policies and procedures for optimal reimbursement of nutritional services	2.62 ± 1.30
Communicating with Others	Identifying and informing clinicians of current evidence-based nutritional knowledge	3.92 ± 0.98	Advocating the value of nutritional services to key stakeholders	3.37 ± 1.23
Monitoring quality assurance	Identifying quality improvement issues	3.49 ± 1.11	Designing and implementing quality improvement issues	3.38 ± 1.13
Providing clinical expertise	Developing and providing evidence-based nutrition education	4.13 ± 0.94	Designing and conducting clinical research studies	2.98 ± 1.38
Managing human resources	Conducting staff training	3.70 ± 1.08	Making salary decisions	2.98 ± 1.27
Managing financial resources	Developing, justifying, and implementing programs and services	3.08 ± 1.19	Negotiating contracts for nutritional support	2.72 ± 1.24
Managing information technology	Utilizing technology to efficiently communicate with others	3.74 ± 1.13	Analyzing data from technology systems	3.34 ± 1.25

Table 6.7-Summary of Most Frequently Involved Tasks with Level of Involvement and Educational Gap Scores of Clinical Nutrition Managers (CNMs)

Task (Category)	Frequency of Involvement[a]	% Involved in Any Way[b]	Educational Gap Scores (Mean ± SD)[c]
Managing clinical operations (General)	18.85 ± 4.26	100.0	5.39 ± 1.37
Providing leadership to clinical nutrition services (General)	18.60 ± 4.64	100.0	5.57 ± 1.34
Utilizing technology to efficiently communicate with others (Managing Information Technology)	17.94 ± 5.79	100.0	5.29 ± 1.61
Motivating staff to function at their highest level (Managing Human Resources)	13.08 ± 8.80	100.0	5.76 ± 1.67
Providing medical nutrition therapy to clients/patients (General)	12.42 ± 9.93	91.1	4.98 ± 1.13
Managing foodservice operations (General)	11.40 ± 8.84	81.2	4.73 ± 1.52
Serving as an interdisciplinary and interdepartmental liaison within the healthcare team (Communicating with Others)	11.18 ± 8.83	99.6	4.95 ± 1.52
Providing leadership to foodservice operations (General)	11.11 ± 8.89	79.0	4.72 ± 1.49
Developing and maintaining effective communication channels between clinical services and other healthcare professionals and departments (Communicating with Others)	10.73 ± 8.97	100.0	5.21 ± 1.55

[a]Frequency of Involvement Scores: daily=20, weekly=4, monthly=1, less than monthly=0.5

[b]Those tasks where 80% or higher of CNMs were involved in some way were considered core activities; CNMs could be involved by assisting others, performing themselves, or supervising/managing others

[c]Educational Gap Scores could range between 1-9, those with means greater than 5.6 were considered highest educational priorities

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Appendix A - CNM Duties Validated by Witte and Messersmith (1995)

Table A.1-Frequency of Clinical Nutrition Manager Duties as Validated by Witte and Messersmith (1995)

Mean Rank of Duty	Duties Performed by Clinical Nutrition Managers	Frequency of Performance (%)
1	Applies newly acquired knowledge to working environment	99.6
2	Maintains credentials including dietetic registration	99.4
3	Ensures that all policies, procedures, and standards are in compliance with regulatory agencies and Joint Commission on Accreditation of Healthcare Organizations standards	98.7
4	Manages quality assurance needs for area of responsibility	98.5
5	Informs superiors of pertinent information in area of responsibility	98.5
6	Evaluates quality assurance data for area of responsibility	98.3
7	Maintains updated policies and procedures for area of responsibility	98.3
8	Implements and enforces policies and procedures for area of responsibility	98.3
9	Applies nutrition expertise to evaluation and selection of products and procedures	98.1
10	Assesses own needs for professional growth and development and develops plan	97.9
11	Informs subordinates of pertinent information regarding organization, department, and area of responsibility	97.2
12	Develops and expands knowledge base in clinical dietetics	97.2
13	Evaluates and documents personal performances according to established standards	96.8
14	Reports results of quality assurance activities in area of responsibility	96.8
15	Maintains membership in The American Dietetic Association	96.6
16	Prepares required reports and required documentation from records and statistics maintained for area of responsibility	95.9

17	Develops and expands knowledge base in management	95.5
18	Develops and maintains nutrition-related standards of care for patients/clients	95.5
19	Develops and expands knowledge base in clinical nutrition management	95.1
20	Develops work methods, job descriptions, and standards of performance for professional staff and dietetics support personnel	94.6
21	Directs daily and long-range operations in area of responsibility	94.5
22	Maintains information exchange with health care professionals and hospital staff	94.4
23	Develops and/or maintains organization-approved diet manual	94.2
24	Maintains patient/client satisfaction	93.8
25	Identifies noncompliant employee behavior and takes appropriate action	93.6
26	Manages in-service education for area of responsibility	92.1
27	Provides nutrition expertise to management staff	91.6
28	Provides nutrition expertise to clinical dietetics staff	90.6
29	Manages employee orientation needs for area of responsibility	90.0
30	Supervises daily activities of subordinates	89.7
31	Manages staff development for professionals in area of responsibility	88.9
32	Determines staffing needs to effectively meet documented standards of care	88.5
33	Controls costs for area of responsibility by effective and efficient management of resources	88.0
34	Schedules employees in area of responsibility	87.0
35	Maintains employee relations in compliance with labor regulations and Equal Employment Opportunity	86.7
36	Assesses patient menus for nutritional adequacy and compliance with diet manual and all regulations	86.1
37	Maintains positive guest relations	83.9
38	Identifies documents and recommends employees for pay raise,	83.5

	promotion, and transfer	
39	Identifies employees' market and selects employees to meet staffing and scheduling needs	83.2
40	Provides nutrition expertise to foodservice employees	82.8
41	Develops menus for patient foodservice including regular and modified menus	77.7
42	Provides nutrition expertise to health care team and non-dietetics staff	77.1
43	Maintains membership in other professional organizations	76.8
44	Provides nutrition education to health care team and hospital staff	75.2
45	Provides written and oral nutrition education presentations for hospital and community	72.8
46	Maintains personnel records for employees in area of responsibility	72.7
47	Coordinates nutrition-related organizational committee(s)	69.7
48	Identifies sources of revenue and develops revenue-generating programs	63.6
49	Manages learning experiences for dietetics students	56.5
50	Assess financial needs of area and determines budgetary needs	55.3
51	Informs community of pertinent nutrition-related information	54.3
52	Manages various budgets for area of responsibility	47.1
53	Manages subsystems of the foodservice operation other than clinical dietetics	45.0
54	Applies nutrition expertise to research and investigative studies in clinical dietetics	23.3

Note: Adapted from Witte and Messersmith (1995)

Appendix B - Permission from Witte to Utilize and Modify CNM Duties

Amber Howells

Fri 3/28/2014 9:35 AM
Sent Items

Dear Dr. Witte,
My name is Amber Howells, and I am currently a PhD candidate at Kansas State University. I am working with Dr. Kevin Sauer and Dr. Carol Shanklin as my major professors. For my dissertation research, I am focusing on clinical nutrition managers. Our research team plans to conduct a practice audit of CNMs and compare their responsibilities to their preparation for the role. Prior to this practice audit, we will be conducting focus groups with CNMs. I was reading the article "Clinical nutrition management position: Responsibilities and skill development strategies" that you and Dr. Messersmith published in 1995 with the Journal of the American Dietetic Association.

I am writing to ask permission to adapt the 54 duties that you found in your research to guide our focus group discussions. We will properly cite the data that we use. I am also wondering if there is any other unpublished data that you may know of in this area that may be helpful for us to review.

I appreciate your assistance and look forward to your response.

Warm Regards,
Amber

Amber Howells, MS, RD, LD
Director, Coordinated Program in Dietetics
Kansas State University
785-532-5576
geist78@ksu.edu

Sandra Witte <sandraw@csufresno.edu>
Fri 3/28/2014 10:54 AM

Dear Amber,
You have my permission to modify the list of duties of clinical nutrition managers. I am not familiar with any other unpublished data in this area at this time.

