ASSESSMENT OF NURSING STAFFS’ SELF-REPORTED NUTRITION-RELATED EDUCATION, KNOWLEDGE, AND ROLES IN FEEDING ASSISTANCE REGARDING THERAPEUTIC AND MODIFIED DIETS

A master’s thesis submitted to the Kent State University College of Education, Health, and Human Services in partial fulfillment of the requirements for the degree Master of Science

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The purpose of this study was to examine self-reported nutrition-related education, knowledge, and roles in feeding assistance regarding therapeutic and modified diets of Ohio nursing staff. It was expected that different nursing staff levels would have different knowledge of therapeutic and modified diets. Also, it was expected that this study would describe current educational strategies regarding nutrition and nursing involvement in assisting patients with nutritional outcomes. An electronic questionnaire was completed by actively licensed Ohio nurse participants (n=3,956). Descriptive statistics were utilized to describe frequency distributions of all participants’ responses. An ANOVA was used to describe differences of summed diet knowledge scores between the three grouping levels (RN, LPN, APRN) of nurse type. Post-hoc analysis using Bonferroni significance was performed for all significant analyses. A significant difference was demonstrated in the summed diet knowledge scores between RNs and LPNs for dental soft diets and modified liquids. This study demonstrated a lack of overall therapeutic and modified diet knowledge across all three nursing types, suggesting nutrition-related educational strategies for these professionals are ineffective. The controversial nature of this topic was unexpected by the researcher, suggesting this area needs to be further investigated.
ACKNOWLEDGEMENTS

Firstly, I would like to thank Dr. Natalie Caine-Bish, who worked tirelessly to help guide me on my journey of understanding nursing nutrition-related education by looking at the big picture. On numerous occasions she provided the encouragement, and instilled in me the confidence, to carry out this project, especially when times got rough. Lastly, I would like to thank her for allowing me to take an occasional nap.

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Pat McKnight, who helped guide me in my search for nursing education materials and resources. She was, and continues to be, an invaluable resource for nursing education research.

My mother and father deserve credit as well. If not for their guidance and expert parenting, I would not be the person I am today. I know my father, while watching over me, has been laughing at my continuous technical difficulties. My mother has provided me with her support and confidence during my journey towards higher education. She has not only been a great listener, but she has also made sure I did not forget to eat dinner or take my glasses with me while walking out the door. I am forever thankful for her exceptional ability to keep me strolling along in life.
My family, Stephanie, Julie, Jackie, Tony, Jon, Josh, Nick, Erika, and all my nieces and nephews, who, in their own unique and special ways, encouraged me to finish this project. There is no other support system that is at all comparable to this one.

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CHAPTER I

INTRODUCTION

Overview of Literature

Nursing staff personnel are often the initial, and most prevalent, source of contact for patients in any doctoral care visit. Due to their direct interactions and communications with patients, nurses receive frequent requests for information regarding nutritional care (Gittens et al., 2012; Murphy & Girot, 2013; Vickstrom & Fox, 1976). This has led to the nursing staff often being referred to as, “informal nutrition educators”, “adjunct nutrition educators”, and “coordinators of health services” (Gittens et al., 2012; Vickstrom & Fox, 1976). In conjunction with a registered dietitian (RD), nurses are positioned to be key facilitators in the, “application of nutrition in patient care”, furthering the RD’s goal of patients, “achieving life-style modifications through dietary behavior changes” (P. McKnight, personal communication, 2013-2014; Murphy & Girot, 2013; Xia & McCutcheon, 2005).

Nursing roles, with regards to the nutritional care of patients, have become more significant due to an increase in the awareness of the importance of chronic disease management and swallowing disorder management in healthcare settings (Bernstein, Franklin, & Munoz, 2012; Johnson, 2011; Xia & McCutcheon, 2005). Therapeutic diets are used in the treatment of diseases or conditions causing an altered nutritional status by eliminating, decreasing, or increasing certain substances in the diet such as sodium, potassium, or fluids (Academy of Nutrition and Dietetics [Academy], 2013b).
Modified diets are used when alterations to textures, consistency, or viscosity in foods or liquids are necessary to ensure safe swallowing by the patient, and reducing the risk of aspiration (American Speech-Language-Hearing Association [ASHA], 2009). If these approaches are not properly implemented, they can become ineffective, can slow recovery, and can hamper the achievement of life-style modifications (Bernstein, Franklin, & Munoz, 2012; Whitney, Cataldo, DeBruyne, & Rolfes, 2001).

Since registered nurses (RNs), out of all healthcare professionals, typically spend the most amount of time with patients, it has become an assumption that they hold the necessary nutritional knowledge base needed to adequately provide proper and safe nutritional care for patients (Kim & Choue, 2009; Morse & Corcoran-Perry, 1993). In their study, Vickstrom & Fox (1976) reported that nurses answered 75% of nutritional knowledge questions correctly, demonstrating that they had a sound base knowledge of basic nutrition and diet therapy. However, these findings do not reflect the current nursing nutritional education strategies. Currently, there is a lack of research to determine the level of nutritional knowledge that modern nurses possess, coupled with an uncertainty as to whether the current nutrition educational strategies being presented in nursing program curriculums are effective, as well as, to what extent nutrition content is being included in nursing program curriculums. Furthermore, it is unclear whether information regarding therapeutic diets and modified diets is being taught in nursing programs. If they are, the extent of information provided is unknown.

The Ohio Board of Nursing (OBN) requires that nutrition content be covered in nursing curriculums. However, because it may be presented as a separate course,
integrated with other nursing topics, or both, it is unclear as to how much nutrition is actually being covered (P. McKnight, personal communication, 2013-2014; ORC, 2012). If the course is integrated, there are no requirements regarding who teaches the content. Cutler (1986) showed that nursing professionals have been teaching integrated nutrition in nursing programs since 1983. Since then, this rate has increased, becoming the trend, and the cause of stand-alone nutrition courses being eliminated from these programs. Because of this, more and more nutrition content is being integrated (D. Herazo, personal communication from P. McKnight, 2013; P. McKnight, personal communication, 2013-2014).

Nutrition is also a required component to be covered on both the National Council Licensure Examination for Registered Nurses [NCLEX-RN] and the National Council Licensure Examination for Practical Nurses [NCLEX-PN] (National Council of State Boards of Nursing, Inc. [NCSBN], 2013; 2014). Nutrition, on both exams, falls under the basic care and comfort section. Basic care and comfort is distributed on average in the NCLEX-RN by 9% and in the NCLEX-PN by 10% (NCSBN, 2013; 2014). Because nutrition is one of seven subcategories, and accounting for variance in questions per test, the actual percentage on the nutrition subcategory alone is unclear, but is projected to be minimal.

In recent years, associate degree program (ADN) and baccalaureate degree of science in nursing (BSN) graduates showed similar scores on the nutrition content of the NCLEX (Johnson, 2011). The similar scores in the nutrition component of the NCLEX were used to rationalize the elimination of nutrition as a stand-alone course, due to the
belief that it would be successfully integrated within existing nursing courses (D. Herazo, personal communication from P. McKnight, 2013; Johnson, 2011; P. McKnight, personal communication, 2013-2014). The elimination of a separate nutrition course was designed to allow a smoother progression from an ADN to a BSN (Johnson, 2011).

Johnson (2011) argued that similarity in test scores may be expected due to the fact that all nursing educational pathways eventually lead to the same licensure exam, the NCLEX-RN. Statistics from the NCSBN show minimal differences in pass rates of BSN, AND, and diploma graduates. In addition to this, these examinations are developed to determine the student’s ability to demonstrate competence within the minimum standards necessary for safe practice (Johnson, 2011; NCSBN, 2013; 2014). Therefore, the NCLEX is not a reliable measure regarding nursing knowledge of nutrition content (Johnson, 2011).

The practice of nutrition course integration has been seen in Alabama, where almost all junior colleges RN to BSN programs have dropped stand-alone nutrition courses (D. Herazo, personal communication from P. McKnight, 2013). There is only one school in Alabama that requires a one-hour clinical nutrition course in their RN to BSN program (D. Herazo, personal communication from P. McKnight, 2013). In Ohio, only nine of 17 ADN programs surveyed reported currently offering a stand-alone nutrition course, with Kent State University recently dropping their required nutrition course (N. Caine-Bish, personal communication, 2014; McKnight, 2013). Mount Carmel University of Ohio is the only nursing program in the country that not only has a standalone nutrition course, but also integrates nutrition into both theory and clinical
nursing courses, with all being taught by RDs (P. McKnight, personal communication, 2013-2014).

The continued elimination of standalone nutrition courses has raised concerns that, “nurses need nutrition education too”, because of their involvement in the nutritional care of patients (D. Herazo, personal communication from P. McKnight, 2013; P. McKnight, personal communication, 2013-2014; Weigley, 1994). Previous research, has been consistent with regard to nursing nutrition education, and concluded that nurses require nutritional knowledge; nursing programs do not offer quality nutrition curriculum; clinical hours focused on nutrition should be increased; and continuing education is the responsibility of the nurse (Bender, 1995; Cutler, 1986; Gittens et al., 2012; Stotts et al., 1987). Furthermore, nutrition professionals believe that a lack of standards for nurses’ nutrition education, has been a theme in its diminishment (Gittens et al., 2012; D. Herazo, personal communication from P. McKnight, 2013; Johnson, 2011; P. McKnight, personal communication, 2013-2014; Vickstrom & Fox, 1976; Weigley, 1994).

Statement of the Problem

Over the years, the importance of nutritional care for successful medical outcomes has grown. Coupled with this, the roles and responsibilities of nursing professionals have become increasingly more significant in the nutritional care of patients (Bernstein, Franklin, & Munoz, 2012; Johnson, 2011; Xia & McCutcheon, 2005). The wide spectrum of nutritional nursing responsibilities include: assessing and screening for nutritional risk, recognizing nutritional problems, alerting physicians and dietitians to
provide nutritional interventions, and partaking in many aspects of mealtimes (Johnson, 2011; Xia & McCutcheon, 2005). Nursing staff individuals typically spend the most time with patients in the healthcare environment, and are often the ones providing and/or evaluating nutritional interventions and/or educations to patients (Kim & Choue, 2009).

The involvement of nurses in the nutritional care of patients has led to the assumption that nursing program curriculums have nutrition as a basic required course. However, nutrition content in nursing programs has decreased over the years due to a lack of standards; attempts to integrate nutrition into other nursing courses; and the elimination of stand-alone nutrition courses (Cutler, 1986; D. Herazo, personal communication from P. McKnight, 2013; Johnson, 2011; P. McKnight, personal communication, 2013-2014; Stotts et al., 1987). The National Research Council (1985) concluded that the scarceness of nutrition education in medical schools needs to be addressed, and that, “integration of nutrition concepts into other courses diminishes its impact and importance”. Integration also often causes the nutrition material to become lost in these courses further decreasing the amount of exposure. Another concern is the expectation that if, “RN to BSN programs break step with BSN programs and do not require any dedicated nutrition course (basic or clinical), it is likely that an RN could progress from AND to doctor of nursing practice (DNP) without ever taking a nutrition course provided by an instructor with a minimum of 18 graduate hours in nutrition science” (Johnson, 2011).

The loss of nutrition classes in nursing education curriculums has raised flags, and caused a push by the Academy of Nutrition and Dietetics (Academy) to allow an existing
practice group to develop a new, active position statement on this issue (D. Herazo, personal communication from P. McKnight, 2013; P. McKnight, personal communication, 2013-2014; Johnson, 2011). Unfortunately, without current data to strengthen the argument, it has been found that getting, “our people to work with their people and getting movement at higher levels of leadership between nursing and dietetics has failed” (D. Herazo, personal communication from P. McKnight, 2013; McKnight, 2013). This lack of movement has further caused an absence of standards for education; standards and terminology on both ends of the two professions; a lack of continuum of care; a lack in coordination of care; and a lack of clarification in roles and responsibilities on both sides (Gittens et al., 2012; P. McKnight, personal communication, 2013-2014; Vickstrom & Fox, 1976; Weigly, 1994). This trend also shows the possibility of causing a setback for the dietetic profession because, if continued, eventually, “the RD clinician role at the round table will diminish” (Johnson, 2011).

Currently, there is a lack of research on the present state of nutrition educational strategies of nursing program curriculums, and the effectiveness of these strategies. There is also an absence of baseline data concerning what allied health professionals truly know about therapeutic and/or modified diets, as well as, if they know how to properly implement therapeutic and/or modified diet plans. Keeping these uncertainties in mind, how can nutrition education guidelines be developed? Because of this, further research is needed, with nursing professionals of different levels being the first measured in these areas, due to their significant role in direct patient care, and their ability to influence patient nutrition-related behaviors by their encouragement and support.
Purpose Statement

The purpose of this quantitative, comparative, descriptive study is to examine Ohio nurses’ self-reported nutrition-related education, knowledge, and roles in feeding assistance with regard to therapeutic and modified diets plans.

Hypotheses

H₁: Different nursing staff levels are going to have different knowledge of therapeutic and modified diets.

This study will also describe current educational strategies regarding nutrition and nurses involvement in assisting patients with nutritional outcomes.

H₁₀: Different nursing staff levels are going to have the same knowledge of therapeutic and modified diets.

This study will not describe current educational strategies regarding nutrition and nurses involvement in assisting patients with nutritional outcomes.

Operational Definitions

- Competency: learned knowledge and skills for the qualification of the ability to make clinical judgments for therapeutic and/or modified diets in the acute care hospital setting.

- Nutrition-related education: education focusing on providing appropriate nutritional care to patients, including screening and assessment, planning,
implementation and evaluation of nutritional care, and evidence-based research in nutritional care components.

- **Therapeutic Diets**: a diet intervention ordered by a health care practitioner as part of the treatment for a disease or clinical condition manifesting an altered nutritional status, to eliminate, decrease, or increase certain substances in the diet (e.g. sodium, potassium) (Academy, 2013b).

- **Modified Diets**: textures, consistency, or viscosity alterations in foods or liquids for safe swallowing practices (ASHA, 2009).

- **Registered Nurses (RNs)**: A registered nurse (RN) is defined by the Ohio Revised Code (ORC) Chapter 4723 of the Nurse Practice Act as, “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a registered nurse” (ORC, 2012).

- **Licensed Practical Nurses (LPNs)**: A licensed practical nurse (LPN) is defined by the ORC Chapter 4723 of the Nurse Practice Act as, “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a licensed practical nurse” (ORC, 2012).

- **Advanced Practice Registered Nurses (APRN)**: An advanced practice registered nurse (APRN) is defined by the ORC Chapter 4723 of the Nurse Practice Act as, “a certified registered nurse anesthetist, clinical nurse specialist, certified nurse-midwife, or certified nurse practitioner” (ORC, 2012). A “certificate of authority”
is the board issued certificate held by an APRN who has fulfilled all requirements of the board (ORC, 2012).
CHAPTER II

REVIEW OF LITERATURE

Nursing Staff Workforce Data

With over 4,104,853 actively licensed RNs in the United States of America, the field of nursing is the largest healthcare profession in the country (AMN Healthcare, 2013; Budden, Zhong, Moulton, & Cimiotti, 2013). In the state of Ohio, the OBN currently regulates 266,000 licenses and certificates and has seen an average increase of 14,000 newly licensed RNs and licensed practical nurses (LPNs) every year since 2008 (OBN, 2013b).

Age

In 2013, the RN Workforce Data Summary, as reported by the OBN (2013b), had a 97% response rate from nurses with an active Ohio nursing license. Seventy-one percent of the respondents were between the ages of 18 and 55 years old (OBN, 2013b). Ninety-two percent of the nurses in this age range reported being employed in nursing (OBN, 2013b). The remaining 29% of RNs who participated in the data summary were over the age of 55. Seventy-two percent of these RNs identified that they were actively employed in nursing (OBN, 2013b).

Gender

The Ohio Workforce Data Summary also reported that 92% of the active licensed RN respondents in 2013 were female and 8% were male (OBN, 2013b). In addition, the
Ohio Advanced Practice Registered Nurse (APRN) Workforce Data Summary reported that 87% percent of APRNs were female and 13% are male (OBN, 2013a).

**Years in Practice**

The 2013 RN Data Workforce Summary did not survey the number of years of active licensure for RNs, however, this information was included in the 2011 RN Data Workforce Summary (OBN, 2011b). The 2011 RN Data Workforce Summary reported that 12.64% of respondents had been licensed nurses for 0-4 years, 45.7% for 5-24 years, 31.1% for 25-34 years, and 10.6% for 40 years and over (OBN, 2011b).

**Employment**

Eighty-six percent of the 2013 RN Data Workforce Summary respondents identified as working in a position where a nursing license was a requirement for employment (OBN, 2013b). Seventy-six percent of the 2013 respondents reported being employed full time; 17% part time; and 6% on a per-diem basis (OBN, 2013b). Five percent of respondents were reported as being unemployed at the time of the survey (OBN, 2013b). Of the respondents who reported working in a nursing position in 2013, 87% reported holding one position; 11% two positions; and 1% three or more positions (OBN, 2013b).

The 2013 APRN Data Workforce Summary reported on the most recent employment of APRNs. Ninety-five percent of APRNs reported being employed in a position where a nursing license is required (OBN, 2013a). Of the 95% employed APRNs, 74% reported working full time; 13% part time; 3% on a per diem basis (OBN,
Two percent of the APRN respondents reported being unemployed (OBN, 2013a). Of the APRN respondents who reported working in a nursing position in 2013, 74% reported holding one position; 14% two positions; and 3% three or more positions (OBN, 2013a).