Best of luck to you!

Sandra S. Witte, PhD, RD
Dean of Graduate Studies
California State University, Fresno
559-278-2448

Appendix C - Request for Participation Email Correspondence

Dear Clinical Nutrition Manager,

A research team from the Department of Hospitality Management and Dietetics at Kansas State University is conducting a study to determine core job responsibilities of the clinical nutrition managers. You have been identified as someone who has previously served on the executive board of the CNM DPG and a professional who understands clinical nutrition management practice. The purpose of this study is to identify and validate job responsibilities of the CNM. Results from this study will assist us in developing a practice audit instrument specific to clinical nutrition management practice and improve understanding of the CNM role.

To identify and validate job responsibilities of the CNM role, we are conducting three focus groups utilizing online videoconferencing technology and are requesting your participation. Focus groups will take approximately one hour with eight to ten participants and the researchers. The focus groups will be done online using technology, and the researchers will provide detailed instructions on how to use this technology prior to the date of the focus groups.

Your responses will remain confidential and anonymous. Only summary results will be reported. No individual responses will be disclosed. If you agree to participate, you will be given an informed consent form to complete prior to the focus groups indicating your willingness to participate.

Please notify us by DATE if you are willing to participate in these focus groups. We will schedule the focus groups once we have received responses from all of our participants.

If you have any questions about this study, please feel free to contact Amber Howells at 785-532-5576 or geist78@ksu.edu or Kevin Sauer at 785-532-5581 or ksauer@ksu.edu.

Thank you for your time and consideration. Your participation is sincerely appreciated.

Amber Howells, MS, RD, LD
PhD Candidate
Kansas State University
785-532-5576
geist78@ksu.edu

Kevin Sauer, PhD, RD, LD
Associate Professor
Kansas State University
785-532-5581
ksauer@ksu.edu

Appendix D - Informed Consent to Participate in Focus Groups

KANSAS STATE UNIVERSITY

INFORMED CONSENT

PROJECT TITLE: Analysis of Clinical Nutrition Managers' job responsibilities and role preparedness

APPROVAL DATE OF PROJECT: 5/30/14   EXPIRATION DATE OF PROJECT: Exempt

PRINCIPAL INVESTIGATOR: Amber Howells (785-532-5576)

CO-INVESTIGATOR(S): Dr. Kevin Sauer (785-532-5581) Dr. Carol Shanklin (785-532-7927); Dr. Rick Scheidt (785-532-1483); Dr. Nancy Hakel-Smith (402-481-8052)

CONTACT NAME AND PHONE FOR ANY PROBLEMS/QUESTIONS: Amber Howells, MS, RD, LD, 785-532-5576, geist78@ksu.edu; or Dr. Kevin Sauer, 785-532-5581; ksauer@ksu.edu

IRB CHAIR CONTACT/PHONE INFORMATION*:*

- Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

- Jerry Jaax, Associate Vice President for Research Compliance and University Veterinarian, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

SPONSOR OF PROJECT: N/A

PURPOSE OF THE RESEARCH: This is a project that is investigating the core job responsibilities of clinical nutrition managers and their role preparedness. These focus groups will help identify job responsibilities and assist in developing a practice audit instrument specific for clinical nutrition management practice.

PROCEDURES OR METHODS TO BE USED: Focus groups will be used to identify job responsibilities of clinical nutrition managers. Online synchronous focus groups will be conducted utilizing videoconferencing technology.

LENGTH OF STUDY: The overall project will be one year; the focus groups will each take approximately one hour

RISKS OR DISCOMFORTS ANTICIPATED: No known risks

BENEFITS ANTICIPATED:
1. To identify and validate job responsibilities of the clinical nutrition manager position.
2. To develop a practice audit instrument specific to clinical nutrition management practice to administer to a larger sample of clinical nutrition managers.

EXTENT OF CONFIDENTIALITY: Responses will remain confidential and anonymous

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name:

Participant Signature: **Date:**

Witness to Signature: (project staff)   **Date:**

Appendix E - Instructions to Use Internet Videoconferencing Technology for Online Focus Groups

Zoom Instructions

You will need the following on your computer to participate:

1. Web Camera
2. Microphone and Speakers (note: some web cameras have the microphone built it).

Instructions for Desktop or Laptop Users for Accessing Zoom Meeting

1. In your email inbox, refer to the email sent by Amber Howells (geist78@ksu.edu) regarding attending a Zoom Meeting.
2. Click on the link in the email.
3. Click the "join the meeting" button.
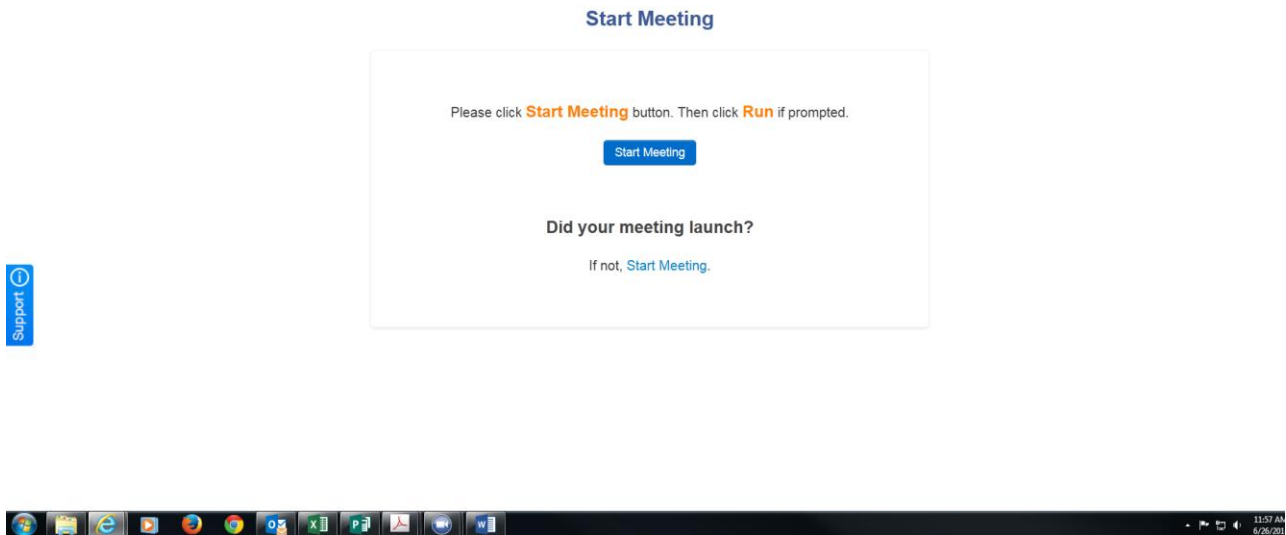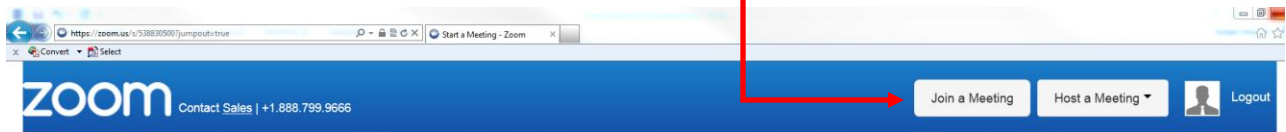
4. A textbox may appear that asks "do you want to run this application?" If so, click on Run.
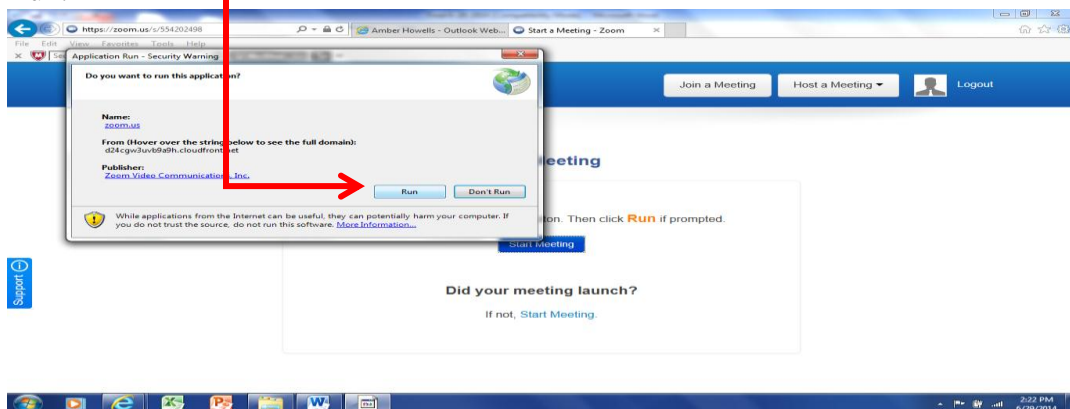
5. A text box may appear that asks you to enter your name; if so, please enter your name.
6. It will ask if you want to use your phone or computer microphone and speaker system. If you have a computer microphone and speaker system, click on that option.
7. If you do not have a computer microphone and speaker system, click on the telephone option.

If you are using a mobile device for the Zoom Meeting, please contact Amber Howells at geist78@ksu.edu to receive further instructions on how to access Zoom.

To View Live Video of all Participants, click on the Gallery Button at the top, right hand of the Zoom Window.
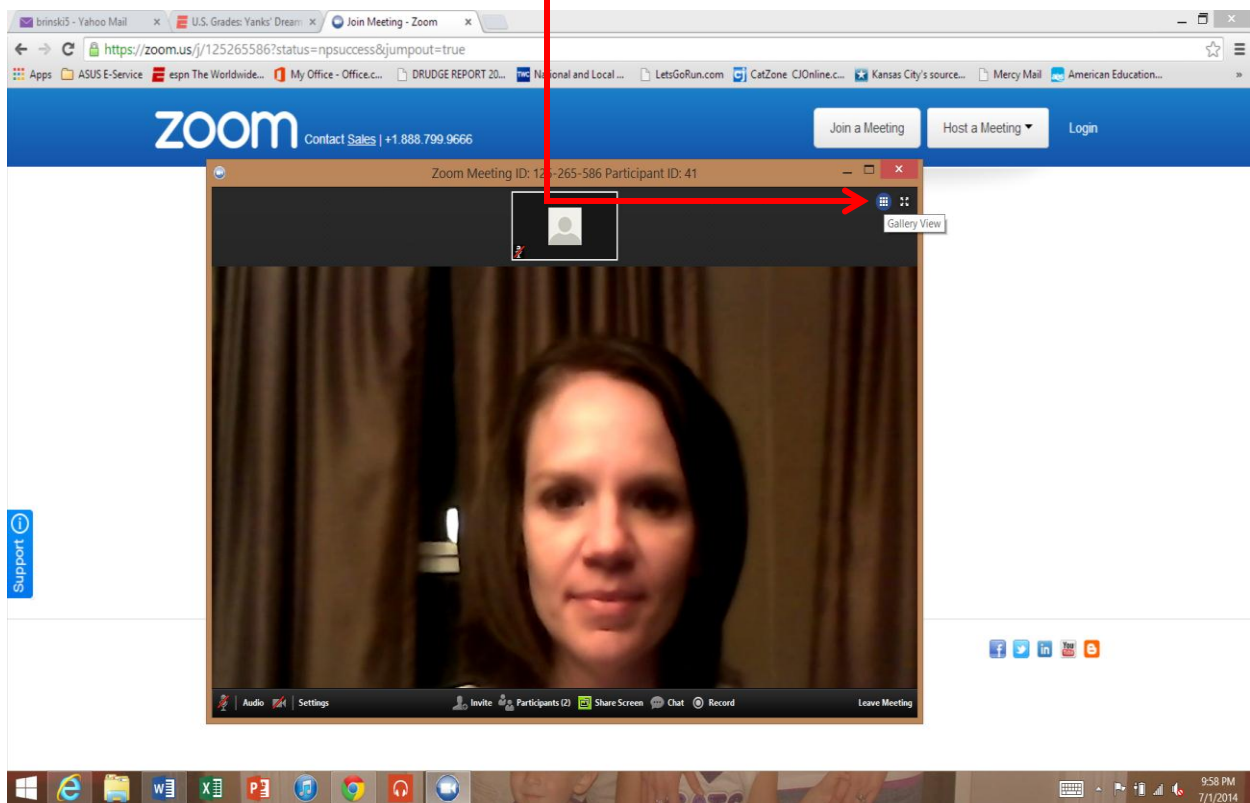
Trouble Shooting:

Zoom screen shot adapted from K-State's FAQ for First Time Zoom Participants

If your microphone is not working, a couple of things you can try include:
1. Ensure that your microphone is plugged in.
2. In the bottom left hand side of the video screen, there is a picture of a microphone. A red line through the microphone indicates that you are muted. If you click on the microphone, it will unmute you and you will be heard by the participants.
3. In the bottom left hand side of the video screen, there is a settings button. Click on settings. In the pop up box, on the left hand side of the screen, select audio. You can test your microphone by clicking on the Test Mic button and then speaking into the mic. It will record your speaking and if your microphone is working correctly, it will play back what you said during your test. In this pop up, you can also select another microphone option from your drop down menu.

If your speakers are not working, you can try the following:
1. Ensure that your speakers are plugged in and turned on.
2. In the bottom left hand of the video screen, there is a settings button. Click on settings. In the pop up box, on the left hand side of the screen, select audio. You can test your speakers by clicking on the Test Speaker button. If you speakers are working correctly, you should be able to hear music when you click on that button. You can also select another speaker option from your drop down menu here.

If your Video is not working, you can try the following:
1. Make sure that your webcam is plugged in and turned on.
2. Connect your webcam to a different USB port if not working properly.
3. Ensure that your webcam is not being used by another application on your computer.
4. In the bottom left hand side of your video screen, there is a settings button. Click settings. In the pop up box, on the left hand side, click video. Ensure that you are utilizing the correct webcam from your drop down menu.

If you need technical assistance at the beginning of the focus group, contact:
Dr. Kevin Sauer
785-532-5581

Appendix F - Focus Group Date and Time Confirmation
Email Correspondence

Good Afternoon Professional,

Thank you again for participating in our focus groups to identify and validate CNM job responsibilities. From the doodle meeting request responses, we have scheduled you for:

Friday, July 18th, 2014 from 12:00-1:00 PM Central time (1:00-2:00 PM Eastern Time; 11:00-12:00 PM Mountain Time; 10:00-11:00 AM Pacific Time)

Prior to the focus group, I ask that you please complete the following:
1. An informed Consent Form is attached to this email. Please read, sign, and scan and email back to me at geist78@ksu.edu. The form can also be faxed to Attn: Amber Howells at 785-532-5522. This form must be on file for all participants.

2. Please complete the demographic questionnaire located at the following link: https://kstate.qualtrics.com/SE/?SID=SV_6XoEW1FAA13cERf

3. Please review the online videoconferencing technology instructions attached. The program that we are using for these online focus groups is called Zoom.
   a. If you would like to practice with the Zoom technology prior to the focus group date, the researchers would be happy to do so. Please let us know and we can schedule a time to practice the technology.
   b. The link to the Zoom meeting will be sent about 15 minutes prior to the time of your focus group on the date specified above.
   c. You will need a webcam and a microphone to participate in the focus groups. If you do not have these, please contact me and I will give further instructions.