**Practice Setting**

Nationwide, those nurses who are working in clinical settings represent more than half of all labor costs in acute care settings (AMN Healthcare, 2013). In Ohio, this balance is seen as well. The OBN (2013b) reported in the RN Data Workforce Summary that 45% of respondents have the position title of direct patient care staff or floor nurse and the primary practice setting of RNs (Table 1) was reported to be the hospital setting (OBN, 2013b). Within the hospital setting, 39% of nurses reported working in inpatient care; 6% in outpatient care; 5% in the emergency department; and 1% in a federal government hospital (OBN, 2013b). A total of 335 Ohio RNs reported working in other non-health related settings (OBN, 2013b).

Table 1. *Primary Practice Settings of Ohio Registered Nurses, n=166,764*

<table>
<thead>
<tr>
<th>Primary Practice Setting</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory Care</td>
<td>6,597</td>
</tr>
<tr>
<td>APRN – Owned/Operated Practice</td>
<td>250</td>
</tr>
<tr>
<td>Correctional Facility</td>
<td>971</td>
</tr>
<tr>
<td>Education/Academic</td>
<td>4,131</td>
</tr>
<tr>
<td>Home Care</td>
<td>7,564</td>
</tr>
<tr>
<td>Hospice Care</td>
<td>3,448</td>
</tr>
<tr>
<td>Hospital – Inpatient</td>
<td>65,485</td>
</tr>
<tr>
<td>Hospital – Outpatient</td>
<td>10,514</td>
</tr>
<tr>
<td>Hospital – Emergency Department</td>
<td>8,485</td>
</tr>
<tr>
<td>Hospital – Federal Government</td>
<td>1,754</td>
</tr>
<tr>
<td>Insurance Claims or Benefits</td>
<td>3,100</td>
</tr>
<tr>
<td>Nursing Home/Extended Care Facility/Assisted Living Facility</td>
<td>10,042</td>
</tr>
<tr>
<td>Occupational Health Setting</td>
<td>1,063</td>
</tr>
<tr>
<td>Office/Clinic – Solo Practice</td>
<td>884</td>
</tr>
<tr>
<td>Office/Clinic – Partnership</td>
<td>2,292</td>
</tr>
</tbody>
</table>
The 2013 APRN Workforce Data Summary reported that 48% of APRNs are Certified Nurse Practitioners; 22% are Certified Registered Nurse Anesthetists; 6% are Certified Nurse Specialists; and 2% are Certified Nurse Midwives (OBN, 2013a). The hospital setting was also reported as the primary practice setting for APRNs (Table 2) (OBN, 2013a). Thirty-three percent of APRNs reported working in the inpatient care setting; 12% outpatient care; 2% emergency department; and 2% a federal government hospital (OBN, 2013a). There were eight APRNs who reported working in a non-health related setting and 991 who were unspecified (OBN, 2013a).

Table 2. *Primary Practice Settings of Ohio Advanced Practice Registered Nurses, n=10,633*

<table>
<thead>
<tr>
<th>Primary Practice Setting</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory Care</td>
<td>659</td>
</tr>
<tr>
<td>APRN – Owned/Operated Practice</td>
<td>163</td>
</tr>
<tr>
<td>Correctional Facility</td>
<td>54</td>
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<tr>
<td>Education/Academic</td>
<td>530</td>
</tr>
<tr>
<td>Home Care</td>
<td>100</td>
</tr>
<tr>
<td>Hospice Care</td>
<td>69</td>
</tr>
<tr>
<td>Hospital – Inpatient</td>
<td>3,540</td>
</tr>
<tr>
<td>Hospital – Outpatient</td>
<td>1,253</td>
</tr>
<tr>
<td>Hospital – Emergency Department</td>
<td>250</td>
</tr>
<tr>
<td>Hospital – Federal Government</td>
<td>209</td>
</tr>
<tr>
<td>Insurance Claims or Benefits</td>
<td>12</td>
</tr>
<tr>
<td>Nursing Home/Extended Care Facility/Assisted Living Facility</td>
<td>338</td>
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<tr>
<td>Occupational Health Setting</td>
<td>62</td>
</tr>
<tr>
<td>Office/Clinic Solo Practice</td>
<td>226</td>
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<tr>
<td>Office/Clinic Partnership</td>
<td>635</td>
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<tr>
<td>Office/Clinic Single Specialty Group</td>
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<tr>
<td>Patient Centered Medical Home</td>
<td>110</td>
</tr>
<tr>
<td>Policy/Planning/Regulatory</td>
<td>9</td>
</tr>
<tr>
<td>Public/Community Health</td>
<td>194</td>
</tr>
</tbody>
</table>
Research School Health Urgent Care Other Health Related
30 48 132 201

Adapted from “2013 Advanced Practice Registered Nurse Ohio Workforce Data Summary Report,” by Ohio Board of Nursing, 2013a, p. 10.

Practice Area

The 2013 RN Workforce Data Summary (Table 3) showed geriatrics, critical care, cardiology, and general surgery as the most prevalent areas of practice reported of the surveyed RNs (OBN, 2013b).

Table 3. Primary Practice Areas of Ohio Registered Nurses, n=166,764

<table>
<thead>
<tr>
<th>Primary Practice Area</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>5,140</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>2,281</td>
</tr>
<tr>
<td>Allergy and Immunology</td>
<td>209</td>
</tr>
<tr>
<td>Cardiology</td>
<td>9,240</td>
</tr>
<tr>
<td>Critical Care</td>
<td>12,766</td>
</tr>
<tr>
<td>Dermatology</td>
<td>311</td>
</tr>
<tr>
<td>Education</td>
<td>3,644</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>406</td>
</tr>
<tr>
<td>Emergency Care</td>
<td>8,661</td>
</tr>
<tr>
<td>Family/General Practice/Primary Care</td>
<td>5,167</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>1,930</td>
</tr>
<tr>
<td>Geriatrics</td>
<td>12,947</td>
</tr>
<tr>
<td>Gynecology Only</td>
<td>136</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>632</td>
</tr>
<tr>
<td>Internal Medicine General</td>
<td>4,915</td>
</tr>
<tr>
<td>Neonatal</td>
<td>3,004</td>
</tr>
<tr>
<td>Nephrology</td>
<td>2,308</td>
</tr>
<tr>
<td>Neurology</td>
<td>1,884</td>
</tr>
<tr>
<td>Obstetrics and gynecology</td>
<td>6,837</td>
</tr>
<tr>
<td>Occupational Health</td>
<td>1,257</td>
</tr>
<tr>
<td>Oncology, including hematology Oncology</td>
<td>4,866</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>320</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>157</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>2,920</td>
</tr>
<tr>
<td>Pain Management</td>
<td>1,012</td>
</tr>
<tr>
<td>Pathology</td>
<td>5</td>
</tr>
<tr>
<td>Pediatrics – general</td>
<td>5,050</td>
</tr>
<tr>
<td>Pediatrics – specialties</td>
<td>2,449</td>
</tr>
<tr>
<td>Pediatrics – adolescents</td>
<td>765</td>
</tr>
<tr>
<td>Physical Medicine and Rehabilitation</td>
<td>909</td>
</tr>
<tr>
<td>Psychiatry/Mental Health</td>
<td>4,344</td>
</tr>
<tr>
<td>Psychiatry - Child</td>
<td>357</td>
</tr>
<tr>
<td>Public Health/Preventative Medicine</td>
<td>1,788</td>
</tr>
</tbody>
</table>
The 2013 APRN Workforce Data Summary (Table 4) showed anesthesiology, family/general practice/primary care, pediatrics, and geriatrics as the most prevalent areas of practice reported of the surveyed APRNs (OBN, 2013b).

Table 4. Primary Practice Areas of Ohio Advanced Practice Registered Nurses, \(n=10,633\)

<table>
<thead>
<tr>
<th>Primary Practice Setting</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>113</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>2,019</td>
</tr>
<tr>
<td>Allergy and Immunology</td>
<td>18</td>
</tr>
<tr>
<td>Cardiology</td>
<td>404</td>
</tr>
<tr>
<td>Critical Care</td>
<td>298</td>
</tr>
<tr>
<td>Dermatology</td>
<td>58</td>
</tr>
<tr>
<td>Education</td>
<td>280</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>89</td>
</tr>
<tr>
<td>Emergency Care</td>
<td>233</td>
</tr>
<tr>
<td>Family/General Practice/Primary Care</td>
<td>1,203</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>99</td>
</tr>
<tr>
<td>Geriatrics</td>
<td>384</td>
</tr>
<tr>
<td>Gynecology Only</td>
<td>37</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>32</td>
</tr>
<tr>
<td>Internal Medicine General</td>
<td>427</td>
</tr>
<tr>
<td>Neonatal</td>
<td>286</td>
</tr>
<tr>
<td>Nephrology</td>
<td>73</td>
</tr>
<tr>
<td>Neurology</td>
<td>128</td>
</tr>
<tr>
<td>Obstetrics and gynecology</td>
<td>400</td>
</tr>
<tr>
<td>Occupational Health</td>
<td>66</td>
</tr>
<tr>
<td>Oncology, including hematology Oncology</td>
<td>320</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>9</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>33</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>80</td>
</tr>
<tr>
<td>Pain Management</td>
<td>106</td>
</tr>
<tr>
<td>Pathology</td>
<td>0</td>
</tr>
<tr>
<td>Pediatrics – general</td>
<td>435</td>
</tr>
</tbody>
</table>

Adapted from “2013 Registered Nurse Ohio Workforce Data Summary Report,” by Ohio Board of Nursing, 2013b, p. 14.
Pediatrics – specialties 303
Pediatrics – adolescents 23
Physical Medicine and Rehabilitation 23
Psychiatry/Mental Health 417
Psychiatry - Child 43
Public Health/Preventative Medicine 32
Pulmonology 67
Radiology/Nuclear Medicine 19
Research 21
Rheumatology 9
Surgery – general 303
Surgical Specialties 214
Telehealth with majority of patients in Ohio 5
Telehealth with majority of patients out of Ohio 0
Urgent Care 82
Urology 26
Women’s Health 168
Other 1,248

Adapted from “2013 Advanced Practice Registered Nurse Ohio Workforce Data Summary Report,” by Ohio Board of Nursing, 2013a, p. 12.

**Highest Degree Obtained**

The 2013 RN Workforce Summary Data reported that 45% of RNs hold a baccalaureate or higher degree in nursing while 9% of RNs hold a baccalaureate or higher in a non-nursing field (OBN, 2013b). Of the 45% of RNs who reported holding a baccalaureate or higher degree in nursing; 10% hold a master’s degree in nursing and 0.6% hold a doctorate of philosophy (PhD), doctorate of nursing practice (DNP), or other doctoral degree in nursing (OBN, 2013a).

**Nursing Profession Scope of Practice**

State boards are the governing bodies of the nursing profession and each state has its own board of nursing. All boards are expected to have the same purpose in which they act to protect the public from harm (American Nurses Association, 2013). The American Nurses Association (2013) lists the following duties for state boards: establishing and executing requirements for basic education, continuing education,
competency for licensure eligibility; defining and interpreting the scope of practice of nursing by the Nurse Practice Act; and investigating all complaints of licenses and disciplinary actions.

Registered Nurses (RNs)

**Defined.** A registered nurse (RN) is defined by the Ohio Revised Code (ORC) Chapter 4723 of the Nurse Practice Act as, “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a registered nurse” (ORC, 2012).

**Scope of practice.** The RN scope of practice is detailed in Section 4723.01 of the ORC and is defined as “providing to individuals and groups nursing care requiring specialized knowledge, judgment, and skill derived from the principles of biological, physical, behavioral, social, and nursing sciences” (OBN, 2011a, pg. 1). This nursing care, according to the OBN (2011a), includes the following responsibilities: recognition of patient response to health problems; determining, managing, and evaluating nursing regimens to be used; assessments of health status for effective care; providing health counseling and health education; administration of medical treatments; and, mentoring future nursing professionals.

The assessment of health status by the RN is defined in Section 4723.01 of the ORC as the “collection of data through nursing assessment techniques, which may include interviews, observations, and physical evaluations for the purpose of providing nursing care” (ORC, 2012). The health assessment determines the nursing regimen that
should be provided and may focus on preventative, restorative, or health-promotion activities (OBN, 2011a). The OBN (2011a) has provided specific examples of the RN’s role in patient care. To determine the nursing regimen needed to be implemented, RNs may be responsible for collecting and analyzing health data and information from the patient, patient’s family, the LPN, or other health care providers involved in the patient’s care (OBN, 2011a). The RN may also institute, accept, or revise a nursing diagnosis or problem; implement and communicate the nursing care plan; continuously evaluate and document the patient’s responses to care; and continuously reassess and modify the nursing care plan (OBN, 2011a).

Licensed Practical Nurses (LPNs)

**Defined.** A licensed practical nurse (LPN) is defined by the ORC Chapter 4723 of the Nurse Practice Act as, “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a licensed practical nurse” (ORC, 2012).

**Scope of practice.** The scope of practice of LPNs is detailed in Section 4723.01 of the ORC, and is defined as “providing to individuals and groups nursing care requiring the application of basic knowledge of the biological, physical, behavioral, social, and nursing sciences at the direction of a licensed physician, dentist, podiatrist, optometrist, chiropractor, or registered nurse” (OBN, 2011a). According to the OBN (2011a), this type of nursing care includes observing, educating, and caring of patients in a diverse array of health care settings as well as assisting to establish a plan of care. LPNs also may provide medications and treatments ordered by an authorized individual upon
completion of an approved course in medication administration, administer intravenous
therapy to adults ordered by an authorized individual, and instruct LPNs and others who
the LPN is authorized to delegate nursing tasks to as directed by a RN (OBN, 2011a).

LPNs hold a dependent role and may provide nursing care “only at the direction
of a registered nurse, physician, dentist, podiatrist, optometrist or chiropractor” (OBN,
2011a, pg.3). The direction a LPN receives may be a verbal or written communication of
the care plan for the patient (ORC, 2012). The OBN (2011a) has provided specific
examples of the LPN’s role and many are similar to those of the RN. The LPN collects
and documents patient data and observations, includes health information and
observations into nursing assessments, and gives data reports to the RN or other
authorized directing health care practitioner (OBN, 2011a). The LPN also implements
the current nursing care plan under the direction of a RN, implements medication or
treatment ordered by directing physician or other authorized care provider, documents all
patient responses to the nursing care plan, assists in necessary modifications to the
nursing care plan, and continuously assists in evaluating the care plan effectiveness
(OBN, 2011a).

**Advanced Practice Registered Nurses (APRNs)**

**Defined.** An advanced practice registered nurse (APRN) is defined by the ORC
Chapter 4723 of the Nurse Practice Act as, “a certified registered nurse anesthetist,
clinical nurse specialist, certified nurse-midwife, or certified nurse practitioner” (ORC,
2012). A “certificate of authority” is the board issued certificate held by an APRN who
has fulfilled all requirements of the board (ORC, 2012).
Scope of practice. The scope of practice for APRNs is detailed in Section 4723.02 of the ORC, and is defined as “providing patients nursing care that requires knowledge and skill obtained from advanced formal education, which includes a clinical practicum, and clinical experience” (ORC, 2012).

APRNs should practice in accordance with their educational and clinical experience, their national certification, and the rules adopted by Chapter 4723 of the ORC (2012). Unlike RNs and LPNs, APRNs that are certified nurse midwives, certified nurse practitioners, and clinical nurse specialists are authorized to prescribe drugs (ORC, 2012). APRNs are also still able to practice as a registered nurse in accordance with Section 4723.01 of the ORC and rules of the board (ORC, 2012).

Nutrition-Related Education for Nurses

Registered Nursing Education Program

Within the Nurse Practice Act, the ORC (2012) has defined the “registered nursing education program” as a “professional nursing education program that leads to initial licensure as a registered nurse.” Nursing programs do not have to be accredited by nursing associations but must comply with state requirements under Chapter 4723-5 in order to maintain approval by the OBN (ORC, 2012; P. McKnight, personal communication, 2013-2014). If programs fail to meet and maintain the requirements, they will be considered noncompliant by the board potentially harming a program’s approval status (ORC, 2012).
The curriculum for a registered nursing education program is detailed in Chapter 4723-5-13 of the ORC (2012) Nurse Practice Act. This states that the program curriculum should include content that “validates the student’s acquired knowledge, skills, and behaviors that are necessary to safely and effectively engage in the practice of registered nursing” with curriculum that should be “derived from a philosophy, conceptual framework, or organizing theme that is consistently evident throughout the curriculum” (ORC, 2012, pg.22). In Ohio, nursing programs need to be a minimum of two years with full time study allowing 30 weeks each year for examination (ORC, 2012). Curriculum plans for RN programs need to include the sequence of courses, the laboratory and clinical experiences included in each course, and the number of credits or hours focusing on theory, laboratory, and clinical experiences (ORC, 2012).