Again, thank you for your willingness to participate in these focus groups. As an incentive for participating, we will mail you a $25 Visa gift card. ***In order to process the gift cards, we will need the following information from you after the focus groups: Mailing Address and Social Security Number.***

Warm Regards,
Amber

Amber Howells, MS, RD, LD
PhD Candidate
Director, Coordinated Program in Dietetics
Kansas State University
785-532-5576
geist78@ksu.edu

Appendix G - Categorization of Witte and Messersmith (1995) Duties

Communication
- Applies newly acquired knowledge to working environment
- Informs superiors of pertinent information in area of responsibility
- Informs subordinates of pertinent information regarding organization, department, and area of responsibility
- Maintains information exchange with health care professionals and hospital staff
- Coordinates nutrition-related organizational committee(s)
- Informs community of pertinent nutrition-related information

Ensures regulations and accreditation standards are followed
- Ensures that all policies, procedures, and standards are in compliance with regulatory agencies and Joint Commission on Accreditation of Healthcare Organizations standards
- Maintains updated policies and procedures for area of responsibility
- Implements and enforces policies and procedures for area of responsibility
- Prepares required reports and required documentation from records and statistics maintained for area of responsibility
- Assesses patient menus for nutritional adequacy and compliance with diet manual and all regulations

Monitors Quality Assurance
- Manages quality assurance needs for area of responsibility
- Evaluates quality assurance data for area of responsibility
- Reports results of quality assurance activities in area of responsibility
- Maintains patient/client satisfaction
- Maintains positive guest relations

Provides Clinical Expertise
- Applies nutrition expertise to evaluation and selection of products and procedures
- Develops and maintains nutrition-related standards of care for patients/clients
- Develops and/or maintains organization-approved diet manual
- Provides nutrition expertise to management staff
- Provides nutrition expertise to clinical dietetics staff
- Provides nutrition expertise to foodservice employees
- Provides nutrition education to health care team and hospital staff
- Provides written and oral nutrition education presentations for hospital and community
- Applies nutrition expertise to research and investigative studies in clinical dietetics
- Develops menus for patient foodservice including regular and modified menus
- Provides nutrition expertise to health care team and non-dietetics staff

Human Resource Management
- Evaluates and documents personal performances according to established standards
- Develops work methods, job descriptions, and standards of performance for professional staff and dietetics support personnel
- Identifies noncompliant employee behavior and takes appropriate action
- Manages employee orientation needs for area of responsibility
- Supervises daily activities of subordinates
- Determines staffing needs to effectively meet documented standards of care
- Schedules employees in area of responsibility
- Maintains employee relations in compliance with labor regulations and Equal Employment Opportunity
- Identifies documents and recommends employees for pay raise, promotion, and transfer
- Identifies employees' market and selects employees to meet staffing and scheduling needs
- Maintains personnel records for employees in area of responsibility

Professional Development
- Assesses own needs for professional growth and development and develops plan
- Develops and expands knowledge base in management
- Develops and expands knowledge base in clinical nutrition management
- Develops and expands knowledge base in clinical dietetics
- Manages in-service education for area of responsibility
- Manages staff development for professionals in area of responsibility
- Maintains credentials including dietetic registration
- Maintains membership in other professional organizations
- Maintains membership in The American Dietetic Association
- Manages learning experiences for dietetics students

Financial Resource Management
- Controls costs for area of responsibility by effective and efficient management of resources
- Identifies sources of revenue and develops revenue-generating programs
- Assess financial needs of area and determines budgetary needs
- Manages various budgets for area of responsibility

Other Management
- Manages subsystems of the foodservice operation other than clinical dietetics
- Directs daily and long-range operations in area of responsibility

Appendix H - Focus Group Discussion Guide

Researchers' Focus Group Guide

Purpose: To determine the responsibilities of the clinical nutrition manager.

Introduction (1 minute): Hello, my name is Amber Howells and I am a graduate student at Kansas State University. Joining me today are my co-major professors, Dr. Kevin Sauer and Dr. Carol Shanklin. I would like to thank you for volunteering to participate in our focus group today. Currently, I am working on a study regarding clinical nutrition managers' job responsibilities and their role preparedness. The objective of the focus group today is to discuss your thoughts about what the core job responsibilities of the clinical nutrition manager role. I would like to validate general responsibility categories established by Witte and Messersmith (1995) and ask what types of activities clinical managers do regarding each category.

Today we have several professionals with us who we consider experts within CNM practice.

Disclosure (2 minutes): This focus group is scheduled for approximately one hour. However, please take your time when answering questions because your thoughts and opinions are important to me. Your identity and answers will not be disclosed to anyone. If at anytime you feel uncomfortable or wish to discontinue participating in this focus group, you are allowed to leave the group discussion and log-out of the session. If you have any questions regarding this study, please contact myself or Dr. Kevin Sauer. If you have questions regarding the use of human subjects, please contact the Office of Research and Sponsored Programs. The contact information for these offices, as well as your rights regarding participation in this focus group, are in the consent forms that I have provided to you. If you have not read and signed the consent form, please do so at this time. I will need a copy of the form for my records. You can fax the form to 785-532-5522 or scan and email to geist78@ksu.edu. This discussion will be audio-recorded so that we may refer back to our discussion today.

Guidelines (2 minutes): Today I will be asking questions regarding core job responsibilities of clinical nutrition managers. Please share your thoughts and opinions. There are no wrong answers, but please realize that there may be different opinions within the group. Everyone's thoughts and opinions are important for me to hear. Thus, it is important that only one person speaks at a time. Given that the focus groups are online, to start the discussion after each question, I will call on someone to start the discussion. Please be respectful of other group members at all times. Before we get started with the discussion, does anyone have any questions regarding the focus group instructions?

Data Collection (53 minutes): See focus group questions below

Closing (2 minutes): I would like to thank you for your participation. Your thoughts and opinions regarding core job responsibilities will be useful in creating a questionnaire that is appropriate to distribute to clinical nutrition managers. The long-term goal of my project is to identify ways to improve preparedness of clinical nutrition managers to complete their job responsibilities. For your participation today, you will receive a $25 gift card in the mail within one week. I will need you to email me your social security number and your mailing address so that I can process the gift cards. Also, please remember to email me your informed consent form if I do not have it already.

Once we have the task statement developed, we will also be conducting cognitive interviews to ensure that our task statements are understood correctly. Would any of you be willing to volunteer for the cognitive interviews? They will be scheduled for one hour, and we are offering another $25 gift to the participants.

Focus Group Questions

Introduction: In 1995, Witte and Messersmith validated 54 duties related to the clinical nutrition manager role. We have categorized these into eight categories that are listed in the document I provided.   We will go through each of the categories, and I will ask a few questions about each category.

1. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to communicating. (12:05-12:10)

    a. Should any of these duties be eliminated from this category?

    b. Are there any additional duties that fall within this category currently?

2. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to ensuring compliance with standards, regulations, policies, and procedures. (12:10-12:15)

    a. Should any of these duties be eliminated from this category?

    b. Are there any additional duties that fall within this category currently?

3. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to monitoring quality assurance. (12:15-12:20)

    a. Should any of these duties be eliminated from this category?

    b. Are there any additional duties that fall within this category currently?

4. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to providing clinical expertise. (12:20-12:25)

    a. Should any of these duties be eliminated from this category?

    b. Are there any additional duties that fall within this category currently?

5. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to managing human resources (12:25-12:30)

    a. Should any of these duties be eliminated from this category?

    b. Are there any additional duties that fall within this category currently?

6. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to managing professional development of self and staff. (12:30-12:35)

     a.   Should any of these duties be eliminated from this category?

     b.   Are there any additional duties that fall within this category currently?

7. In the document provided, there is a list of duties validated by Witte and Messersmith in 1995 related to managing financial resources. (12:35-12:40)

     a.   Should any of these duties be eliminated from this category?

     b.   Are there any additional duties that fall within this category currently?

8. What other activities outside of these categories do you perform? (12:40-12:45)

9. In general, how prepared did you feel to function as a CNM when you started in the role? (12:45-12:50)

10. How have you prepared yourself to perform the various responsibilities in your role as a CNM? (12:50-12:55)

11. Self-efficacy is one's personal confidence in performing a specific task. How has your self-efficacy changed from when you first entered the CNM role to currently? (12:55-1:00)

     a.   What factors influenced this change in self-efficacy?

Appendix I - Cognitive Interview Informed Consent

KANSAS STATE UNIVERSITY

INFORMED CONSENT

PROJECT TITLE: Analysis of Clinical Nutrition Managers' job responsibilities and role preparedness

APPROVAL DATE OF PROJECT: 5/30/2014   **EXPIRATION DATE OF PROJECT: EXEMPT**

PRINCIPAL INVESTIGATOR: Amber Howells (785-532-5576)

CO-INVESTIGATOR(S): Dr. Kevin Sauer (785-532-5581) Dr. Carol Shanklin (785-532-7927); Dr. Rick Scheidt (785-532-1483); Dr. Nancy Hakel-Smith (402-481-8052)

CONTACT NAME AND PHONE FOR ANY PROBLEMS/QUESTIONS: Amber Howells, MS, RD, LD, 785-532-5576, geist78@ksu.edu; or Dr. Kevin Sauer, 785-532-5581; ksauer@ksu.edu

**IRB CHAIR CONTACT/PHONE INFORMATION*:*

- Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

- Jerry Jaax, Associate Vice President for Research Compliance and University Veterinarian, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

SPONSOR OF PROJECT: N/A

PURPOSE OF THE RESEARCH: This is a project that is investigating the core job responsibilities of clinical nutrition managers and their role preparedness. These cognitive interviews will assist in developing a practice audit instrument specific for clinical nutrition management practice. The cognitive interviews will help ensure that survey participants accurately understand the task statements in the practice audit instrument.

PROCEDURES OR METHODS TO BE USED: Cognitive interviews will be used to determine if participants are accurately understanding the task statements. Online synchronous cognitive interviews will be conducted utilizing videoconferencing technology.

LENGTH OF STUDY: The overall project will be one year; the cognitive interviews will each take approximately one hour

RISKS OR DISCOMFORTS ANTICIPATED: No known risks

BENEFITS ANTICIPATED:
1. To identify and validate job responsibilities of the clinical nutrition manager position.
2. To develop a practice audit instrument specific to clinical nutrition management practice to administer to a larger sample of clinical nutrition managers.

EXTENT OF CONFIDENTIALITY: Responses will remain confidential and anonymous

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name: _____

Participant Signature: _____   **Date:** _____

Witness to Signature: (project staff) _____   **Date:** _____

Appendix J - Cognitive Interview Guide

Researchers' Cognitive Interview Guide

Purpose: To ensure that survey participants will accurately understand the meaning of the task statements in the practice audit.

Introduction (10 minutes): Hello, my name is Amber Howells and I am a graduate student at Kansas State University. I would like to thank you for volunteering to participate in our cognitive interviews today. The objective of the cognitive interview today is to discuss your thoughts about the meaning of various task statements that will be used in a practice audit tool to be distributed to other clinical nutrition managers. I will present several task statements and ask you to state in your own words what the task statement means to you.

Disclosure (5 minutes): This cognitive interview is scheduled for approximately one hour. However, please take your time when answering questions. Your identity and answers will not be disclosed to anyone. If at anytime you feel uncomfortable or wish to discontinue participating in this interview, you are allowed to leave the interview and log-out of the session. If you have any questions regarding this study, please contact either myself or Dr. Kevin Sauer. If you have questions regarding the use of human subjects, please contact the Office of Research and Sponsored Programs. The contact information for these offices, as well as your rights regarding participation in this interview, are in the consent forms that I have provided to you. Let's review the consent forms at this time. After reading the consent form carefully, please sign it if you agree to the conditions. One copy is for you to keep; please return the other copy to me for my records. You can mail the form to Amber Howells, 104 Justin Hall, Kansas State University, Manhattan, KS 66506, Fax the form to 785-532-5522 or scan and email to geist78@ksu.edu. This discussion will be audio-recorded so that we may refer back to our discussion today. Are there any questions about the interview before we get started?

Data Collection (35 minutes): I have sent you a copy of the task statement that will be discussed in this interview. I will read a task statement, allow you time to review that task statement from the list I have provided and will ask the following question for each task statement discussed.

[Insert task statement]. Can you explain in your own words what this task statement means to you?

Closing (5 minutes): I would like to thank you for your participation in this cognitive interview. Your answers will be helpful to determine the appropriate wording for task statements that are specific to clinical nutrition managers. For your participation today, you will receive a $25 gift card in the mail within one week.

Appendix K - Survey Draft

Survey Draft

Dear Clinical Nutrition Manager,

A research team from the Department of Hospitality Management and Dietetics at Kansas State University is conducting a study evaluating clinical nutrition managers' job responsibilities and role preparedness. You have been identified as a professional who understands clinical nutrition management practice. The purpose of this study is to identify job responsibilities of clinical nutrition managers and evaluate role preparedness.   Results from this study will provide a greater understanding of the clinical nutrition manager role and assist others in developing continuing education activities specific for clinical nutrition managers.

Your input is important for the success of this study. Please take a few minutes to complete the survey; the survey will take approximately minutes of your time. Your participation is voluntary. Refusal to participate will involve no penalty or loss of benefits and you may discontinue participation at any time without penalty or loss of benefits. Your responses will remain confidential and anonymous. Only summary results will be reported. No individual responses will be disclosed. Completing the questionnaire indicates that you are volunteering to participate in this study.

If you have any questions about this study, please feel free to contact Amber Howells at 785-532-5576 or geist78@ksu.edu or Kevin Sauer at 785-532-5581 or ksauer@ksu.edu.

Thank you for your time and participation.

Sincerely,

Amber Howells, MS, RD
Director, Coordinated Program in Dietetics
PhD Candidate
Hospitality Management & Dietetics
Kansas State University

Kevin Sauer, PhD, RD
Assistant Professor
Hospitality Management & Dietetics
Kansas State University
_____
 For questions about your rights as a participant or the manner the study is conducted, you may contact Dr. Rick Scheidt, Chair of Committee on Research Involving Human Subjects, (785) 532-3224, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506.

Screening Questions:

1. Do you currently supervise clinical staff?
    a. Yes
    b. No
2. Do you currently manage a clinical nutrition program?
    a. Yes
    b. No
3. Are you a member of the CNM DPG? (Pilot Test only)
    a. Yes
    b. No

Practice Audit:

1. In the last year, in what ways have you been involved with this activity (if any)? (no involvement, assist others, perform myself, supervision/manage)
2. [IF INVOLVED} With what frequency have you been personally involved (in any way) with this activity over the last year? (daily, weekly, monthly, less than monthly)
3. How confident are you that you can perform the activity as of now? (5-point scale with 0=definitely cannot do; 1=probably cannot do, 2=don't know if can do, 3=moderately certain can do, 4=highly certain can do)
4. How important is it to receive education related to this activity for a CNM to perform it successfully? (5 point scale; 1=Not at all important, 2=unimportant, 3=neither important nor unimportant, 4=important, 5=very important)
5. How well were your educational needs met through formal education to do this activity? (i.e. BS degree, supervised practice, MS degree) (5-point scale; 1=completely unmet, 2=mostly unmet, 3=neither met or unmet, 4=mostly met, 5=completely met)
6. How well were your educational needs met through professional continuing education and/or on-the-job training strategies to do this activity? (5-point scale; 1=completely unmet, 2=mostly unmet, 3=neither met or unmet, 4=mostly met, 5=completely met)

Activities Performed in Primary Position as a Clinical Nutrition Manager

1. Way(s) Involved				2. Frequency				3. How confident are you that you can perform the activity _**as of now**_?					
NI	AO	PM	SM	D	W	M	<M	0	1	2	3	4	Activity
													Activity 1
													Activity 2
													Activity 3

Education Preparedness for activities as a Clinical Nutrition Manager

4. Importance of education related to this activity to perform it successfully					5. Educational need met through formal education					6. Educational need met through professional continuing and/or on-the-job training					
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	Activity
															Activity 1
															Activity 2
															Activity 3