In the state of Ohio, nursing program curriculum requires content in “nursing art and science, the physical, biological, and technological sciences, and social and behavioral sciences” (ORC, 2012). Nursing programs are able to take this content and integrate, combine, or present the content in separate courses (Table 5) (ORC, 2012).
Table 5. *Curriculum for a Registered Nursing Education Program as Specified in the ORC Nurse Practice Act, Chapter 4723-5-13*

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>May include, but not limited to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing art and science applied to a variety of settings and individuals across the life span</td>
<td>- The nursing process&lt;br&gt;- Application of nursing care concepts for the physiological, psychological, cultural, and spiritual needs of clients&lt;br&gt;- Communication with clients, families, and significant individuals&lt;br&gt;- Documentation of nursing care within various health information systems&lt;br&gt;- Information management pertaining to health records, nursing science, and evidence-based practice&lt;br&gt;- Concepts of teaching and learning&lt;br&gt;- Exercising clinical judgment, using evidence-based practice for integration of increasingly complex knowledge, skills, and technologies as they relate to the clients</td>
</tr>
<tr>
<td>Safe and effective care environment</td>
<td>- Manager duties such as delegation of tasks, any legal or ethical issues, collaboration with those significant to the client, and professionalism and mentoring of other nurses&lt;br&gt;- Safety and infection control</td>
</tr>
<tr>
<td>Health counseling and health teaching</td>
<td>No content specified</td>
</tr>
<tr>
<td>Psychological integrity</td>
<td>No content specified</td>
</tr>
<tr>
<td>Physiological integrity</td>
<td>- Care and comfort for the patient&lt;br&gt;- Pharmacological and parental therapies&lt;br&gt;- Physiological adaptation&lt;br&gt;- Reduction of risk potential including patient safety strategies</td>
</tr>
<tr>
<td>Physical, biological, and technological sciences</td>
<td>- Pharmacology&lt;br&gt;- Human anatomy and physiology&lt;br&gt;- Chemistry&lt;br&gt;- Biology&lt;br&gt;- Microbiology&lt;br&gt;- Physics&lt;br&gt;- Nutrition&lt;br&gt;- Mathematics&lt;br&gt;- Computer operations</td>
</tr>
<tr>
<td>Social and behavioral sciences</td>
<td>Necessary so nurse learns to understand:&lt;br&gt;- The effect of a client’s religious, spiritual, cultural, and growth and developmental experiences on the client’s health&lt;br&gt;- The client’s attitude toward health maintenance&lt;br&gt;- How to effectively communicate with the client</td>
</tr>
<tr>
<td>Clinical and laboratory experiences</td>
<td>- Should meet the established course objectives or outcomes&lt;br&gt;- Provide practice of cognitive, psychomotor, and affective skills in the performance of a variety of nursing functions with individuals or groups across the life span&lt;br&gt;- Provide opportunity to practice technical skills&lt;br&gt;- Provided concurrently with the related theory instruction</td>
</tr>
</tbody>
</table>

Adapted from “Nurse Practice Act: Chapter 4723” by Ohio Revised Code [ORC], 2012, p. 21.
**Practical Nursing Education Program**

Within the Nurse Practice Act, the ORC has defined “practical nursing education program” as “a nursing education program that leads to initial licensure as a licensed practical nurse” (ORC, 2012, pg.3). Practical nursing education programs must meet and maintain the same requirements as the registered nursing education program under Chapter 4723-5 in order to maintain approval by the OBN (ORC, 2012). Curriculum for a practical nursing education program is detailed in Chapter 4723-5-14 of the Nurse Practice Act (ORC, 2012). Program curriculum should include content that “validates the student’s acquired knowledge, skills, and behaviors that are necessary to safely and effectively engage in the practice of licensed practical nursing” and should be “derived from a philosophy, conceptual framework, or organizing theme that is consistently evident throughout the curriculum” (ORC, 2012, pg.35). The program should be a minimum length of 30 weeks full-time, including examination time, allowing hours for coursework, theory, laboratory, and clinical experiences (ORC, 2012). Practical nursing education programs offered to students at the secondary or high school level cannot start any earlier than the beginning of the student’s junior year (ORC, 2012). Areas of study shown in Table 6 may be integrated, combined, or presented as separate courses in a practical nursing education program (ORC, 2012). In addition to these requirements, course or content in intravenous therapy is required (ORC, 2012).
Table 6. *Curriculum for a Practical Nursing Education Program as Specified in the ORC Nurse Practice Act, Chapter 4723-5-14*

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>May include, but not limited to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic physical, biological, and technological sciences</td>
<td>• Pharmacology&lt;br&gt;• Human anatomy and physiology&lt;br&gt;• Chemistry&lt;br&gt;• Microbiology&lt;br&gt;• Nutrition&lt;br&gt;• Mathematics&lt;br&gt;• Computer operations</td>
</tr>
<tr>
<td>Social and behavioral sciences</td>
<td>Necessary so nurse learns to understand:&lt;br&gt;• The effect of a client’s religious, spiritual, cultural, and growth and developmental experiences on the client’s health&lt;br&gt;• The client’s attitude toward health maintenance&lt;br&gt;• How to effectively communicate with the client</td>
</tr>
<tr>
<td>Basic nursing art and science practiced in a variety of structured settings, with courses and experiences to prepare students to safely deliver nursing care to individuals and groups across the life span</td>
<td>• The nursing process: collection and organization or relevant health care data; assisting in the identification of health needs and problems; and contributing to the interdisciplinary health care team in addressing client physiological, psychological, cultural, and spiritual needs&lt;br&gt;• Application of nursing care concepts for the physiological, psychological, cultural, and spiritual needs of clients&lt;br&gt;• Communication with clients, families, and significant individuals&lt;br&gt;• Documentation of nursing care within various health information systems&lt;br&gt;• Information management pertaining to health records, nursing science and evidence-based practice&lt;br&gt;• Concepts of teaching and learning</td>
</tr>
<tr>
<td>Safe and effective care environment and coordinated care</td>
<td>• Collaboration with clients, families, other members of health care team, and other individuals to the client&lt;br&gt;• Delegation of nursing tasks in accordance with Chapter 4723-13&lt;br&gt;• Demonstration of knowledge of legal, ethical, historical, and emerging issues in nursing that include, but are not limited to, the law and rules regulating nursing practice in Ohio</td>
</tr>
<tr>
<td>Safety and infection control</td>
<td>No content specified</td>
</tr>
<tr>
<td>Health promotion and maintenance</td>
<td>No content specified</td>
</tr>
<tr>
<td>Psychosocial integrity</td>
<td>No content specified</td>
</tr>
<tr>
<td>Physiological integrity</td>
<td>• Basic care and comfort for the patient&lt;br&gt;• Pharmacological therapies</td>
</tr>
<tr>
<td>Reduction of risk potential</td>
<td>• Patient safety strategies</td>
</tr>
<tr>
<td>Physiological adaptation</td>
<td>No content specified</td>
</tr>
<tr>
<td>Application of principles of clinical judgment in the delivery of nursing care</td>
<td>No content specified</td>
</tr>
</tbody>
</table>
Clinical and laboratory experiences

- Meet the established course objectives and outcomes
- Provide opportunity to practice cognitive, psychomotor, and affective skills in the performance of a variety of basic nursing functions with individuals or groups across the life span
- Provide opportunity to practice technical skills
- Provided concurrently with related theory instruction

Professionalism and acting as a mentor for other nurses

No content specified

Adapted from “Nurse Practice Act: Chapter 4723” by Ohio Revised Code [ORC], 2012, p. 23.

Nutrition-Related Education

Developments in nursing education, nutrition science, nutrition public policy, and the evolution of nursing and dietetics have been influential factors in the extensive changes of the “scope, depth, and type of nutrition content in nursing curriculum” (Morse & Corcoran-Perry, 1993). Due to this, there has been, and continues to be, a lack of evidence of nutrition curriculum in nursing programs.

In 1983, Cutler (1986) surveyed 331 state approved programs in the United States accredited by the National League for Nursing (NLN). In his survey he compared schools with full-time dietitian (ftd), part-time dietitian (ptd), or no faculty dietitian (nd) on staff while he explored the design of the nutrition curriculum at each institution, administrative arrangements for implementing the curriculum, professional characteristics of the nutrition educators, and the basic nutrition content included in each program. Cutler (1986), with a 53% response, found that a majority of schools followed a two-part approach where basic nutrition was a required course (75% at schools with ftd; 71.1% with ptd; and 56.4% with nd) while diet therapy was integrated within other nursing courses (69.7% ftd; 61.3% ptd; 76.7% nd). A majority of schools were also found to offer nutrition focus in clinical laboratory (77.8% ftd; 67.4% ptd; and 72.3% nd)
(Cutler, 1986). However, advanced nutrition elective courses were not offered in a majority of the schools (69.4% ftd; 88.6% ptd; and 71.9% nd) (Cutler, 1986). Cutler (1986, pg.933) reported in a “small percentage of programs, basic nutrition was both a required course and integrated content, not required content, or combined with diet therapy or growth and development in one course.” In addition, the largest percentage of programs that had basic nutrition integrated into nursing courses (34%) were found in schools with nd (Cutler, 1986).

Cutler (1986) found that the majority of schools who solely offered basic nutrition typically offered it as a three-credit course (72.7% ftd; 64.1% ptd; and 69.3% nd). Cutler (1986) also found that the majority of schools with a ftd (63.6%) or a ptd (70%) offered a basic nutrition course within the nursing school. External sources outside of the nursing programs, such as a College of Nutrition, Home Economics, or Health Sciences, were used to offer the basic nutrition course in 93.5% of the schools that had nd (Cutler, 1986). The basic nutrition course was found to be open to all students who elected to study nutrition as well as to those for whom it was a requirement in more than 50% of the programs (Cutler, 1986).

In the majority of programs, RDs taught the basic nutrition courses (88% ftd; 79% ptd; and 61% nd) (Cutler, 1986). When basic nutrition was integrated into nursing programs, a RN taught the course in 85% of the schools who had nd (Cutler, 1986). In contrast, in programs where diet therapy was a separate course, the majority of instructors were RDs (Cutler, 1986). Overall, 96% of schools with nd had RNs teach the subjects of diet therapy and basic nutrition for the nursing program requirements (Cutler, 1986). In
conclusion, Cutler (1986) suggested the instructor changes and deletion of nutrition in
nursing curriculum had a dramatic effect on the training of nurses in nutrition.

In another study, Stotts, Englert, Crocker, Bennum, and Hoppe (1987) surveyed
446 deans of NLN-accredited baccalaureate nursing programs to determine the type and
nature of nutrition education being provided in these programs within the United States.
A total of 264 programs responded to this survey and all programs reported requiring
nutrition content in their curriculum (Stotts, Englert, Crocker, Bennum, & Hoppe, 1987).
However, the number of required courses in each program that were solely focused on
nutrition varied from zero to five ($\bar{x} = 0.64$) (Stotts et al., 1987).

Sixty-one percent of the nursing programs in the study (161 programs) required
courses in which nutrition content was integrated with other nursing content (Stotts et al.,
1987). The number of courses containing integrated nutrition content ranged from zero
to ten ($\bar{x} = 5.4$) (Stotts et al., 1987). The number of required laboratory/clinical hours
that focused solely on nutrition ranged from 0 – 64 ($\bar{x} = 3.3$) (Stotts et al., 1987). Of
these 161 programs, 70% had no laboratory/clinical hours that focused entirely on
nutrition (Stotts et al., 1987).

Stotts et al. (1987) reported that nutritional assessment (96%) was the most
frequently taught in required nutrition courses. Enteral and parenteral nutrition therapy
and diet counseling were taught in 85% and 84% of schools respectively, while nutrition
biochemistry was included least frequently (71%) (Stotts et al., 1987). Role
differentiation of health care team members was included only slightly more often (72%),
as was the evaluation of the effects of therapy (76%) (Stotts et al., 1987). In 57.5% of
schools, RNs were responsible for nutrition education, and in 67% of schools, RDs were responsible for teaching nutrition content (Stotts et al., 1987).

According to Stotts et al. (1987), 54% of schools offered an elective nutrition course and only 10% of these courses were offered within the nursing curriculum. The nutrition content of the elective courses was similar to the required courses, however, enteral and parenteral nutrition were least addressed in the elective courses (39%) and nutritional assessment was the most frequently covered topic (83%) (Stotts et al., 1987).

**Graduate programs.** Graduate programs with significant nutrition content covered 80% of the content in required classroom and/or clinical hours and 20% of the content through elective courses (Stotts et al., 1987). For every seven hours spent on nutrition content in classroom instruction only three hours of instruction was spent on nutrition content in clinical/laboratory practice (Stotts et al., 1987). In graduate programs, it was found that nutritional assessment was most frequently taught (96%), followed by diet counseling (84%) (Stotts et al., 1987). From this cross-sectional study, Stotts et al. (1987) suggested that an increase in the amount of clinical time spent in nutrition and an increase in options of elective nutrition courses was needed.

**Time spent on nutrition content.** Cutler (1986) reported that across all schools, there was a considerable variation in the number of class hours for basic nutrition when integrated in nursing courses. This further demonstrated that none of the schools possessing integrated basic nutrition curriculum equaled those of a three-credit semester course.
Diet therapy courses were available in a small percentage of schools and were usually offered as a two or three-credit course open to all health profession students (Cutler, 1986). When diet therapy was integrated into nursing courses, Cutler (1986) found a considerable variation in the number of hours diet therapy was actually taught. As shown in Table 7, schools with the highest percentages, spending more than 15 hours on diet therapy, were those with a full-time dietitian (Cutler, 1986).

Table 7. Characteristics of the Integrated Diet Therapy Component of Nursing Curriculum in Schools with and without a Faculty Dietitian

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Full-time Dietitian¹</th>
<th>Part-time Dietitian²</th>
<th>No Dietitian³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (n)</td>
<td>% (n)</td>
<td>% (n)</td>
</tr>
<tr>
<td>Faculty employed by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing college</td>
<td>89.2 (25)</td>
<td>93.3 (28)</td>
<td>97.3 (72)</td>
</tr>
<tr>
<td>External Source</td>
<td>10.8 (3)</td>
<td>6.7 (2)</td>
<td>2.7 (2)</td>
</tr>
<tr>
<td>Totals</td>
<td>100 (28)</td>
<td>100 (30)</td>
<td>100 (74)</td>
</tr>
<tr>
<td>Professional title of faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Dietitian</td>
<td>71.4 (20)</td>
<td>40.0 (12)</td>
<td></td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>10.7 (3)</td>
<td>33.3 (10)</td>
<td>95.9 (71)</td>
</tr>
<tr>
<td>RD and RN</td>
<td>7.2 (2)</td>
<td>23.3 (7)</td>
<td>4.1 (3)</td>
</tr>
<tr>
<td>Other</td>
<td>10.7 (3)</td>
<td>3.3 (1)</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>100 (28)</td>
<td>99.9º (30)</td>
<td>100 (74)</td>
</tr>
<tr>
<td>Number of class hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-8</td>
<td>21.4 (8)</td>
<td>35.7 (10)</td>
<td>34.3 (24)</td>
</tr>
<tr>
<td>9-15</td>
<td>32.1 (9)</td>
<td>35.7 (10)</td>
<td>32.9 (23)</td>
</tr>
<tr>
<td>16-25</td>
<td>25.0 (7)</td>
<td>25.0 (7)</td>
<td>30.0 (21)</td>
</tr>
<tr>
<td>26-30</td>
<td>21.4 (6)</td>
<td>3.6 (1)</td>
<td>1.4 (1)</td>
</tr>
<tr>
<td>31 or more</td>
<td></td>
<td>1.4 (1)</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Totals</td>
<td>99.9º (28)</td>
<td>100 (30)</td>
<td>100 (74)</td>
</tr>
</tbody>
</table>

¹ Schools with a full-time dietitian (n=28)
² Schools with a part-time dietitian (n=30)
³ Schools with no faculty dietitian (n=74)
º % as defined by frequency of responses in each group
* Does not total 100% due to rounding error


Cutler (1986) surveyed the schools on the number of class hours spent on specific nutrition content topics, including carbohydrates, proteins, fats, energy metabolism, minerals, vitamins, food additives, labels, dietary assessment, assessment of nutritional status, nutrition and the elderly, and weight management. It was found that a variable
number of class hours were spent on each topic, as shown in Table 8 (Cutler, 1986).

Within the basic nutrition content, the schools with ftd or ptd spent more time on the topics than the schools with nd (Cutler, 1986).

Table 8. Number of Class Hours Spent on Selected Nutrition Topics in Nursing Schools with and without a Faculty Dietitian

<table>
<thead>
<tr>
<th>Class Hours on Nutrition Topics</th>
<th>Full-time Dietitian</th>
<th>Part-time Dietitian</th>
<th>No Dietitian</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (n)</td>
<td>% (n)</td>
<td>% (n)</td>
</tr>
<tr>
<td>Carbohydrate, protein, fat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2.9 (1)</td>
<td>6.5 (3)</td>
<td>6.9 (6)</td>
</tr>
<tr>
<td>Less than 1 hour</td>
<td>5.7 (2)</td>
<td>21.7 (10)</td>
<td>30.2 (26)</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>17.1 (6)</td>
<td>19.6 (9)</td>
<td>15.1 (13)</td>
</tr>
<tr>
<td>More than 2-4 hours</td>
<td>20.0 (7)</td>
<td>17.4 (8)</td>
<td>20.9 (18)</td>
</tr>
<tr>
<td>More than 4 hours</td>
<td>54.3 (19)</td>
<td>41.3 (19)</td>
<td>27.9 (24)</td>
</tr>
<tr>
<td>No response</td>
<td>(1)</td>
<td></td>
<td>(8)</td>
</tr>
<tr>
<td>Totals</td>
<td>100.1° (36)</td>
<td>99.9° (46)</td>
<td>99.9° (94)</td>
</tr>
<tr>
<td>Energy metabolism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2.9 (1)</td>
<td>6.5 (3)</td>
<td>6.9 (6)</td>
</tr>
<tr>
<td>Less than 1 hour</td>
<td>22.9 (8)</td>
<td>30.4 (14)</td>
<td>40.2 (35)</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>40.0 (14)</td>
<td>41.3 (19)</td>
<td>28.7 (25)</td>
</tr>
<tr>
<td>More than 2-4 hours</td>
<td>28.6 (10)</td>
<td>17.4 (8)</td>
<td>14.9 (13)</td>
</tr>
<tr>
<td>More than 4 hours</td>
<td>5.7 (2)</td>
<td>4.3 (2)</td>
<td>9.2 (8)</td>
</tr>
<tr>
<td>No response</td>
<td>(1)</td>
<td></td>
<td>(7)</td>
</tr>
<tr>
<td>Totals</td>
<td>100.1° (36)</td>
<td>99.9° (46)</td>
<td>99.9° (94)</td>
</tr>
<tr>
<td>Minerals, vitamins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2.9 (1)</td>
<td>4.3 (2)</td>
<td>4.7 (4)</td>
</tr>
<tr>
<td>Less than 1 hour</td>
<td>8.6 (3)</td>
<td>17.4 (8)</td>
<td>37.2 (32)</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>14.3 (5)</td>
<td>26.1 (12)</td>
<td>20.9 (18)</td>
</tr>
<tr>
<td>More than 2-4 hours</td>
<td>31.4 (11)</td>
<td>26.1 (12)</td>
<td>13.9 (12)</td>
</tr>
<tr>
<td>More than 4 hours</td>
<td>42.9 (15)</td>
<td>26.1 (12)</td>
<td>23.3 (20)</td>
</tr>
<tr>
<td>No response</td>
<td>36 (1)</td>
<td></td>
<td>(8)</td>
</tr>
<tr>
<td>Totals</td>
<td>100.1° (36)</td>
<td>100 (46)</td>
<td>100 (94)</td>
</tr>
<tr>
<td>Food additives, labels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>17.6 (6)</td>
<td>13.0 (6)</td>
<td>31.8 (28)</td>
</tr>
<tr>
<td>Less than 1 hour</td>
<td>58.8 (20)</td>
<td>58.7 (27)</td>
<td>46.6 (41)</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>14.7 (5)</td>
<td>23.9 (11)</td>
<td>17.0 (15)</td>
</tr>
<tr>
<td>More than 2-4 hours</td>
<td>5.9 (2)</td>
<td>4.3 (2)</td>
<td>4.5 (4)</td>
</tr>
<tr>
<td>More than 4 hours</td>
<td>2.9 (1)</td>
<td></td>
<td>(6)</td>
</tr>
<tr>
<td>No response</td>
<td>(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>99.9° (36)</td>
<td>99.9° (46)</td>
<td>99.9° (94)</td>
</tr>
<tr>
<td>Dietary assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>8.3 (3)</td>
<td>4.3 (2)</td>
<td>3.4 (3)</td>
</tr>
<tr>
<td>Less than 1 hour</td>
<td>33.3 (12)</td>
<td>26.1 (12)</td>
<td>37.9 (33)</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>25.0 (9)</td>
<td>45.7 (21)</td>
<td>31.0 (27)</td>
</tr>
<tr>
<td>More than 2-4 hours</td>
<td>22.2 (8)</td>
<td>21.7 (10)</td>
<td>16.1 (14)</td>
</tr>
<tr>
<td>More than 4 hours</td>
<td>11.1 (4)</td>
<td>2.2 (1)</td>
<td>11.5 (10)</td>
</tr>
<tr>
<td>No response</td>
<td></td>
<td></td>
<td>(7)</td>
</tr>
</tbody>
</table>
In 1991, the Academy (formerly known as the American Dietetic Association) issued the *Position of The American Dietetic Association: Nutrition Education of Health Professionals* (ADA, 1991). The Academy stated in this position statement that “nutrition should be incorporated into basic and clinical sciences in undergraduate and graduate school curricula, as well as in training programs and continuing education seminars” (ADA, 1991). The nutrition content of a specific education program should emphasize the essential information relevant to that particular health care discipline.

Attention should be paid to administrative support of nutrition education, the effective use of existing resources, the recruitment of a coordinator and interested faculty, and the
integration of nutrition in applied clinical care (ADA, 1991). The Academy supported
nutrition education for the health professions and considered didactic, clinical, and
continuing education the top priorities for the next decade (ADA, 1991). Expanded
nutrition services were determined necessary to enhance the health care system and to be
an integral part of the health services to meet the public’s needs. As this position
statement is no longer active, there is currently a committee acting to pursue and publish
a new position statement on nutrition education in the nursing practice (P. McKnight,

In a letter to the editor of the American Journal of Clinical Nursing, Weigley
(1994) stated that the NCLEX-RN exam includes nutrition content and nursing curricula
incorporating nutrition. Entry level nurses were asked to rank the topics assessed on this
exam according to perceived importance, utilizing a five-point Likert-type scale for
which one was essential and five was irrelevant. Table 9 shows the priority assigned to
the different topics. The item with the highest ranking, considered essential by greater
than 90% of the participants, was fluids, electrolytes, and acid-base balance (Weigley,
1994). Basic nutrients, nutrition across the life span, and nutrition in the prevention and
treatment of many diseases was also rated highly (Weigley, 1994). Under “other
nutrition topics,” nutrition support, nutrition and exercise, alcohol and substance abuse as
they relate to nutrition, drug-nutrient interactions, iatrogenic malnutrition, and criteria for
an adequate diet also had high ratings of less than two (Weigley, 1994). The only
concepts scoring a rating greater than three were food laws and legislation, world food
supply, and historical aspects of nutrition (Weigley, 1994). While these topics were
ranked greater than three it is important to note that they were at least considered desirable, although not essential (Weigley, 1994). The lower ratings of some “other nutrition topics” may be explained by two facts. Several respondents commented that in their institutions, RDs performed all nutrition planning and counseling and that, many of the nurses are employed in intensive care and acute-care settings (Weigley, 1994). In such situations, knowledge of some of these topics may seem less important. As cited by Weigley (1994), it has been demonstrated that practice setting and client needs are the main determinants of functions performed by entry-level nurses.

Table 9. *Priority Assigned to Nutrition Topics for Inclusion in the Nursing Curriculum* *

<table>
<thead>
<tr>
<th>Topic</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nutrients</strong></td>
<td></td>
</tr>
<tr>
<td>Fluids, electrolytes, and acid-base balance</td>
<td>1.1</td>
</tr>
<tr>
<td>Lipids</td>
<td>1.4</td>
</tr>
<tr>
<td>Proteins</td>
<td>1.4</td>
</tr>
<tr>
<td>Vitamins</td>
<td>1.4</td>
</tr>
<tr>
<td>Digestion and metabolism</td>
<td>1.5</td>
</tr>
<tr>
<td>Carbohydrates including fiber and artificial sweeteners</td>
<td>1.7</td>
</tr>
<tr>
<td>Major minerals</td>
<td>1.8</td>
</tr>
<tr>
<td>Trace minerals</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Life span nutrition</strong></td>
<td></td>
</tr>
<tr>
<td>Pregnancy and lactation</td>
<td>1.4</td>
</tr>
<tr>
<td>Infancy, childhood, adolescence</td>
<td>1.4</td>
</tr>
<tr>
<td>Adult years</td>
<td>1.4</td>
</tr>
<tr>
<td>Older adult</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Nutrition and disease process</strong></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>1.3</td>
</tr>
<tr>
<td>Surgery, trauma, and sepsis</td>
<td>1.4</td>
</tr>
<tr>
<td>Cancer</td>
<td>1.5</td>
</tr>
<tr>
<td>AIDS</td>
<td>1.5</td>
</tr>
<tr>
<td>Gastrointestinal disorders</td>
<td>1.5</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1.5</td>
</tr>
<tr>
<td>Renal diseases</td>
<td>1.5</td>
</tr>
<tr>
<td>Burns</td>
<td>1.5</td>
</tr>
<tr>
<td>Atherosclerosis</td>
<td>1.6</td>
</tr>
<tr>
<td>Metabolic disorders other than diabetes</td>
<td>1.6</td>
</tr>
<tr>
<td>Liver and biliary tract disorders</td>
<td>1.6</td>
</tr>
<tr>
<td>Anemias</td>
<td>1.6</td>
</tr>
<tr>
<td>Respiratory disorders</td>
<td>1.7</td>
</tr>
<tr>
<td>Prevention of chronic diseases</td>
<td>1.7</td>
</tr>
<tr>
<td>Eating disorders</td>
<td>1.8</td>
</tr>
<tr>
<td>Skeletal and connective tissue disorders</td>
<td>1.8</td>
</tr>
<tr>
<td>Condition</td>
<td>Scale</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Overweight and underweight</td>
<td>1.9</td>
</tr>
<tr>
<td>Allergic reactions</td>
<td>1.9</td>
</tr>
<tr>
<td>Rehabilitation and handicapped conditions</td>
<td>1.9</td>
</tr>
<tr>
<td>Nervous system disorders</td>
<td>1.9</td>
</tr>
<tr>
<td>Stress</td>
<td>1.9</td>
</tr>
<tr>
<td>Inborn errors of metabolism</td>
<td>2.0</td>
</tr>
<tr>
<td>Oral cavity diseases</td>
<td>2.0</td>
</tr>
<tr>
<td>Psychiatric disorders</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Other nutrition topics</strong></td>
<td></td>
</tr>
<tr>
<td>Nutrition support (enteral and parenteral)</td>
<td>1.4</td>
</tr>
<tr>
<td>Nutrition and exercise</td>
<td>1.5</td>
</tr>
<tr>
<td>Alcohol</td>
<td>1.7</td>
</tr>
<tr>
<td>Drug-nutrient interactions</td>
<td>1.7</td>
</tr>
<tr>
<td>Substance use and abuse</td>
<td>1.8</td>
</tr>
<tr>
<td>Criteria for adequate diet</td>
<td>1.9</td>
</tr>
<tr>
<td>Iatrogenic malnutrition</td>
<td>1.9</td>
</tr>
<tr>
<td>Community nutrition program (e.g., WIC, meals on wheels)</td>
<td>2.0</td>
</tr>
<tr>
<td>Nutrition and immunity</td>
<td>2.0</td>
</tr>
<tr>
<td>Nutritional supplements</td>
<td>2.0</td>
</tr>
<tr>
<td>Nutritional assessment</td>
<td>2.1</td>
</tr>
<tr>
<td>Diet counseling</td>
<td>2.2</td>
</tr>
<tr>
<td>Food safety</td>
<td>2.3</td>
</tr>
<tr>
<td>Cultural nutrition</td>
<td>2.3</td>
</tr>
<tr>
<td>Reliable sources of nutrition information</td>
<td>2.3</td>
</tr>
<tr>
<td>Food composition</td>
<td>2.5</td>
</tr>
<tr>
<td>Food additives</td>
<td>2.6</td>
</tr>
<tr>
<td>Food economics</td>
<td>2.6</td>
</tr>
<tr>
<td>Evaluating popular dietary regimens</td>
<td>2.6</td>
</tr>
<tr>
<td>Effect of processing on food</td>
<td>2.7</td>
</tr>
<tr>
<td>Unorthodox nutritional therapies</td>
<td>2.7</td>
</tr>
<tr>
<td>Food fads</td>
<td>2.9</td>
</tr>
<tr>
<td>Food laws and legislation</td>
<td>3.1</td>
</tr>
<tr>
<td>World food supply</td>
<td>3.2</td>
</tr>
<tr>
<td>History of nutrition</td>
<td>3.4</td>
</tr>
</tbody>
</table>

*Scale: 1, essential; 2, important; 3, desirable but not essential; 4, unimportant; 5, irrelevant.


A recent phone survey had received information from 17 of a possible 41 ADN programs in Ohio (McKnight, 2013). This survey revealed that nine of the 17 programs offered nutrition courses, but only four of these programs made the nutrition course a requirement (McKnight, 2013). Of the 17 programs, the survey found that two of these programs contained a nutrition course that was taught by an RD and that two other programs had a nutrition course that was taught by a nurse (McKnight, 2013).
Individuals who responded to the survey were unsure of what the qualifications were for the other 13 programs/courses (McKnight, 2013). Similarly, information regarding the integration of nutrition with other courses is vague. Eight participants of the survey knew that nutrition was an integrated topic, but only four knew that the courses were taught by RNs (McKnight, 2013).

**Continuing Education**

Continuing education (CE) according to the OBN (2014, pg.1) is “learning activities that build upon a pre-licensure or precertification education program and enables a licensee or certificate holder to acquire or improve the knowledge or skills that promote professional or technical development to enhance the licensee’s or certificate holder’s contribution to quality.” All nursing professionals in the state of Ohio who are renewing, reactivating, or reinstating a license or certificate must complete CE requirements (OBN, 2014).

All CE must be approved by an OBN approver or offered by an OBN approved provider unit headquartered within the state of Ohio (OBN, 2014). An OBN approver is an organization that has been authorized by the Board to approve CE activities offered by a provider (OBN, 2014).

RNs and LPNs in Ohio must complete 24 contact hours of CE during each licensure period, every two years, to renew a license (OBN, 2014). At least one contact hour must be directly related to the Ohio Nurse Practice Act and the rules of the OBN.
If the RN or LPN has been licensed by endorsement for one year or less, they must complete 12 contact hours (OBN, 2014).

**Availability of appropriate CE nutrition-related topics.** The OBN (2014) lists the following OBN approvers: Licensed Practical Nurse Association of Ohio (OBN-002-92); Northwest State Community College, Division of Nursing (OBN-008-92); Ohio Department of Developmental Disabilities (OBN-010-93); Ohio Department of Mental Health (OBN-003-92); Ohio League for Nursing (OBN-006-92); Ohio Nurses Association (OBN-001-91); Omnicare Great Lakes Region, Division of Education (OBN-009-93); UC Health (OBN-07-92); University of Cincinnati, College of Nursing (OBN-011-93); and the UVMC-Education and Development (OBN-005-92).

CE’s were viewable on two of the OBN approvers’ websites. The Ohio Nursing Association (ONA) provides a list of CE on [www.ce4nurses.org](http://www.ce4nurses.org). As of March 2014, there were four total CEs available relating to nutrition found on this website. The first, “Chronic Kidney Disease: Stages and Nursing Care”, offered 1.47 contact hours and encompassed a components of the renal diet (ONA, 2014). The second, “Heart Failure: A New Look at an Old Problem”, offered 1.27 contact hours, and discussed the DASH diet, sodium reduction, and weight reduction (ONA, 2014). The third, “Obesity”, offered 1.4 contact hours and discussed dietary programs and conventional diets (ONA, 2014). The final CE, “Women and Coronary Disease: The Heart of the Matter”, offered 1.4 contact hours, and briefly discussed diet, focusing on making small changes in the diet (ONA, 2014). UC Health also listed four possible nutrition-related CE’s but these could not be confirmed due to no description of the CE courses being available (UC Health,
2014). Each CE was 1.0 contact hour and were titled the following: “Nutrition: It’s Health Effect is Far More Than Generally Known”; “Renal Failure in Renal Transplant Recipients”; “Pulmonary Hypertension”; and “Long Term Care of the Chronic Mentally III”.

CE activities that have been approved or provided by a nationally recognized accreditation system of continuing education, such as the American Nurses Credentialing Center (ANCC), the Accreditation Council for Continuing Medical Education (ACCME), and the International Association for Continuing Education and Training (IACET), are also acceptable forms of continuing education (OBN, 2014). Also, a successfully completed course provided by an accredited educational institution for which academic credit is awarded can be accepted as a CE (OBN, 2014).

**Special Certifications**

There are many different certifications available to nursing professionals offered by a variety of organizations. However, certifications specific to therapeutic and modified diets are limited. Certifications that could play a role related to nutrition in some manner include the following: Certified Diabetes Educator (CDE), Certified Addictions Registered Nurse (CARN), Certified Correctional Health Profession (CCHP), Certified Critical Care Registered Nurse (CCRN), Certified Developmental Disabilities Nurse (CDDN), Certified Family Nurse Practitioner (CFNP), Certified Gastroenterological Nurse (CGN)/Certified Gastroenterological Registered Nurse (CGRN), Certified Health Education Specialist (CHES), Certified Hemodialysis Nurse (CHN), Cardiac Medicine Certification (CMC), Certified Nephrology Nurse (CNN),
Clinical Nurse Specialist (CNS), Certified Nutrition Support Dietitian (CNSD), Certified Peritoneal Dialysis Nurse (CPDN), Certified Pediatric Nurse (CPN), Certified Pediatric Nurse Practitioner (CPNP), Certified Pediatric Oncology Nurse (CPON), Certified Rehabilitation Counselor (CRC), Certified Registered Nurse Hospice (CRNH), Certified Registered Nurse Practitioner (CRNP), Certified Rehabilitation Registered Nurse (CRRN), Certified School Nurse (CSN), Wound, Ostomy, and Continence Nurse Certified (WOCNC) and Oncology Certified Nurse (OCN).