Additional questions:

1. How satisfied are you with your current job as a CNM?
   a. Very Satisfied
   b. Moderately Satisfied
   c. Neutral
   d. Moderately dissatisfied
   e. Very dissatisfied

2. Over the past 6 months, would you say your satisfaction level has:
   a. Increased significantly
   b. Increased slightly
   c. Stayed the same
   d. Decreased slightly
   e. Decreased significantly

3. How would you rate your overall self-efficacy to perform in the CNM role? (Self-efficacy is defined as personal confidence in one's ability to perform a specific task.)
   a. Very High
   b. High
   c. Neutral
   d. Low
   e. Very Low

Demographic Questions:

1. Which job title best describes your current position? (Check all that apply)
   a. Clinical Nutrition Manager
   b. Chief Clinical Dietitian
   c. Director of Dietary Services/Director of Food and Nutrition Services
   d. Internship Director
   e. Other: (Specify: _____)

2. What is your primary dietetic credential?
   a. RD/RDN
   b. DTR
   c. CDM
   d. Other: (Specify: _____)

3. What is your highest level of education?
   a. Baccalaureate degree
   b. Some graduate coursework completed
   c. Master's Degree
   d. Doctoral Degree
   e. Prefer not to answer

4. What is your gender?
   a. Female
   b. Male
   c. Prefer not to answer

5. What is the year of your birth? _____ (Please skip if you prefer not to answer)

6. How many employees do you directly supervise? _____

7. Please indicate your current employment status
   a. Full-Time (32 or more hours per week)
   b. Part-Time (less than 32 hours per week)
   c. Currently retired

8. How long have you been a CNM? Years:_____ Months:_____

9. How many years have you been in your current job? Years:_____ Months:_____

10. What is your primary place of employment?
    a. Hospital or Medical Center
    b. Other Healthcare Facility
    c. Long-Term Care Facility
    d. Other: Specify_____

11. Which of the following best describes your employer?
    a. Contract Management Company
    b. Self-Operated Organization
    c. Self-Employed

12. What is the size of your facility (number of patient beds)? _____

13. My Primary Supervisor is an RD.
    a. Yes
    b. No

14. Who is the primary person you report to?
    a. Foodservice Director
    b. Clinical Director
    c. Other: Specify: _____

15. My primary mentor is the person I report to?
    a. Yes
    b. No

16. My primary mentor is:
    a. Foodservice Director
    b. Clinical Director
    c. Other: Specify: _____

17. How satisfied are you with the level of mentoring you receive from your primary mentor?
    a. Very Satisfied
    b. Moderately Satisfied
    c. Neutral
    d. Moderately dissatisfied
    e. Very dissatisfied

18. The mentoring I have received from my primary mentor has helped me to be a successful CNM?
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

19. How would you rate your competence level using to the Academy of Nutrition and Dietetics Standards of Professional Performance for Clinical Nutrition Managers?
    a. Competent—A competent CNM is a task oriented CNM who is newly acquiring management skills
    b. Proficient—A proficient CNM has a moderate level of management experience
    c. Expert—An expert CNM has achieved the highest level of skill and mastery in clinical nutrition management

20. On average, what percentage of your time do you spend doing the following activities?
    a. Supervising clinical services: _____
    b. Supervising foodservice operations: _____
    c. Other activities besides supervising clinical or foodservice operations: _____

Open-ended Questions:

21. What strategies do you think would be the most beneficial to prepare RDs for the CNM role?

22. What factors impact self-efficacy to perform in the CNM role?

23. How has your self-efficacy changed over your career as a CNM?

24. What factors have contributed to a change in self-efficacy over your career as a CNM?

25. What strategies would be the most beneficial to continue to enhance your self-efficacy?

Appendix L - Job Task Statements for Practice Audit

Activities in your primary position: general

1. Develop strategic plans
2. Provide medical nutrition therapy to clients/patients
3. Manage all or some clinical operations
4. Provide leadership for clinical nutrition services
5. Manage all or some functional areas within foodservice operations
6. Provide leadership for functional areas within foodservice operations
7. Manage all or some functional areas within other departments in the organization
8. Identify market trends to implement and provide competitive services
9. Collaborate with others to develop and implement a marketing plan for nutrition services and programs
10. Provide leadership for clinical programs across multiple organizational units
11. Develop clinical standards and procedures to apply current evidence-based nutrition knowledge

Activities in your primary position: communicating

12. Identify and inform clinicians of current evidence-based nutrition knowledge
13. Inform clinicians of pertinent evidence-based information regarding the department and organization
14. Communicate nutrition information to healthcare stakeholders
15. Develop and maintain effective communication channels between clinical services and other healthcare professionals and departments
16. Serve as an interdisciplinary and interdepartmental liaison within the healthcare team
17. Create and facilitate nutrition-related committee(s)
18. Distribute pertinent nutrition-related information to the community
19. Advocate the value of nutrition services to key stakeholders (i.e. how nutrition services can impact the organization's costs, patient satisfaction, etc.)

Activities in your primary position: ensuring compliance with regulations and accreditation standards

20. Identify nutrition-related standards and regulations
21. Create and maintain nutrition-related policies and procedures that are in compliance with accrediting agencies and state and federal regulations
22. Monitor staff compliance with organizational policies and procedures
23. Document and evaluate regulatory data required by organization
24. Prepare regulatory reports for clinical services
25. Review and approve patient menus
26. Review and approve diet manual
27. Identify regulations impacting coding and billing of nutrition services
28. Develop policies and procedures for optimal reimbursement of nutrition services

29. Assess the effectiveness of chart audits to ensure the appropriate utilization of the nutrition care process
30. Develop emergency and disaster policies and procedures

Activities in your primary position: monitoring quality assurance/performance improvement (QAPI)

31. Identify quality improvement issues
32. Evaluate quality improvement data
33. Identify process improvement opportunities
34. Report results of quality improvement activities
35. Develop, implement, and evaluate systems to ensure patient safety
36. Design and implement quality improvement initiatives
37. Collect and analyze data regarding patient/client satisfaction
38. Develop and implement action plans to maintain/improve patient/client satisfaction

Activities in your primary position: providing clinical expertise

39. Provide clinical nutrition leadership on committees
40. Evaluate and select nutrition-related products
41. Develop evidence-based standards of care for patient/client outcomes and intervention protocol
42. Provide nutrition expertise for foodservice operations
43. Advance clinical practice through mentorship, coaching, and training of staff
44. Provide nutrition expertise to other healthcare professionals, administration, and policy makers
45. Develop and provide evidence-based nutrition education
46. Design and conduct clinical research studies
47. Analyze and report clinical data of research studies
48. Ensure the appropriate use of the nutrition care process
49. Establish and manage facility's nutrition support formulary

Activities in your primary position: managing human resources

50. Conduct on-going and annual performance appraisals
51. Develop job descriptions for clinical staff
52. Develop productivity standards for clinical staff
53. Develop competency assessment systems
54. Develop performance standards for clinical staff
55. Determine staffing needs to effectively meet standards of care
56. Recruit, select, and promote staff
57. Develop and manage employee orientation for staff
58. Schedule employees
59. Monitor federal employment regulations and labor relations
60. Identify noncompliant behavior of staff
61. Administer disciplinary action for staff

62. Terminate staff
63. Motivate staff to function at their highest level
64. Make salary decisions
65. Conduct productivity studies
66. Initiate conflict resolution to resolve staff disputes
67. Conduct on-going staff training
68. Foster career advancement plans for staff
69. Coordinate dietetic students' and interns' supervised practice
70. Mentor dietetic students and interns

Activities in your primary position: managing financial resources

71. Develop, justify, and implement programs and services
72. Develop and manage operating budget for clinical services
73. Develop strategies to effectively control costs in clinical services
74. Identify sources of revenue
75. Assess financial performance of area of responsibility
76. Prepare financial reports
77. Negotiate contracts for nutrition support
78. Secure financial resources and physical space for nutrition services

Activities in your primary position: managing information technology

79. Utilize technology to efficiently communicate with others
80. Identify, evaluate, and implement technology systems for efficient and effective nutrition care (electronic health records, food and nutrition services software)
81. Develop work flow procedures to implement when technology is non-functional
82. Train staff on utilizing the electronic medical record
83. Analyze data from technology systems (electronic health records, food and nutrition services software)
84. Utilize technology to disseminate nutrition information to others

Appendix M - Final Practice Audit Instrument

Dear Professional,

A research team from the Department of Hospitality Management and Dietetics at Kansas State University is conducting a study evaluating clinical nutrition managers' job responsibilities and role preparedness. You have been identified as a professional who understands clinical nutrition management practice. The purpose of this study is to identify job responsibilities of clinical nutrition managers and evaluate role preparedness. Results from this study will provide a greater understanding of the clinical nutrition manager role and assist others in developing continuing education activities specific for clinical nutrition managers.