**Therapeutic Diets**

The term, “therapeutic diets”, has been defined by the Academy as a, “diet intervention ordered by a health care practitioner as part of the treatment for a disease or clinical condition manifesting an altered nutritional status, to eliminate, decrease, or increase certain substances in the diet (e.g. sodium, potassium)” (Academy, 2013b; 2013w). The Academy has also stated that therapeutic diets should be considered, “a component of a treatment program for an individual whose health status is impaired or at risk due to disease, injury, or surgery” (Academy, 2013b; 2013w). Furthermore, the Academy states that, “a RD or Registered Dietitian Nutritionist (RND) may perform the therapeutic diet as initiated by or in consultation with a physician or other practitioner authorized to prescribe via approved written or electronic standing orders, order sets, or protocols using evidence-based guidelines” (Academy, 2013b; Academy, 2013w).

Every therapeutic diet is based on a general, or normal nutritional diet, which has been modified, or altered, to meet an individual’s unique requirements, “such as digestive and absorptive capacity, alleviation or arrest of a disease process, or psychosocial
factors” (Mahan, Escott-Stump, & Raymond, 2012; pg. 270). Guidelines, such as the MyPlate, the Dietary Guidelines of Americans, and the Dietary Reference Intakes, serve as a foundation for determining an individual’s adequate diet (Mahan et al., 2012). The type of modified diet prescribed to an individual is inconsequential. Rather, the purpose of the prescribed diet is to, “supply needed nutrients to the body in a form it can handle” (Mahan et al., 2012, pg.270). When meal planning, there are numerous aspects that a prescriber must consider in order to ensure the therapeutic diet prescribed reflects the individual’s diet as much as possible.

The Centers for Medicare and Medicaid Services (CMS) requested that the Academy define the term, “therapeutic diet”, because of the numerous interpretations adopted by various regulations and standards (Academy, 2013b; 2013w). However, even though the Academy provided a standard definition, the term therapeutic diet has only been incorporated into a fraction of long-term care regulations (Academy, 2013b; 2013w). While CMS has used the definition, provided by the Academy, for coding purposes, they have also included the terms, “supplement”, and “mechanically altered diet”. Both of these terms required the Academy to provide interpretative recommendations for use in clarifying what these terms meant (Academy, 2013b; 2013w). The following rules apply to the interpretations regarding recommendations and coding:
• Therapeutic diets:
  o Correspond to particular disease or clinical condition treatments that produce an altered nutrition status.
  o Provide specifics to treat the altered nutrition status (Academy, 2013b; 2013w).

• Nutritional Supplements:
  o Serve as a house supplement or packaged supplement.
  o Can be provided as a component of the therapeutic diet for treatment of altered nutrition status.
  o Do not constitute a therapeutic diet.
  o Are coded as K0500D (Therapeutic Diet), whether given with, in-between, or instead of meals (Academy, 2013b; 2013w).

• Mechanically Altered Diet:
  o Is not a therapeutic diet, nor should it be considered a therapeutic diet (Academy, 2013b; 2013w).

**Types of Therapeutic Diets**

**Regular/house diet.** “Regular”, or “house”, diets act as the basic foundation for therapeutic diets, and are diets that have no restrictions (Academy, 2013b; 2013o; Mahan et al., 2012). A regular diet should be used as often as possible, especially when a patient’s medical condition does not require any dietary restrictions (Mahan et al., 2012).
A general diet includes a wide variety of nutritionally adequate foods, and typically contains approximately 1600 to 2200 kilocalories. Furthermore, these diets are generally composed of 60 to 80 grams of protein, 80 to 100 grams of fat, and 180 to 300 grams of carbohydrates (Mahan et al., 2012). While this type of diet does not have any particular food restrictions, many care facilities have developed their own regular diets based on guidance provided by the Dietary Guidelines for Americans. Typically, these diets are low in fat, cholesterol, and sodium, while being high in fiber (Academy, 2013b; 2013o; Mahan et al., 2012).

**Cardiac/heart healthy diet.** “Cardiac”, or “heart healthy” diets are commonly ordered within the acute care hospital setting. Components of the heart healthy diet typically consist of low cholesterol (<200 milligrams), low fat (<35% total energy intake from fat, <7% total energy intake from saturated fat, and with little to no trans-fat), low sodium (<3000 milligrams), and extremely limited to no amounts of caffeine (Academy, 2013q; 2013s; Mahan et al., 2012). According to Escott-Stump (2012), cardiac diets are extensively used throughout most hospitals, and are prescribed to patients diagnosed with heart disease, hypertension, myocardial infarction, hyperlipidemia, and dyslipidemia, and can be used as part of regimen for the prevention or treatment of cardiovascular disease (Escott-Stump, 2012; Academy, 2013q). Two of the most commonly ordered amongst these diets, as translated by the Nutrition Care Manual are the, “Therapeutic Lifestyle Changes (TLC)’, and the, “Dietary Approaches to Stop Hypertension (DASH)”.

The TLC diet is implemented as a means of primary and secondary prevention of cardiovascular heart disease (CHD) (Mahan et al., 2012). The TLC diet recommends 25-
35% total fat from the following, 7% saturated fat; zero or as low as zero trans-fatty acids; up to 10% polyunsaturated fat; up to 20% of monounsaturated fat; 50-60% carbohydrates from whole grains, fruits, and vegetables is emphasized; 25-30 grams/day of fiber; 2 grams/day of plant sterols; approximately 15% protein; and less than 200 milligrams/day of cholesterol (Mahan et al., 2012). The TLC diet recommends that an individual should perform at least moderate, approximately 200 kilocalories per day, of physical activity (Mahan et al., 2012).

Similar in use to the TLC diet, the DASH eating pattern is also used for cardiovascular disease prevention and treatment. Furthermore, it is also used in the prevention and control of high blood pressure (Escott-Stump, 2012; Mahan et al., 2012). According to the Academy (2013i), Escott-Stump (2012), and Mahan et al. (2012), the principles for the DASH diet, at the 2,000 calorie level, are as follows: choose four to five servings of both fruits and vegetables daily, two or less protein-rich foods daily, two to three low-fat dairy servings daily, seven to eight servings of grains daily, three of which need to be whole grains, four to five servings of nuts, seeds, and dry beans weekly, and limit fats and sweets. Currently, the Academy (2012d; 2013a; 2013r) recommends the DASH diet, at a sodium level under 2,400 milligrams per day, over the TLC diet as a nutrition therapy for hypertension.

The DASH and TLC eating plans are designed to reduce the consumption of sodium, increase the consumption of fruits, vegetables, and whole grains, and limit the amount of consumed fats, in an effort to lower blood cholesterol (Escott-Stump, 2012). Furthermore, the combination of these two eating guidelines outline an eating pattern that
is high in potassium, calcium, magnesium, and fiber, while limiting sodium intake to levels between 1,500 to 2,400 milligrams per day (Academy, 2013q; 2013s).

The “cardiac diet” used for the purpose of this study will be defined as a, “regular house diet”, with low cholesterol, 200 milligrams or less, low fat, and low sodium, less than 3000 milligrams per daily intake.

**Adherence to the cardiac/heart healthy diet.** Coronary heart disease (CHD) can be caused by many different factors, and can manifest itself through either atherosclerosis, and/or thrombosis, with controllable or uncontrollable existing risk factors (Hubbard, Mejia, & Horning, 1994). According to Hubbard, Mejia, and Hubbard (1994), there has been extensive amounts of data available, since World War II, which has shown a link between controlling dietary risk factors for CHD and the prevention of CHD. One such study, conducted by Morrison in 1952, examined the diets over 50 million people across Europe. Morrison (1952) found that the study population had extremely limited dietary options to consume, due to the destruction of the War. Furthermore, Morrison (1952) documented that the study populations’ consumption of meat, dairy products, high cholesterol, and high fat foods had significantly decreased. According to Morrison’s study (1952), this led to a reduction of fat consumption from 40 to 50% to approximately 25%, and a reduction of daily cholesterol intake from 600 milligrams per day to approximately 300 milligrams per day (Morrison, 1952). Interestingly, Morrison (1952) took note that during the five year period immediately after the War, coronary deaths were reduced by 30%. However, after the five year period, coronary deaths returned to pre-War levels as fat and cholesterol intake returned
to pre-War amounts (Morrison, 1952). Morrison later (1960) performed another study that involved patients who suffered from coronary infarction. In his study, Morrison (1960) split his participants into two groups, one group consumed a low fat, low cholesterol diet, while the other group consumed a traditional Western diet. Morrison (1960) found that the survival rate for the patients in the first group rose significantly from three years to twelve years.

Research has shown that a greater adherence to the DASH diet was associated with lower rates of heart failure in middle-aged and older men (Levitan, Wolk, & Mittleman, 2009). Furthermore, research findings from Fung et al. (2009) concluded that adherence to the DASH diet had a positive association a lower risk of coronary heart disease and stroke among middle-aged women throughout 24 years of follow-up. Hypertension is defined as a systolic blood pressure over 140mmHg or higher, or a diastolic blood pressure of 90mmHg or higher (Sacks & Campos, 2010). A study conducted by Epstein et al. (2012) concluded that a greater adherence to the DASH diet was associated with larger systolic blood pressure reductions, independent of weight loss. Every two point increase in overall DASH diet adherence resulted in a 3.4mmHg reduction in systolic blood pressure (Epstein et al., 2012). High blood pressure is associated with an increased risk of stroke, myocardial infarction, hypertension, congestive heart failure, renal failure, and cognitive treatment (Okonofua, 2006; Sacks & Campos, 2010; Wang & Vasan, 2005). Morbidity has increased in patients with whose blood pressure was above 115/75mmHg as cited by Sacks & Campos (2010). Furthermore, Sacks & Campos (2010) also cited that a systolic blood pressure over
115mmHg was the leading determinant in risk of death worldwide, being responsible for 7.6 million cardiovascular deaths annually.

**Patient understanding and compliance to the cardiac/heart healthy diet.**

Epstein et al. (2012) showed in their results that men and women with high blood pressure were able to successfully adopt the DASH dietary intake pattern, and as a result modified their eating habits during the course of a 16 week period. At the beginning of this study, participants reported typical American diet consumption habits, consisting of high amounts of fats, cholesterol, sodium, and low amount of fruits, vegetables, and low-fat dairy items (Epstein et al., 2012). Results at the end of the study concluded that both DASH intervention groups had been successful in increased fruits, vegetables, and low-fat dairy products consumption, while at the same time, fats, saturated fats, sweets, and sodium consumption decreased (Epstein et al. 2012).

In their 2012 guidelines, the Academy (2013o), emphasized the importance of focusing on overall eating patterns, rather than specific nutrients or food groups in an effort to form more consistent, healthy, and positive lifestyle changes, while reducing patient confusion. The study conducted by Epstein et al. (2012), stressed the importance of clinician encouragement directed towards patient adherence with regards to their prescribed DASH diet, in patients with high blood pressure, and exercise and weight loss in overweight or obese patients. Epstein et al. (2012) also stated that they found factors such as, regular patient contact with the staff of the study, encouragement of self-monitoring behavior, and increased education regarding diet and blood pressure helped both DASH intervention groups in adapting and maintaining the DASH diet pattern. In
another study, conducted by Windak, Gryglewska, Tomaskik, Narkiewicz, and Grodzicki (2009), Polish primary care physicians were found to have only given half of the required recommendations for lifestyle required for individuals with elevated blood pressure and those at increased risk for cardiovascular disease. Winda et al. (2009) concluded that success in lifestyle modification could be difficult, and that it required intensive interactions between patients and their care providers. Furthermore, Windak et al. (2009) found that physicians needed to recognize that practice guidelines were not always effective in changing patient behavior, feedback and patient education were more likely to promote changes within patient behavior.

Primary factors that contribute to noncompliance of therapeutic diets, as reported by Metz et al. (1997), include: difficulty in patient understanding of diet principles, the time commitment required to plan and prepare meals, and the consumption restrictions that accompany this type of diet. Furthermore, heart healthy diets typically include multiple diet modifications, which increase the difficulty of patient compliance. In their large, multicenter trial, Metz et al. (1997) showed that independent of dietary intervention type, participants who were compliant to their therapeutic diet, significantly reduced their blood pressure, plasma lipids, and body weights. This contrasted greatly with participants who were noncompliant to their therapeutic diet (Metz et al., 1997).

According to a study reported by Leong, Malassioti, and Marsh (2004), cardiac diets had a higher frequency of compliance when compared to physical activity, smoking cessation, weight loss, social activity, and alcohol use. However, these findings do not correlate with past studies that have shown a greater percentage of noncompliance by
patients due to their dislike of the taste of the cardiac diet (Barnes & Terry, 1991; Leong, Malassioti, & Marsh, 2004). The study conducted by Leong et al. (2004) concluded that encouragement directed towards the patient provided an increase in their rate of compliance, especially when this encouragement came from the patient’s family, friends, and healthcare providers.

**Low salt diet.** There is no standard definition for what constitutes a low salt diet, however, according to Mahan et al., (2012) therapeutic dietary sodium restrictions are dependent upon the degree of treatment required, and should be prescribed in milligrams of maximum sodium limit per day (Mahan et al., 2012). There have been multiple health agencies that recommend, or agree to, a daily sodium intake of no more than 2.4 grams (2,400 milligrams) or less per day for healthy individuals (Mahan et al., 2012).

Healthcare facilities may utilize a, “no added salt” (NAS) provision, which could restrict patients to no more than 4,000 milligrams of sodium daily (Mahan et al., 2012). NAS diets can potentially have significant impact on a patients’ diet. Table salt should not be used or severely limited, to a patient on a NAS diet because one teaspoon of table salt contains 2,300 milligrams of sodium (Mahan et al., 2012). Additional food products that could be limited on a NAS diet include: “smoked, cured, or dried meats and cheese, condiments and seasonings, salted snacks, canned and dried soups, and bouillon” (Mahan et al., 2012, pg.1130).

The 3,000 milligram sodium (7.5 NaCl or 130 mEq Na) restriction focuses on the restriction of any foods and beverages that are high in sodium (Mahan et al., 2012). Restricted foods for this diet can include: highly processed fast foods; salad dressings;
soy sauce; salty snack foods; cured, smoked, salted, and kosher meats; regular canned foods; pickled vegetables; luncheon meats; condiments; canned soups; processed cheese; prepackaged mixes; and commercially softened water (Academy, 2013q; Mahan et al., 2012).

The “low salt” diets, for the purpose of this study, will be defined as a sodium restriction of three grams or less per day.

**Adherence to the low salt diet.** Therapeutic sodium restrictions are often utilized for the management of hypertension, cardiovascular disease, severe cardiac failure, impaired liver function, renal disease, and chronic renal failure (Escott-Stump, 2012; Mahan et al., 2012). The goal in the treatment in those patients considered to be sodium-sensitive is promoting excretion of excess fluids from edema and ascites (Mahan et al., 2012). A study conducted by, Nguyen, Odelola, Rangaswami & Amanullah (2013) concluded that, “there is no uniformed definition of salt-sensitivity due to great variations in published studies regarding study protocols, techniques, duration, and magnitude of sodium intake and blood pressure changes”.

There have been many studies that have examined the relationship between dietary sodium intake, and the prevention and/or treatment of high blood pressure. The Academy (2013a) strongly recommended, in their Evidence Analysis Library, that hypertensive adults should increase their daily intake of fruits and vegetables, while they decrease their daily intake of sodium, in an effort to reduce blood pressure. One possible conclusion, provided by Mahan et al. (2012) is that the combination of sodium and chloride in table salt may exacerbate hypertension, especially in those individuals who
are sensitive to salt. Furthermore, a study conducted by Sacks & Campos (2010), showed that there is a strong correlation between high sodium intake and hypertension development.

Cook et al. (2007) completed an observational long term follow up study (ten to fifteen years) that used data from the original Trials of Hypertension Prevention (TOHP). Their results concluded that those individuals with hypertension assigned to a sodium reduction intervention reduced their risks of adverse cardiovascular events by 25-30% in the ten to fifteen years following the study (Cook et al., 2007). Cook et al. (2007) used the DASH-Sodium trial to compare the effects of three different sodium intake levels separately between the DASH diet, and a control diet that reflected a typical American diet. According to data collected from 24-hour urine collections, the diets’ sodium levels were characterized as lower, intermediate, and higher. The lower sodium diet provided 1.5 grams of sodium, the intermediate diet provided 2.5 grams of sodium, and the higher diet provided 3.3 grams of sodium. Furthermore, Cook et al. (2007), discovered that reduced sodium intake significantly lowered blood pressure in the major groups studied: men, women, African Americans, and non-African Americans. They also found that sodium reduction significantly lowered blood pressure in the non-hypertensive participants in both diet groups (Cook et al., 2007).

Cardiovascular disease outcomes should be decreased from increased improvements in hypertension treatments, where primary prevention can improve quality of life and any associated costs (Mahan et al., 2012). Those who are at higher risk should be strongly encourage and supported to make healthy lifestyle changes which have been
found to be effective in primary prevention and control of hypertension (Mahan et al., 2012).

**Patient understanding and compliance of the low salt diet.** A study by Luft, Morris, and Weinberger (1997) concluded that in order to increase diet therapy compliance and success rates in blood pressure control, it was essential to have continuous active guidance of patients by clinicians or other health care professionals with expertise in dietary management. Furthermore, Wang and Vasan (2005) demonstrated that there have been numerous findings which emphasized the critical role that nurses, nurse practitioners, and pharmacists have in improving hypertension care. However, they also found that due to a lack of multidisciplinary approaches, proposals have been made that hypertension control rates achieved in the completed randomized trials have not actually been replicated in the clinical settings (Wang & Vasan, 2005).