Your input is important for the success of this study. Please take a few minutes to complete the survey; the survey will take approximately 45 minutes of your time. Given the design of the survey, it may be easiest completed on a computer. Your participation is voluntary. Refusal to participate will involve no penalty or loss of benefits and you may discontinue participation at any time without penalty or loss of benefits. Your responses will remain confidential and anonymous. Only summary results will be reported. No individual responses will be disclosed. Completing the questionnaire indicates that you are volunteering to participate in this study. Once you complete the survey, you may enter your name in a drawing to win one of five $100 gift cards.

If you have any questions about this study, please feel free to contact Amber Howells at 785-532-5576 or geist78@ksu.edu or Kevin Sauer at 785-532-5581 or ksauer@ksu.edu.

Thank you for your time and participation.

Sincerely,
Amber Howells, MS, RD
Director, Coordinated Program in Dietetics
PhD Candidate
Hospitality Management & Dietetics
Kansas State University

Kevin Sauer, PhD, RD
Associate Professor
Hospitality Management & Dietetics
Kansas State University

_____

This research has been approved by the Institutional Review Board for Use of Human Subjects at Kansas State University. For questions about your rights as a participant or the manner the study is conducted, you may contact Dr. Rick Scheidt, Chair of Committee on Research Involving Human Subjects, (785) 532-3224, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506.

Q2 Do you currently supervise clinical staff?
❍ Yes (1)
❍ No (2)
If No Is Selected, Then Skip To End of Survey

Q46 The next part of the survey includes 8 categories of job task statements. This includes:
1. General
2. Communicating
3. Ensuring compliance with regulations and accreditation standards
4. Monitoring quality assurance/performance improvement
5. Providing clinical expertise
6. Managing human resources
7. Managing financial resources
 8. Managing information technology.

Demographic Questions will follow the 8 categories in the practice audit portion. Given that this is a practice audit of CNM practice, it is very important to complete all categories of job task statements. Incentives of entering your name for a drawing to win one of 25 $50 gift cards are being offered to those who complete the entire survey.

Q48 Please hit the >> button to begin the practice audit.

Instructions: For each job task statement, four questions will be asked:

1. In the last year, in what ways have you been involved with this activity (if any)? Check all that apply.
no involvement
assist others: help with this activity under someone else's direct supervision
perform myself: personally do this activity (independently or as part of a group) without direct supervision
supervise/manage: oversee performance of this activity by others and/or plan, organize, or direct organizational performance of this activity

2. With what frequency have you been personally involved (in any way) with this activity over the last year?   Check one that fits best.
daily (D)   weekly (W)   monthly (M)   less than monthly (LM)

3. How important is it to receive education related to this activity to perform it successfully? (5-point Likert Scale)
1=Not important at all   2=Fairly unimportant   3=Neutral   4=Fairly Important   5=Very Important

4. How well were your educational needs met to successfully perform this activity?
(5-point Likert Scale)   1=Completely unmet   2=Mostly unmet   3=Neither met nor unmet   4=Mostly Met   5=Completely Met

Category 1 of 8: Activities performed in your primary position: General

	1. Ways Involved? Check all that apply				2. Frequency Check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Develop strategic plans (1)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Provide medical nutrition therapy to clients/ patients (2)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Manage all or some clinical oper-ations (3)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Provide leader-ship for clinical nutrition services (4)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Manage all or some functional areas within food-service oper-	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

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ations (5)																		
Provide leader-ship for functional areas within food-service oper-ations (6)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Manage all or some functional areas within other depart-ments in the organ-ization (7)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Identify market trends to imple-ment and provide competitiv e services (8)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Collabo-rate with others to develop and imple-ment a marketing plan for nutrition services	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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and programs (9)																		
Provide leader-ship for clinical programs across multiple organizational units (10)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop clinical standards and proce-dures to apply current evidence-based nutrition know-ledge (11)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Q70 How confident are you that you can successfully complete the job activities at the present time in the above category: General?
- ○ Definitely cannot do (0)
- ○ Probably cannot do (1)
- ○ Don't know if I can do (2)
- ○ Moderately certain I can do (3)
- ○ Highly certain I can do (4)

Category 2 of 8: Activities performed in your primary position: Ensuring compliance with regulations and accreditation standards

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Identify nutrition-related standards and regul-ations (1)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Create and maintain nutrition-related policies and proce-dures that are in compl-iance with accred-iting agencies and state and federal regul-ations (2)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Monitor staff comp-liance with organi-	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

zational policies and procedures (3)																		
Document and evaluate regulatory data required by organization (4)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Prepare regulatory reports for clinical services (5)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Review and approve patient menus (6)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Review and approve diet manual (7)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Identify regulations impacting coding and billing of nutrition services (8)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

policies and proce-dures for optimal reimburse-ment of nutrition services (9)																		
Assess the effective-ness of chart audits to ensure the appro-priate utilization of the nutrition care process (10)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Develop emer-gency and disaster policies and proce-dures (11)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

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Q75 How confident are you that you can successfully complete the job activities at the present time in the above category: Ensuring compliance with regulations and accreditation standards?

○ Definitely cannot do (0)
○ Probably cannot do (1)
○ Don't know if I can do (2)
○ Moderately certain I can do (3)
○ Highly certain I can do (4)

Category 3 of 8: Activities performed in your primary position: Communicating

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Identify and inform clinicians of current evidence-based nutrition know-ledge (1)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Inform clinicians of pertinent evidence-based inform-ation regarding the depart-ment and organi-zation (2)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Communi-cate nutrition informa-tion to health-care stake-	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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holders (3)																		
Develop and maintain effective comm-unication channels between clinical services and other health-care profess-ionals and depart-ments (4)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Serve as an interdiscip-linary and inter-depart-mental liaison within the health-care team (5)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Create and facilitate nutrition-related comm-ittee(s) (6)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Distribute pertinent nutrition-related	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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inform-ation to the comm-unity (7)																	
Advocate the value of nutrition services to key stake-holders (i.e. how nutrition services can impact the organ-ization's costs, patient satis-faction, patient outcomes etc.) (8)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○

Q77 How confident are you that you can successfully complete the job activities at the present time in the above category: Communicating?
- ○ Definitely cannot do (0)
- ○ Probably cannot do (1)
- ○ Don't know if I can do (2)
- ○ Moderately certain I can do (3)
- ○ Highly certain I can do (4)

Category 4 of 8: Activities performed in your primary position: Monitoring quality assurance/performance improvement (QAPI)

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Identify quality improve-ment issues (1)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Evaluate quality improve-ment data (2)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Identify process improve-ment opportun-ities (3)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Report results of quality improve-ment activities (4)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop, imple-ment, and evaluate systems to ensure	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

patient safety (5)																	
Design and imple-ment quality improve-ment initiatives (6)	□	□	□	□	○	○	○	○	○	○	○	○	○	○	○	○	○
Collect and analyze data regard-ing patient/ client satis-faction (7)	□	□	□	□	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop and imple-ment action plans to maintain/ improve patient/ client satis-faction (8)	□	□	□	□	○	○	○	○	○	○	○	○	○	○	○	○	○