The results from the follow-up study, the TOHP showed that within the two groups studied, (TOHP I and TOHP II), 48% vs. 32% respectively, reported that they disliked salty foods, and that 71% vs. 64% liked low sodium or unsalted foods (Cook et al., 2007). Additionally, 47% vs. 29% reported that they usually, or always, used low sodium products; 66% vs. 44% utilized food labels for sodium amounts; and that 28% vs. 20% sometimes kept track of their daily sodium intake (Cook et al., 2007). Cook et al. (2007) structured their study so that participants in TOHP I received a more active intervention, while participants in TOHP II received a less active intervention. Participants in TOHP I received dietary and behavior counseling as a means used to identify sodium in the diet, to self-monitor sodium intake, and how to select, or prepare
lower sodium foods and condiments (Cook et al., 2007). Meanwhile, participants in TOHP II received no form of counseling beyond the initial group and individual sessions (Cook et al., 2007).

**Low sodium diet.** Healthcare settings also utilize therapeutic sodium restrictions of 2,000 milligrams (5 grams NaCl or 87 mEq Na) or less frequently (Mahan et al., 2012). The low sodium diet focuses on the elimination of all processed and high-sodium containing foods and beverages (Escott-Stump, 2012; Mahan et al., 2012). Because this is a much more sodium restrictive diet, neither salt, should be used in any cooking or at the table, nor should milk or milk products be consumed in high quantities due to the naturally occurring high amount of sodium (Academy, 2012c; 2013p; 2013x; 2013gg; Escott-Stump, 2012; Mahan et al., 2012). This study defined a low sodium diet as sodium restrictions of 2,000 milligrams or less per day.

**Adherence to the low sodium diet.** Low sodium restrictions may aid in the prevention or treatment of, excessive water build up in the body, edema, or ascites (Academy, 2012c; Escott-Stump, 2012; Mahan et al., 2012). According to the Academy (2012c), this type of diet could be used in the treatment of high blood pressure, congestive heart failure, kidney disease, or other conditions in which swelling or fluid retention can occur. Additionally, the Academy (2012c) has recommended that a daily intake of 2,000 milligrams or less of sodium is very important, even when blood pressure medications or diuretics are prescribed.

Therapeutic restrictions of 2,000 milligrams of sodium per day have shown to be an effective nutrition therapy in the management of fluid retention commonly seen with
heart failure (Academy, 2012c; 2013p; 2013x). Van der Wal et al. (2006) found that limiting sodium intake, as well as, achieving or maintaining an appropriate weight, were two effective ways to manage fluid retention seen in heart failure. Van der Wal et al. (2006) cited that preventing hospital readmissions for heart failure improves the patient’s quality of life, as well as, represents a cost savings to the hospital. During the past two decades, hospital admissions and associated costs for heart failure have increased, causing heart failure to account for two percent of total health care expenditure (van der Wal et al., 2006). Furthermore, according to van der Wal et al. (2006), heart failure symptoms can be worsened with non-adherence to medication and diet eventually leading to hospitalization, which accounts for nearly 70% of the total costs of patient treatment and care costs.

**Patient understanding and compliance to the low sodium diet.** There are many factors that have been attributed to poor patient compliance and misunderstanding regarding low-sodium restricted diets. The factors that can contribute to poor patient compliance include: a lack of knowledge pertaining to sodium, and lower sodium food choices; an inability to comprehend food labels; perceptions that the diet affects social eating; and either a lack of cooking skills, or adequate cooking facilities (Mahan et al., 2012). Additional contributors to noncompliance may include: memory loss, severe fatigue, and economic issues (Mahan et al., 2012).

A study by Neily et al. (2002) found that 86% of participants had no knowledge of the sodium restriction guidelines, and that 56% of participants were unable to differentiate between high- or low-sodium categories. Neily et al. (2002) also found that
42% of participants were unable to determine the amount of sodium from the Nutrition Facts label, which could also contribute to the above finding. A very small percentage, 8%, of participants scored a perfect ten on the dietary sodium knowledge measure (Neily et al., 2002). However, many measures of sodium knowledge significantly improved, as participant awareness of sodium restriction guidelines rose from 14% to 42%, after education performed by a RD (Neily et al., 2002). Furthermore, Neily et al. (2002) found that participants’ ability to read sodium content on the Nutrition Facts label increased from 58% to 92%, and that the use of the label guide increased from 54% to 94% in order to separate foods based on the amount of sodium. Participants who received a perfect score of ten also rose from 8% to 26% (Neily et al., 2002).

Neily et al. (2002) concluded that the most important finding of this study demonstrated that there are significant deficiencies of knowledge in patients diagnosed with heart failure living in an urban county with hospitals that hinder compliance with dietary sodium intake restrictions. This key finding suggests that, “a majority of patients with symptomatic heart failure in the urban county hospital could not restrict their salt intake had they not received further education regarding dietary sodium intake (Neily et al., 2002).

A comprehensive review by Evangelista and Dracup (2000), agrees that patients with heart failure have poor compliance with medication and dietary restrictions. They found that dietary compliance ranged from 22% to 51.4%, where 50% of heart failure related hospital admission could have been prevented, and are related to poor medication and dietary compliance (Evangelista & Dracup 2000). This review concluded, similarly
to the findings presented by van der Wal et al. (2006), that communication and education with heart failure patients have the ability to influence behavior (Evangelista & Dracup 2000).

The study performed by van der Wal et al. (2006) found that the majority of patients, 83%, indicated that following low-sodium diet restrictions were important, that 79% reported to be compliant. On the other hand, 6% reported they faced motivational problems, while an additional 6% reported practical problems with the diet, and that 13% reported they had difficulties with their diet because it was not palatable with the sodium restriction (van der Wal et al., 2006). This study also examined participants’ beliefs about compliance, and found that 86% reported that low-sodium diets decreasing fluid retention was an important benefit, that 69% believed keeping their self-healthy was an important benefit, and that 61% believed keeping the heart healthy was an important benefit (Van der Wal et al., 2006). According to the study, the taste of food (53%) and the restricted ability to eat at a restaurant (32%), were the two most important barriers reported to follow the low-sodium diet. It was reported through both univariate and multivariate analysis that compliance with diet was more likely associated with benefits, and less likely with barriers (Van der Wal et al., 2006).

**Carbohydrate consistent diet.** According to the Academy (2012a; 2103e), a carbohydrate consistent diet consists primarily of counting carbohydrates in foods and meal planning, with the overall focus on the total amount of carbohydrates consumed consistently at meals and snacks. One serving a food that contains carbohydrates, is approximately 15 grams of carbohydrates (Academy, 2012a; 2013e). Carbohydrate
intake should be equally consistent throughout the day at breakfast, lunch, dinner, and snack (Academy, 2012a; 2013e; Escott-Stump, 2012; Franz, Boucher, Green-Pastors, & Powers, 2008).

The Academy (2012a; 2013e) and Escott-Stump (2012) suggest that most women needed about three to four carbohydrate choices ranging from 45 to 60 grams of carbohydrates at each meal, and that men needed about four to five carbohydrate choices ranging from 60 to 75 grams of carbohydrates per meal. However, if these individual men or women are physically active, carbohydrate requirements will increase (Academy, 2012a; 2013e; Escott-Stump, 2012). Snacks are typically one to two carbohydrate choices ranging from 15 to 30 grams of carbohydrates (Escott-Stump, 2012). There is no set carbohydrate amount that can be recommended for every patient, factors such as body size and activity level must be considered when determining the number of carbohydrate choices needed (Academy, 2012a; 2013e; Escott-Stump, 2012).

This study will define a carbohydrate consistent diet as 75 grams of carbohydrates for all three meals, with 15 grams of carbohydrates representing one serving of a carbohydrate containing food (Academy, 2012a; 2013e).

*Adherence to the carbohydrate consistent diet.* Healthy and appropriate food choices paired with physical activity are two lifestyle factors that have great influence on the prevention and treatment of diabetes (Mahan et al., 2012). A study that compared lifestyle interventions to a control group demonstrated a reduction of type 2 diabetes mellitus from 67% to 29% (Mahan et al., 2012). Bolstering their claim, Mahan et al. (2012) cited two studies, the Finnish Diabetes Prevention Study and the Diabetes
Prevention Program. Both studies reported a 58% reduction in the incidence of type 2 diabetes mellitus when compared to control groups (Diabetes Prevention Program Research Group, 2009; Lindstrom et al., 2006).

Professionals must monitor glucose, A1C, lipid levels, blood pressure, weight, and patient quality of life as a means of measuring the outcome of nutrition related therapy in diabetes (Academy, 2012a; Escott-Stump, 2012; Franz, 2010; Mahan et al., 2012). Total diabetes care and management requires incorporating medical nutrition therapy [MNT] with an individualized approach, nutrition self-management education, and counseling (Mahan et al., 2012). If the intervention outcomes are not in the best interest of the individual patient, changes need to be made to the plan of care (Academy, 2012a; 2013e; Mahan et al., 2012).

**Patient understanding and compliance to the carbohydrate consistent diet.** The American Diabetes Association (ADA) has released a position statement strongly recommending hospitals to use carbohydrate consistent meals that do not focus on specific caloric levels (Schaffer et al., 1997). It has been determined that carbohydrate consistent meals appropriately meet the nutritional needs of patients, which in turn, can promote metabolic control for patients in the acute care hospital setting (Schaffer et al., 1997). Hirsch, Paauw, and Brunzell (1995) suggested that timing of meals and snacks for patients with diabetes needed to be considered, as hypoglycemia is commonly caused by not eating food in time, or by completely missing a meal.

A study by Williams et al. (2009) demonstrated that clinicians who were supportive of patient’s self-directed and self-regulated medication use, as well as, the
patient’s perceived competence for diabetes self-management may facilitate the patient’s quality of life, medication adherence, and lead to improved physiological outcomes. These results are consistent with a growing body of literature linking motivational constructs to both quality of life and physiological indicators of health.

Renal diet. The standard renal diet in most hospital settings focuses on controlling a patient’s protein intake, with restrictions to sodium, potassium, and phosphorous intake (Academy, 2012b; 2013f; 2013g; Escott-Stump, 2012; National Kidney Foundation [NKF], 2002; NKF, 2003; Thomas et al., 2001). Additionally, some patients may also have restrictions on calcium intake and fluid restrictions depending on their condition (Academy, 2012b; 2013f; 2013g; Escott-Stump, 2012). Nutrition intervention for individuals with chronic kidney disease (CKD) require complete assessments and individualizations due to the varying nutritional needs of each patient, which are based on the etiology and stage of CKD, comorbidities, medications, and previous dietary intake (Academy, 2012b; Escott-Stump 2012; Mahan et al., 2012; NKF, 2002; NKF, 2003).

This study will define a standard renal diet as providing 60 grams of protein with two grams of sodium, phosphorous, and potassium restrictions (Academy, 2012b; 2013f; 2103g; Escott-Stump, 2012; Mahan et al., 2012; NKF, 2002; NKF, 2003; Thomas et al., 2001).

Adherence to the renal diet. The slow and gradual loss of kidney function is known as chronic renal failure (CRF) (Escott-Stump, 2012; NKF, 2002; NKF, 2003). Escott-Stump (2012) has identified that, Lupus, Alport Syndrome, chronic hypertension,
prolonged urinary obstruction, nephrotic syndrome, PKD, cystinosis, and diabetes can all be causes of CRF. Manifestations from renal disease are significant, and can be ordered by degree of severity: 1.) kidney stones; 2.) acute kidney injury (AKI); 3.) chronic kidney disease; 4.) end stage renal disease (ESRD). The focus of nutritional care is dependent on the abnormality being treated (Mahan et al, 2012).

Chronic kidney disease is characterized by, “the inability of kidney function to return to normal after acute kidney failure, or progressive renal decline due to disease”, and often causes an accumulation of excess urea and nitrogenous waste in the bloodstream or azotemia (Mahan, Escott-Stump, & Raymond, 2012, pg. 864). As a result, there is a permanent reduction in kidney function, eventually leading to end stage renal disease. The National Kidney Foundation [NKF] has categorized CKD into five stages, based on their estimated glomerular filtration rate (eGFR) (Mahan, Escott-Stump, & Raymond, 2012; NKF, 2002; NKF, 2003). Stage one and two are considered the early stages, consisting of markers such as proteinuria, hematuria, or anatomic issues (NKF, 2002; NKF, 2003). Stages three and four are the advanced stages, with stage five resulting in death, unless dialysis is initiated or there is a transplant (NKF, 2002; NKF, 2003). Researchers are still uncertain why some individuals with CKD are able to remain stable for months to years, while others progress rapidly to renal failure and dialysis as reported by Mahan et al. (2012).

The primary risk factor leading to the development of CKD is diabetes, although hypertension closely follows (Academy, 2012b; 2013d; 2013e; Mahan et al., 2012; Escott-Stump, 2012; NKF, 2002; NKF, 2003). However, Escott-Stump (2012) has also
identified other risk factors, these include: cardiovascular disease, a family history of CKD, the use of certain medications, and being over 60 years of age. Potential risk factors for CKD that can be controlled/modified include: proteinuria, hypertension, dyslipidemia, anemia, oxidative stress, infections, depression, hyperglycemia, bone disease, and obesity (Escott-Stump, 2012). Regardless of the underlying disease to CKD, once approximately one-half to two-thirds of kidney function have been lost, there will continue to be further progressive kidney function loss (Mahan et al., 2012; NKF, 2002; NKF, 2003).

The patient population of individuals with ESRD requiring dialysis has been, and will continue to grow rapidly (Gilberston et al., 2005). Gilberston et al. (2005) expect the incidence of individuals with ESRD to increase by 44%, with the prevalence increasing 85% by the year 2015. Mortality and morbidity rates for patients on their first year of hemodialysis remain high, and continue to be a major public health concern (Collins et al., 2010). In its final ruling regarding the reimbursement of Medicare MNT, CMS has accepted changes suggested by the Academy in an effort to help expand access to MNT (Ochs, 2002). Specifically pertaining to renal disease, it was determined that ESRD beneficiaries not on dialysis were eligible for MNT, while post renal transplant beneficiaries received an additional 30 months of MNT coverage (Ochs, 2002). Slinin et al. (2011) found that despite expanded access to MNT, only 10.5% of patients who initiated dialysis therapy in 2005 had received dietary counseling before starting ESRD therapy.
While there are different MNT options for each level of CKD, the overall primary objectives of MNT are: the management of associated symptoms and complications such as edema, hypoalbuminemia, and hyperlipidemia; to slow down, or decrease the risk of renal failure progression; and to maintain good nutritional stores (Mahan et al., 2012; NKF, 2002; NKF, 2003). The Academy (2012b) stated in the Nutrition Care Manual that, “MNT is indicated for CKD stages 1 to 5 non-dialysis to treat and prevent protein-energy malnutrition, to manage altered electrolytes, and to minimize the level of nitrogenous waste.”

Escott-Stump (2012) cited that low protein and low phosphorous diets should be prescribed in the renal population, because they may slow the progression of kidney disease. Additionally, these diets have been shown to reduce patient morbidity, preserve renal function, relieve uremic symptoms, improve nutritional status, postpone the start of dialysis for six months, and entail substantial cost-savings (Escott-Stump, 2012; NKF, 2002; NKF, 2003). Escott-Stump (2012) also reported that moderate dietary protein restrictions have been found to be an effective and acceptable means of delaying function renal deterioration.

Modifiable risk factors and key diet components for slowing the progression of CKD include, controlling blood pressure by reducing sodium intake, controlling proteinuria/albuminuria by reducing protein intake, if excessive, and lowering HbA1C by managing diabetes (Academy, 2012b). There are some forms that can be controlled or slowed down but never cured. When creatinine clearance (CrCl) is below 25 mL/min, this indicates progressive declines in spontaneous protein and energy intake, serum
proteins, cholesterol, total creatinine excretion, and anthropometric values which occurs in those with progressive CRF who consume uncontrolled diets (Escott-Stump, 2012). Furthermore, when serum albumin levels drop below 3.5 g/dL and cholesterol levels drop to 150-180 mg/dL, mortality greatly increases (Escott-Stump, 2012). From the Modification of Diet of Renal Disease [MDRD] study, Peterson et al. (1995) found that for patients with proteinuria of more than 1 g/d, a target blood pressure of less than 92 mm Hg (125/75 mm Hg) is recommended, and for patients with proteinuria of 0.25 – 1.0 g/d, a target blood pressure of less than 98 mm Hg (130/80 mm Hg) may be suggested. Diabetic neuropathy incidence has shown to be reduced when glucose is tightly controlled (Escott-Stump, 2012; NKF, 2002; NKF, 2003).

Beto and Bansal (2004) stated that a reduction in a patient’s protein intake is necessary, as a means reducing stress on the kidney, when kidney function decreases. They also concluded that in clinical practice, protein needs should be match to the workload of the remaining kidney function, as in stages 1-4 or to the level of treatment (Stage 5) (Beto & Bansal, 2004). In a secondary analysis for the MDRD, Levy et al. (1996) found that tight control of blood pressure and the modification of protein intake was helpful in delaying disease progression by as much as 41%.

All patients with CKD are at high risk for cardiovascular disease, it has been reported that more than 50% of those with stage 5 chronic kidney disease died from cardiovascular events (Beto & Bansal, 2004). Encouragement of decreasing saturated fat consumption and increasing monounsaturated and polyunsaturated fats, among other dietary interventions for healthier lifestyle changes is recommended for these patients.
(Beto & Bansal, 2004). Additionally, controlling sodium intake can help reduce fluid retention (Academy, 2012c). Elevated levels of potassium, hyperkalemia, are directly related to irregular heartbeat and death (Beto & Bansal, 2004). Education on potassium is challenging due to patient inability to taste potassium in the food and contents not always listed on food labels (Beto & Bansal, 2004). Phosphorous and calcium aid in the preservation of bone composition in those who have kidney disease (Beto & Bansal, 2004). The recommended calcium-phosphorous product of 55 or less has been based on research finds of elevated products 72 or greater were shown to increase mortality by 34% in those with chronic kidney disease (Beto & Bansal, 2004). Health care professionals have the responsibility to discuss supplemented and fortified foods that may be part of the patient’s dietary intake frequently (Beto & Bansal, 2004).

**Patient understanding and compliance to the renal diet.** There have been many studies to determine the level of patient compliance with regards to renal diets. However, these studies have all defined their measurements of patient compliance differently. Brown and Fitzpatrick (1988), Durose, Holdsworth, Watson, and Przygrodzk (2004), and Leggat et al. (1998) all measured compliance with biochemical laboratory data.

Brown and Fitzpatrick (1988) studied the dietary compliance of patient’s undergoing dialysis, as well as, the influence of the locus of control, the idea of acceptance, and the effect of family on compliance. The three clinical assessments used to define compliance were: interdialytic weight gain (IDWG), serum potassium levels, and urea levels. An IDWG of 2.0-2.4 kilograms signified “some abuse”, while anything greater than 2.5 kilograms showed “great abuse”. Serum potassium levels ranging from
5.5-6.0 mEq/L showed “some abuse”, while levels greater than 6.0 mEq/L demonstrated “great abuse”. Lastly, urea levels between 27-35 mEq/L showed “some abuse”, while any level greater than 35 mEq/L displayed “great abuse” (Brown & Fitzpatrick, 1988).

Based on their definitions, Brown and Fitzpatrick (1988) stated that 58% of patients exhibited some degree of abuse. Furthermore, they found that assessments of patient self-reported questionnaires were significantly correlated with the dietary abuse scores from their laboratory data (Brown and Fitzpatrick, 1988). While reviewing their findings, Brown and Fitzpatrick (1988) discovered that the factor most closely associated with dietary abuse was acceptance. They found that patients who had a strong association of acceptance with their internal locus of control, had also accepted the limitations from their illness, and as a result, had significantly lower abuse scores. Brown and Fitzpatrick (1988) concluded that, “in this study, internal control is associated with acceptance which in turn is associated with successful dietary control”.

Leggat et al. (1998) studied patient characteristics that are associated with noncompliance in hemodialysis and the impact of noncompliance survival. In this study, noncompliance was defined as skipping hemodialysis sessions, shortening hemodialysis sessions by ten or more minutes, possessing an IDWG of more than 5.7% dry weight, or a serum phosphate of greater than 7.5 mg/dL (Leggat et al., 1998). Leggat et al. (1998) reported that using an IDWG greater than 5.7% was likely to be considered excessive by nephrologists, and more closely represented fluid intake rather than urine output when compared with other studies using IDWG of greater than one to two kilograms. Furthermore, Leggat et al. (1998) rationalized the use of serum phosphate levels over 7.5
mg/dL due to the fact that most patients on hemodialysis are required to adhere to dietary phosphorous restrictions, or to take phosphate binders. They believed that the use of levels over 7.5 mg/dL would report actual patient behavior, rather than inadequate diet prescription or phosphate binder control (Leggat et al., 1998).

After their study, Leggat et al. (1998) found that 10% of the patients studied had an IDWG greater than 5.7%, and that 22% had serum phosphate levels greater than 7.5mg/dL. “Excessive IDWG and hyperphosphatemia represent different components of the hemodialysis process and are less strongly correlated with skipping or shortening hemodialysis sessions” (Leggat et al., 1998). Leggat et al. (1998) also reported that noncompliant patients with an IDWG greater than 5.7% had a 35% higher risk of death, while those who had serum phosphate levels greater than 7.5 mg/dL had a 13% higher risk of death.

Lastly, the study conducted by Durose et al. (2004) explored the relationship between knowledge of medical conditions resulting from dietary noncompliance, and dietary compliance among hemodialysis patients. Dietary knowledge studied included: restrictions of potassium, phosphorous, sodium, and fluid restrictions (Durose et al., 2004). Dietary compliance was defined as patients having met the following target levels, measured at each dialysis session: potassium ranging from 3.5-6.5mmol/L; phosphorous levels of 2.0 mmol/L; sodium and fluid, or IDWG of 4% of dry weight (Durose et al., 2004).

Durose et al. (2004) reported that 38% of the 71 patients who completed the study were deemed noncompliant with one or more dietary restrictions. Furthermore,
phosphorous dietary restrictions were the most commonly abused, while potassium was the least (Durose et al., 2004). Laboratory data measurements calculated that 62% of patients studied were compliant with all of the dietary restrictions (Durose et al., 2004).

The study also showed that a patient’s level of knowledge concerning, “dietary restrictions and the medical consequences of noncompliance…were not predicative of dietary compliance” (Durose et al., 2004). However, Durose et al. (2004) also reported that patients within their study population had a better knowledge base of, “foods restricted in their diet than they did about the medical complications of noncompliance.”

These findings are bolstered by the fact that less than 20% of the patients could correctly report the risks associated with excessive phosphorous, sodium, and fluid intake (Durose et al., 2004). Although, 39% of patients were able to demonstrate knowledge related to excessive potassium intake and its adverse effects on the heart (Durose et al., 2004). Patients were least knowledgeable on foods containing phosphorous (the most commonly abused), while they were most knowledgeable on foods that are high in sodium, and potassium (Durose et al., 2004). In conclusion, all three studies believed that IDWG was an accepted measure of fluid and sodium compliance, because it is directly affected by patient behavior (Brown & Fitzpatrick, 1988; Durose et al., 2004; Leggat et al., 1998).

The study conducted by Thomas et al. (2001) produced findings that indicated of their 276 participants, 62% were compliant to their therapeutic diet regimens. They also found that 82.56% of their compliant participants attributed factors such as, feeling better and less frequent hospital visits due to their diets. Furthermore, Thomas et al. (2001)
found that their participants were more likely to report feeling, “bad”, when not on a special diet.

Expanding on the above figures, 80.23% of the compliant participants believed they could reduce their risk of developing major health problems by eating the right kinds of foods (Thomas et al., 2001). Compliant participants also believed that following their prescribed therapeutic diet was one of the best things they could do for their health. Additionally, 85% of compliant participants felt that good nutrition decreased the severity of health problems, as compared to 76% of noncompliant participants (Thomas et al., 2001). This study also identified a dramatic increase in compliance in those who had gout, which was expected by Thomas et al. (2001) because “the retention of uric acid is higher in renal patients and contributes to increased discomfort.”

Contributing factors to their participants’ dietary compliance include, attitudes, social support, and knowledge (Thomas et al. 2001). This study showed that participants were more likely to be compliant if they had positive attitudes towards compliance, and if they believed that following their prescribed diet would yield benefits (Thomas et al. 2001). Thomas et al. (2001) found that patients with ESRD were significantly more compliant to their dietary restrictions when they had supportive environments and knowledge related to their particular renal diet. They also found that 94% of their participants were more likely to think that it was important to follow their special diet, compared to 82% of noncompliant participants (Thomas et al., 2001).

Over the course of their study, Thomas et al. (2001) found that a patient’s family was an influential environment that most often contributed to participants following their
therapeutic diet. It was found that 84% of compliant participants reported having received information regarding other diet regimens, but remained on their prescribed diet, as compared to 71% of noncompliant participants (Thomas et al. 2001). The study found that 99.6% of all participants reported that their doctor recommended a therapeutic diet, however, only about 8% reported that their physician, “always”, reminded them about the therapeutic diet (Thomas et al. 2001). However, 66% of participants responded that health care professionals, “always”, reminded them about the therapeutic diet (Thomas et al., 2001). Furthering the importance of the role nursing staff plays, almost 90% of participants reported that the nursing staff was the group most responsible for reminding patients of the need to follow prescribed diets.

A study conducted by Zyrinyi et al. (2003), examined “how dietary self-efficacy influenced biochemical treatment markers and compliance behaviors of hemodialysis patients.” This study reported that the greater the self-efficacy was in the participant, the lower serum potassium and weight gain were (Zyrinyi et al., 2003). No other behavior measures were found to be correlated with any further biochemical outcomes (Zyrinyi et al., 2003). The study showed that the better the relationship between the care staff and the participant were, the greater the dietary self-efficacy was. In turn, greater dietary self-efficacy was shown to improve compliance attitudes and behaviors (Zyrinyi et al., 2003).

Zyrinyi et al. (2003) found that women were significantly greater at dietary self-efficacy than the men in this study. Furthermore, they found that living with or without a spouse had no effect on dietary self-efficacy. However, their study found an inverse
relationship between the number of family members living with the participants and dietary self-efficacy (Zyrinyi et al., 2003). The greater the number of family members living with the individual, the lower the dietary self-efficacy, beliefs, and expectations (Zyrinyi et al., 2003).

Results from the study conducted by Zyrinyi et al. (2003) confirmed that there are, “several relationships between dietary self-efficacy, care, and patient characteristics.” Positive patient staff relationships showed an increase in self-reported compliance efforts and behaviors of patients and increased dietary self-efficacy capacities (Zyrinyi et al. 2003). These effects suggest that staff can influence potassium intake and weight gain in the patients they foster relationships with (Zyrinyi et al., 2003). However, these positive effects can be diminished, especially as the number of family members living with the patient increase. Patients reported that expectations of his/her ability to resist tempting eating situations diminish, and an increase in serum potassium and weight gain was found (Zyrinyi et al., 2003).

Zyrinyi et al. (2003) performed a regression analysis with results supporting clinical interventions designed to modify dietary efficacy beliefs and expectations can yield significant and prolonged improvements in patients’ compliance behaviors. The regression analysis also showed a positive relationship between serum albumin and self-reported patient compliance behaviors, suggesting that increased serum albumin may have a beneficial effect (Zyrinyi et al., 2003).

**NPO diet.** NPO, *non per os* or *nil per os*, (Latin for “nothing by mouth”), is a commonly ordered diet, in the acute care hospital setting, that restricts all patient food
and beverage intake by mouth for a specified time period (Crenshaw & Winslow, 2002; Green, Pandit, & Shork, 1996; Maltby, 1996). Franklin et al. (2011) concluded that the appropriateness for ordering nothing by mouth diets was determined by the plan for medical nutrition therapy. Acceptable reasons include, “ileus, or poor bowel function (as evidence by nasogastric drainage of greater than 1200 milliliters per 24 hours), facial trauma, precluding endoscopy or placement of nasogastric tube, mild to moderate pancreatitis, gastrointestinal hemorrhage (varices or peptic ulcer with visible vessel), damage control laparotomy with packing, withdrawal of care (do not resuscitate), or perioperative management (one day preoperatively and one day postoperatively) (Franklin et al., 2011). Unacceptable reasons for prescribing a patient with an NPO include, insufficient evidence for ileus (24 hour nasogastric output <1200 ml/d), waiting 24 hours after placement of a percutaneous endoscopic gastrostomy (PEG) to initiate feeding, severe pancreatitis, spinal precautions with prone positioning, prior to routine bedside procedures, or when no medical reason could be confirmed from the medical chart (Franklin et al., 2011).

Contrary to the guideline changes made by the American Society of Anesthesiology [ASA] in 2011, Franklin et al. (2011) found that patients prescribed nothing by mouth past midnight diets preoperatively was the second most common reason for prolonged fasting. The ASA defined preoperative fasting as, “a prescribed period of time before a procedure when patients are not allowed the oral intake of liquids or solids” (ASA, 2011). The ASA also defined perioperative pulmonary aspiration as,
“aspiration of gastric contents occurring after induction of anesthesia, during a procedure, or in the immediate period after surgery” (ASA, 2011).

Traditionally, the routine practice of care for preoperative nutrition care for surgery was to order the patient take nothing by mouth at midnight prior to surgery (Mahan et al, 2012). However, there have been several studies conducted from 1996 through 2012 that contradict this practice. NPO was not included in the fasting periods provided by Apfelbaum et al. (2001). According to the Apfelbaum et al. (2011) study, the minimum fasting periods are as follows: clear liquids two hours prior for both children and adults; breast milk four hours prior; infant formula six hours prior; nonhuman milk six hours prior; and light meal (e.g. toast and clear liquid) six hours prior. These recommendations by the Apfelbaum et al. (2011) study apply to healthy patients, undergoing elective procedures requiring general anesthesia, regional anesthesia, or sedation/analgesia, and are not recommended for women in labor, and do not guarantee complete bowel emptying. However, Apfelbaum et al. (2011) reported that fried, high fat foods, and meat may require additional fasting times of more than eight hours due to prolonged gastric emptying. Apfelbaum et al. (2011), Crenshaw & Winslow (2002), Soreide et al. (2005), Green et al. (1996), Maltby (1996), Mahan et al. (2012), and Escott-Stump (2012) all recommend gradually restricting patients diets to clear liquids then further to nothing by mouth.

Maharaj (2009) reviewed information regarding the incredibly controversial subject of food and beverage restrictions for pregnant women in labor. He determined that there was insufficient evidence for regulating what women in labor took in orally.
Mahraj (2009) recommended the oral intake of clear liquids, and stated that the use of general anesthesia would determine the restricted fluid intake for those at risk of aspiration. Furthermore, Maharaj (2009) stated that patients who are scheduled to have a cesarean delivery should fast for six to eight hours prior, with the oral intake of solid foods being avoided during labor.

For the purposes of this study, NPO will be defined as the restriction of all foods and beverages by mouth.

*Adherence to NPO diet.* The traditional practice of ordering nothing by mouth after midnight is thought to have originated, and become common practice, shortly after Mendelson (1946) reported having found a high incidence of pulmonary aspiration from general anesthesia in obstetric patients (Crenshaw & Winslow, 2002; Green et al., 1996; Pandit, Loberg, & Pandit, 2000; Maltby, 1996). Thomas et al. (2011) reported that one-fifth of their studied patient population received an NPO diet for five days or more, and that 15% of those cases provided no clear reasoning for why the NPO diet was ordered. According to numerous studies, many fasting guidelines have moved away from the traditional policy of NPO after midnight, and have adopted more liberal fasting guidelines (Green et al., 1996; Maltby, 1996; Mahan et al., 2012; Wachtel & Dexter, 2007). Furthermore, current research does not provide evidence of physiological nor clinical benefits for patients with prolonged fasting postoperatively (Thomas et al., 2011; Mahan et al., 2012). Additionally, these professionals have found no reports of adverse outcomes, or an increase in number of procedures cancelled, or delayed (Green et al., 1996; Maltby, 1996; Mahan et al., 2012; Wachtel & Dexter, 2007).
Apfelbaum et al. (2011) proposed that the changes made by the ASA to the NPO guidelines could help aid in the reduction and severity from perioperative pulmonary gastric contents complications, which may include, but are not limited to aspiration, pneumonia, respiratory disabilities, and related morbidities. Apfelbaum et al. (2011) suggested that practitioners verify patient compliance with fasting requirements, and noted that the practitioner needed to compare the risks and benefits of proceeding with the procedure if the patient was non-compliant.

Health care professionals have found it increasingly difficult to justify prolonged fasting prior to elective surgery, especially because it can lead to patient discomfort, thirst, hunger, irritability, noncompliance, dehydration, hypovolemia, hypoglycemia, starvation, and resentment in both adults and children (Crenshaw & Winslow, 2002; Green et al., 1996; Thomas et al., 2011; Wachtel & Dexter, 2007). Thomas et al. (2011) found that due to extenuating circumstances, many surgeries had been delayed, thus extending the duration of patient fasting well beyond the intended initial operating time. Perioperative feeding is not possible in emergency patients and surgery should be not be postponed in urgency patients who should be treated as if the stomach is full (Soreide et al., 2005; Mahan et al., 2012).

Thirst was reported as the most bothersome complication according to Crenshaw and Winslow (2002), who concluded that nurses should teach strategies to help patients cope with thirst such as, brushing teeth, rinsing the mouth, sucking ice chips, chewing gum, or sucking hard candy.
**Patient understanding and compliance of NPO diet.** Contrary to the new guidelines, a study by Wachtel and Dexter (2007) reported that there have been no studies showing a reduction in the NPO times of patients undergoing anesthesia. However, there have been numerous studies that confirmed physicians still tell patients to remain NPO after midnight (Crenshaw & Winslow, 2002; Soreide et al., 2005; Green et al., 1996; Pandit et al., 2000; Schulman & Sawyer, 2005; Wachtel & Dexter, 2007).