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Q79 How confident are you that you can successfully complete the job activities at the present time in the above category: Monitoring quality assurance/performance improvement (QAPI)?
- ○ Definitely cannot do (0)
- ○ Probably cannot do (1)
- ○ Don't know if I can do (2)
- ○ Moderately certain I can do (3)
- ○ Highly certain I can do (4)

Category 5 of 8: Activities performed in your primary position: Provide clinical expertise

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Provide clinical nutrition leader-ship on comm-ittees (1)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Evaluate and select nutrition-related products (2)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Develop evidence-based standards of care for patient/ client outcomes and interven-tion protocol (3)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Provide nutrition expertise for food-service opera-tions (4)	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Advance clinical practice through mentor-ship, coaching, and training of staff (5)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Provide nutrition expertise to other health-care profess-ionals, administ-ration, and policy makers (6)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop and provide evidence-based nutrition education (7)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Design and conduct clinical research studies (8)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Analyze and report clinical data of	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

research studies (9)																		
Ensure the appropriate use of the nutrition care process (10)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Establish and manage facility's nutrition support formulary (11)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Q81 How confident are you that you can successfully complete the job activities at the present time in the above category: Providing clinical expertise?
- ○ Definitely cannot do (0)
- ○ Probably cannot do (1)
- ○ Don't know if I can do (2)
- ○ Moderately certain I can do (3)
- ○ Highly certain I can do (4)

Category 6 of 8: Activities performed in your primary position: Managing human resources

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Conduct on-going and annual perform-ance appraisals (1)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop job descript-tions for clinical staff (2)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop product-ivity standards for clinical staff (3)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop compet-ency assess-ment systems (4)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop perfor-mance standards for clinical	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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staff (5)																		
Deter-mine staffing needs to effectively meet standards of care (6)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Recruit, select, and promote staff (7)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop and manage employee orienta-tion for staff (8)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Schedule employ-ees (9)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Monitor federal employ-ment regula-tions and labor relations (10)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Identify non-compliant behavior of staff (11)	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Adminis-ter	❏	❏	❏	❏	○	○	○	○	○	○	○	○	○	○	○	○	○	○

disciplinary action for staff (12)																		
Terminate staff (13)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Motivate staff to function at their highest level (14)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Make salary decisions (15)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conduct product-ivity studies (16)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Initiate conflict resolution to resolve staff disputes (17)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Conduct on-going staff training (18)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Foster career advance ment plans for staff (19)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Coordi-	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

nate dietetic students' and interns' super-vised practice (20)																	
Mentor dietetic students and interns	❑	❑	❑	❑	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Q83 How confident are you that you can successfully complete the job activities at the present time in the above category: Managing human resources?
- ❍ Definitely cannot do (0)
- ❍ Probably cannot do (1)
- ❍ Don't know if I can do (2)
- ❍ Moderately certain I can do (3)
- ❍ Highly certain I can do (4)

Category 7 of 8: Activities performed in your primary position: Managing financial resources

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Develop, justify, and imple-ment programs and services (1)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop and manage operating budget for clinical services (2)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop strategies to effectively control costs in clinical services (3)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Identify sources of revenue (4)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Assess financial performance of area of responsibility (5)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Prepare financial reports (6)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Negotiate contracts for nutrition support (7)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Secure financial resources and physical space for nutrition services (8)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Q85 How confident are you that you can successfully complete the job activities at the present time in the above category: Managing financial resources?
- ○ Definitely cannot do (0)
- ○ Probably cannot do (1)
- ○ Don't know if I can do (2)
- ○ Moderately certain I can do (3)
- ○ Highly certain I can do (4)

Category 8 of 8: Activities performed in your primary position: Managing information technology

	1. Way(s) Involved? Check all that apply				2. Frequency? check one if involved				3. Importance to Receive Education?					4. How well Education Needs Met?				
	No involve-ment	Assist others	Perform myself	Supervise or manage	Daily (20)	Weekly (4)	Monthly (1)	Less than Monthly (0.5)	1-Low	2	3	4	5-High	1-Un-met	2	3	4	5-Met
Utilize techno-logy to efficiently commun-icate with others (1)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Identify, evaluate, and imple-ment techno-logy systems for efficient and effective nutrition care (2)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Develop work flow proce-dures to imple-ment when techno-logy is non-functional	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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(3) Train staff on utilizing the electronic medical record (4)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Analyze data from techno-logy systems (5)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Utilize techno-logy to disse-minate nutrition inform-ation to others (6)	❑	❑	❑	❑	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Q87 How confident are you that you can successfully complete the job activities at the present time in the above category:
Managing information technology?
- ○ Definitely cannot do (0)
- ○ Probably cannot do (1)
- ○ Don't know if I can do (2)
- ○ Moderately certain I can do (3)
- ○ Highly certain I can do (4)

Q14 Additional Questions and Demographic Questions: How satisfied are you with your current job?
- ❍ Very Dissatisfied (1)
- ❍ Dissatisfied (2)
- ❍ Neutral (3)
- ❍ Satisfied (4)
- ❍ Very Satisfied (5)

Q15 Over the past 6 months, your satisfaction level with your job as a CNM has:
- ❍ Decreased significantly (1)
- ❍ Decreased slightly (2)
- ❍ Stayed the same (3)
- ❍ Increased slightly (4)
- ❍ Increased significantly (5)

Q17 How would you rate your overall self-efficacy to perform in the CNM role? (Self-efficacy is defined as personal confidence in one's ability to perform a specific task.)
- ❍ Very Low (1)
- ❍ Low (2)
- ❍ Neutral (3)
- ❍ High (4)
- ❍ Very High (5)

Q18 Which job title(s) best describe your current position? (Select all that apply)
- ❑ Clinical nutrition manager (1)
- ❑ Chief clinical dietitian (2)
- ❑ Director of food and nutrition services/Director of dietary services (3)
- ❑ Internship director (4)
- ❑ Other (5) _____

Q19 What is your primary dietetic credential?
- ○ RD/RDN (1)
- ○ DTR (2)
- ○ Other (4) _____

Q30 What is your highest level of education?
- ○ Baccalaureate degree (1)
- ○ Some graduate coursework completed (2)
- ○ Master's degree (3)
- ○ Doctoral degree (4)
- ○ Prefer not to answer (5)

Q20 How long have you been a CNM? Please answer in years.

Q21 How many years have you been in your current job? Please answer in years.

Q25 Which of the following best describes your employer?
- ○ Contract management (1)
- ○ Self-operated organization (2)
- ○ Self-employed (3)

Q26 What is the size of your facility? (Number of patient beds)

Q33 Who is the primary person you report to?
- ○ Foodservice director, RD (1)
- ○ Clinical director (2)
- ○ Other (3) _____
- ○ Foodservice director, Non-RD (4)

Q35 Who is your primary mentor?
- ⭕ Foodservice director (1)
- ⭕ Clinical director (2)
- ⭕ Other (3) _____
- ⭕ Foodservice director, Non-RD (4)

Q37 The level of mentoring that I have received from my primary mentor has helped me become a successful CNM.
- ⭕ Strongly disagree (1)
- ⭕ Disagree (2)
- ⭕ Neutral (3)
- ⭕ Agree (4)
- ⭕ Strongly Agree (5)

Q22 How would you rate your competence level using the Academy of Nutrition and Dietetics Standards of Professional Performance for Clinical Nutrition Managers?
- ⭕ Competent--A competent CNM is a task oriented CNM who is newly acquiring management skills (1)
- ⭕ Proficient--A proficient CNM has a moderate level of management experience (2)
- ⭕ Expert--An expert CNM has achieved the highest level of skill and mastery in clinical nutrition management (3)

Q40 What strategies do you think would be the most beneficial to prepare RDs for the CNM role?

Q42 What factors impact CNMs' self-efficacy to perform in the role?

Q41 What strategies would be most beneficial to continue to enhance your self-efficacy?