Wachtel and Dexter (2007) developed a simple method used to determine when patients should be prepared for surgery, and adopted newer preoperative fasting guidelines. They then determined that the implementation of these guidelines was predominately a joint effort between the anesthesia and nursing staffs (Wachtel & Dexter, 2007). A study conducted by Crenshaw and Winslow (2002) concluded that, “nurses have the responsibility for recommending excessively long and unkind fasts”. This holds true as most patients do not understand the requirements needed to be completed prior to surgery. Bolstering this point, the majority of the patients studied by Crenshaw and Winslow (2002) reported that they received instructions on preoperative fasting from either a nurse, or a nurse and others. This suggests that nurses and dietitians need to take a proactive role in working with physicians in developing evidence-based fasting instructions for better patient understanding. Wachtel and Dexter (2007) also found that patients have been found to fast for periods longer than actually required, for no reason.

Rohatiner et al. (2012) reported they found that less than 10% of patients studied were offered no food on postoperative day zero, with no reason. The researchers suggested that despite studies showing early postoperative feeding as being safe for the
patient, residual effects of general anesthesia or pain could reduce patient interest in eating (Rohatiner et al., 2012). Furthermore, Rohatiner et al. (2012) reported that 43% of patients studied were kept on an NPO diet on postoperative day one, 20% were kept NPO on postoperative day two, and 12% were kept NPO on postoperative day three. Past studies, according to Rohatiner et al. (2012), suggested a higher incidence of vomiting and nasogastric tube reinsertion rates in patients after early postoperative feeding was administered. Because of this, surgeons are somewhat more reluctant to offer patients food immediately after surgery (Rohatiner et al., 2012). Crenshaw and Winslow (2002) reported that patients were typically advanced from NPO to liquids in an average of 12 hours, while solids are closer to an average of 14 hours. Rohatiner et al (2012) concluded that “although perioperative routines in intestinal surgery differ widely across the world, they appear consistently deviate considerably from the best available scientific evidence.”

Green et al. (1996) reported that the majority of anesthesiologists in the United States had changed their NPO guidelines for children, because parents often had difficulty following the strict preoperative NPO orders for their children. Adult guidelines, on the other hand, were less likely to be relaxed, as the, “benefits of patient satisfaction, decreased anxiety, and less thirst were somewhat overlooked in the adult population for fear of potential acid aspiration” (Green et al., 1996).

Maltby (1996) found that written preoperative fasting instructions must be clear and simple for the patients to read and comprehend. This is especially true as the majority of elective procedures are outpatient, or admitted on the day of surgery. Several researchers have suggested that preoperative instructions provide patients with examples
and lists of what constitutes a “light meal” or a “clear-liquid”, in an attempt to avoid a delay in the procedure due to patient dietary noncompliance (Green et al., 1996; Maltby 1996). Modi et al. (2009) found that although intervention was not significantly associated with increased adherence to instructions there was a definite tendency towards increase adherence to dietary instructions in the intervention group compared to the control group.

A study conducted by Stephen and Berger (2003) reported how essential it was to recognize patients that may not tolerate an early discharge, and to provide all patients with specific relevant instructions to successfully implement clinical pathways. Such an approach would require a healthcare team composed of physician, nurses, dietitians, and ancillary staff to provide patient education, timely removal of tubes and drains, the appropriate level of diet advancement, and early mobilization (Stephen & Berger, 2003). “Clinical pathways may represent an ideal solution by standardizing preoperative, postoperative, and intraoperative care to reduce costs while improving patient care” (Stephen & Berger, 2003). The mean length of hospital stay for patients was 4.2 days, with an average cost of $2240 per patient less than the average cost per patient not on the clinical pathway (Stephen & Berger, 2003).

Peterson and colleagues (2010) found that of their 50 patients, 44% were classified as moderately or severely malnourished as defined by the Subjective Global Assessment (SGA). These patients’ mean energy and protein intake never exceeded 55% of daily requirements, as observed over a seven day study interval (Peterson et al., 2010).
**Clear liquid diet.** The Academy (2013i) defined a clear-liquid diet as being composed of foods that are transparent and liquid at body temperature. Typically, clear-liquid diets include electrolytes and small amounts of energy from allowed foods including: clear fruit juices, broths, gelatin, ice water, popsicles, ice chips, tea of coffee, and carbonated beverages (Academy, 2013i; Mahan et al., 2012). Exceptions or allowances, such as hard candy are permitted, because it can dissolve into sugar and water when body temperature is reached (Academy, 2013i).

The average clear liquid diet contains only 500 to 600 kilocalories (Mahan et al., 2012). These kilocalories are composed of: five to ten grams protein, minimum fat, 120 to 130 grams of carbohydrate, and small amounts of sodium and potassium (Mahan et al., 2012). Clear liquid diets are very inadequate in calories, fiber, and all other essential nutrients and should be used only for short periods (Academy, 2013i; Escott-Stump, 2012; Mahan et al., 2012). Appropriate and inappropriate variables for ordering clear liquids are the same as those for NPO (Franklin et al., 2011). Oral supplements, such as Boost Resource Breeze, may be needed in order to provide more protein and/or calories (Mahan et al., 2012).

For the purpose of this study, clear liquid diets will be defined as foods that are transparent and liquid at body temperature.

**Adherence to the clear liquid diet.** Clear-liquid diets have been ordered to aid in maintaining patient hydration, or a minimum amount of residue in the intestinal tract. This is especially helpful in the following situations: gastrointestinal illness including abdominal distention, nausea, vomiting, and diarrhea; preparation for bowel surgery or a
gastrointestinal procedure; reintroduction of foods following periods of no oral intake when poor tolerance, aspiration, or anastomotic leak is expected (Academy, 2013i). Despite these shortcomings, Thomas et al. (2011) reported finding that every patient studied remained on a clear-liquid diet for at least one full day, with some patients staying on for up to six days (Thomas et al., 2011). In one-third of these cases, there was no apparent reason provided for the continued use of the diet. Furthermore, 75% of the time, a clear-liquid diet was deemed inappropriate for the clinical setting and circumstances (Thomas et al., 2011). The Academy (2013i) has stated that clear-liquid diets should only be used when absolutely necessary, in an attempt to protect the patient against underfeeding, and to maintain adequate nutrient intake.

The Academy (2013i) stated contributing factors leading to the decreased use of clear liquid diets for bowel preparation has been the use of polyethylene glycol and sodium phosphate and acquiring better evidence for the time required for gastric emptying. Additionally, found in postoperative care, the quicker amount of time general diets can be consumed by the patient has become favorable due to improvements in anesthesia, reduced use of nasogastric suction, bowel sounds no longer required to allow feeding (Academy, 2013i). Academy (2013i) also stated that the when earlier feedings were permitted this lead to earlier patient discharges.

Modi et al. (2009) concluded from findings that providing educational interventions for colonoscopy bowel preparation regarding simple instructions on the clear liquid diet resulted in greater adherence. Furthermore, this adherence provided higher quality in terms of bowel preparation for the colonoscopy (Modi et al., 2009).
Also reported by Modi et al. (2009), the clear liquid diet has been the only diet modification found showing improvements in the preparation quality for colonoscopies.

**Patient understanding and compliance to the clear liquid diet.** Practitioners need to acknowledge that clear liquid diets are nutritionally inadequate, and should not be implemented for extended care (Academy, 2013i; Mahan et al., 2012). When patients absolutely have to be restricted to a clear liquid diet for more than 3 days, calorie and protein clear liquid supplements should be ordered (Academy, 2013i; Mahan et al., 2012). Both the clear liquid diet and these supplements are unpalatable and less desirable than a regular diet (Academy, 2013i; Thomas et al., 2011). Therefore, unfortunately they not often well accepted by patients (Academy, 2013i; Thomas et al., 2011). The Academy (2013i) reported that this results in the increase of patient complaints further decreasing patient satisfaction scores.

The improved compliance to clear liquid diets found by providing educational interventions by Modi et al. (2009) emphasizes the need for health care providers to communicate, educate, and encourage these patients. When providing instructions to patients they should be simple and clear allowing the patient to understand them (Maltby, 1996). Green et al. (1996) concluded confusion present among health care providers on what constitutes as a clear liquid leads to the patient following incorrect instructions. Therefore, the patient is unknowingly consuming the inappropriate liquids prior to surgery (Green et al., 1996). Green et al. (1996) recommended physicians define the appropriate clear liquids and provide a short list to enhance patient compliance.
**Full liquid diet.** The Academy (2013n) clarifies all foods allowed on the clear liquid with the addition of milk and small amounts of fiber are what constitutes the full liquid diet. These additional items include thin cereals, strained creamed soups, milkshakes, custard, pudding, and juices or nectars with pulp (Academy, 2013n). Full liquid diets are able to provide adequate amounts of energy, protein, and fat, however, they are often inadequate in vitamins, minerals, and fiber (Academy, 2013n, Mahan et al, 2012). Therefore, patients should not be restricted to full liquid diets for a prolonged period of time (Academy, 2013n; Mahan et al., 2012).

For the purposes of this study, full liquid diets will be defined as all foods allowed on the clear liquid diet with additions containing milk or small amounts of fiber (Academy, 2013n).

**Adherence to the full liquid diet.** Traditionally, full liquid diets have been used as a “short term transitional step” when advancing patients from the clear liquid diet to the regular diet post-gastrointestinal surgery (Academy, 2013n). Other indications include, when patients present: swallowing difficulties; inability to chew or swallow solid foods after head, neck, or dental surgery; ability to only take food through a straw; severe oral, pharyngeal or esophageal motility problems; and upper gastrointestinal stricture (Escott-Stump, 2001).

Long term use of the full liquid diet leads to consequential vitamin and mineral deficiencies (Academy, 2013n). In addition, full liquid diets should be contraindicated when patients exhibit a lactose intolerance, ability to tolerate solid foods, or the inability to tolerate thin liquids (Academy, 2013n). Full liquids that do not contain lactose should
be provided with monitoring when lactose intolerance is suspected in a patient (Academy, 2013n; Whitney et al., 2001).

As reported by the Academy (2013n), there is limited evidence available showing full liquid diets contribute to the progression of postoperative diets. Furthermore, while still existent in others, full liquid diets are being widely eliminated in many healthcare settings. This is due to earlier postoperative discharges resulting from the quicker advancement from a clear liquid diet to solid foods without the transitional step (Academy, 2013n). Sathiaraj et al. (2008) and Warren, Bhalla, and Cresci (2011) both discussed postoperative diet advancement to soft solids without any mention of the full liquid diet. Sathiaraj et al. (2008) examined comparisons of hospital length of stays and tolerance to oral feeding between clear liquid diets and soft solids. Warren et al. (2011) recommended the use of dysphagia diets, or soft diets, in the early postoperative recovery.

**Patient understanding and compliance to the full liquid diet.** The full liquid diet is typically used for only short periods of time, whether as a short transitional step or in the occurrence when patients either are unable to chew or swallow or feel too ill eat (Academy, 2013n). Therefore, there is a lack of research on patient compliance and understanding of this this. However, it should be acknowledged by healthcare providers that full-liquid diets do not meet the nutritional needs therefore they should only be used for short periods with caution (Academy, 2013n; Whitney et al., 2001).

When patients feel too ill to eat it is hard to get them to consume adequate nutrition they need. Often liquid diets are used because the majority of patients tolerate
liquid diets better when they feel too sick to eat solid foods (Whitney et al., 2001). When this occurs, liquids should be offered in small amounts to ensure tolerance of what is being offered (Whitney et al., 2001). Unfortunately, patients tend to continue consuming liquid diets because they know they can tolerate them. This needs to be cautioned because these liquid diets do not provide the energy or nutritional needs required to successfully recover from illnesses (Academy, 2013n; Whitney et al., 2001). Additionally, when patients continue to consume the liquid diets for any length of time, they become bored and find the options unappetizing (Whitney et al., 2001). This results in the patient becoming even further energy and nutritional deficit caused by decreased consumption (Whitney et al., 2001). Healthcare providers need to consider this when educating the patient and their family regarding liquid diets.

When it is absolutely necessary for a patient to stay on the liquid diet for more than a few days, formula supplementation is recommended to curve boredom while providing the needed nutrition (Whitney et al., 2001). Formulas are available for a multitude of different medical needs, and majority are lactose free (Whitney et al., 2001). Another approach that has been suggested is to advance straight to very small servings of solid foods once tolerance for liquids is assessed (Whitney et al., 2001). The first solid foods, however, depend on the patient’s medical condition (Whitney et al., 2001).

**Fluid restrictions.** Fluid restrictions are used to control the amount of fluids consumed by a patient and are based on varying amounts dependent on the patient’s medical needs. Fluids include anything that becomes liquid at room temperature (Academy, 2013mm). Fluids are counted from not only beverages, but also soups
(Academy, 2013mm). “Dry tray” fluid restrictions are used to eliminate all fluids from a patient’s diet. Fluid intake and measurement has been suggested to be the responsibility of the nursing staff (Whitney et al., 2001).

For the purposes of this study, fluid restrictions will be defined as any level of fluid intake restriction.

**Adherence to fluid restrictions.** Fluid restrictions can be ordered to control fluid overload with those experiencing ESRD, dialysis, congestive heart failure, or liver failure with ascites (Escott-Stump, 2012). In those with stages 1-4 CKD, fluid intake should match urine output, or the volume that is removed in treatment in those with stage 5 (Beto & Bansal, 2004). Beto and Bansal (2004) reported fluid restrictions are essential to avoid fluid overload. Beto and Bansal (2004) also reported that adherence to fluid restrictions can be determined by measuring fluid accumulation between dialysis treatments.

**Patient understanding and compliance to fluid restrictions.** Van der Wal et al. (2006) reported finding 73% of patients studied reported complying with the recommended fluid restriction. Variances in patients reporting difficulty of following fluid restrictions have been found. Kugler, Vlaminck, Haverich, and Maes (2006) reported 75% of patients and van der Wal et al. (2006) reported 39% who reported “having problems” with the restriction. Van der Wal et al. (2006) found of this 39%, thirst was found to be the major problem for 27% patients. Interestingly, this study found that compliance may have been caused unknowingly by the 11% who reported they did not know they even had a fluid restriction (van der Wal et al., 2006). In both univariate
and multivariate analyses compliance with fluid restrictions was associated with lower educational level and knowledge (van der Wal et al., 2006).

**Combined Diets Prescriptions**

Patients may require multiple dietary restrictions for disease management, however, these diets should be realistic and meet the nutritional requirements of patients (Mahan et al., 2012). The most important consideration of the diet is providing the patient with foods they are willing and able to eat while fitting within the dietary restrictions (Mahan et al., 2012; Whitney et al., 2001).

The use of a “diabetic” or “sugar-free” full-liquid diets is an example of an unrealistic diet (Academy, 2013i). This is an unrealistic diet because it does not meet the nutritional needs, in terms of carbohydrates and calories, that diabetic patients require (American Diabetes Association, 2008). The American Diabetes Association (2008) has explicitly stated the need to avoid the use of these types of restrictions in both their 2004 and 2008 guidelines. The Association guidelines also recommend that diabetic patients who require liquid diets receive approximately 200 grams of carbohydrates spread out consistently throughout the day (American Diabetes Association, 2008). Furthermore, the Association believes and recommends that the postoperative transition from clear liquids to full liquids to solid foods should be initiated, and accomplished as rapidly as tolerated (Academy, 2013i; American Diabetes Association, 2008).

When a diet plans are being developed for patients, it is important the increased amount of time, motivation, and financial resources that are going to be required of the
patient (Whitney et al., 2001). It is also important to continue encouragement and support to help the patient manage their health. Highly restrictive diets used in treatment greatly limits a patient’s choices, further leading to feelings of monotony and disinterest in eating (Whitney et al., 2001). The attitude of the caregiver is the primary point of encouragement to the patient’s acceptance of the use of therapeutic diet (Whitney et al., 2001). Nurses play a critical role in this area because they are the ones who can provide continuous support through the development of positive staff-patient relationships (Zyrinyi et al., 2003). It is important for nurses to keep in mind that actions, facial expressions, and conversations with the patient can translate into the patient’s efforts of complying with the diet (Whitney et al., 2001). Generally, when the importance of adhering to the therapeutic diet is explained to the patient in terms of successful recovery, the patient becomes more accepting of the modifications more willingly (Whitney et al., 2001). According to Whitney, because nurses maintain frequent contact with their patients, and play the primary role in a patients’ acceptance of nutrition care, they need to be aware of the role that the nutrition care plan provides, in terms of a greater chance of success (Whitney et al., 2001).

In the event that therapeutic restrictions compromise patient meal intake, further compromising patient recovery from surgery, stress, or illness, a liberal approach to therapeutic diets has become the new trend (Mahan et al., 2012). The reasons for facilities taking this liberalized approach, as reported by the Academy (2013w), include: the incorporation of healthier regular or house diets by lowering sodium and fat; the lack of evidence of benefits from overly restrictive therapeutic diets in controlled
environments of an acute or long-term facility, as reported by the Academy (2009), in their Evidence Analysis Library; overly restrictive diets may limit food choices further decreasing food intake and resulting in inadequate food and nutrient intake reported by the Academy (2009); restrictive diets do not mean anything when food is encouraged to bring in home from outside the facility or when patients access to vending machines; benefits of overly restrictive diets for older or terminally ill patients become a concern when meals for them are a major factor in maintaining an acceptable quality of life; and the increase of patient rights awareness to refuse treatments including those made in their diets.

While the Academy has published a position statement for long-term care facilities, concerning the liberalization of diet prescriptions, it is believed this statement can be applicable to other situations as well (Academy, 2013w). The position of the Academy is that the, “quality of life and nutritional status of older adults residing in health care communities can be enhanced by individualization to less-restrictive diets” (ADA, 2005b). The position statement of the Academy (2005b) argued that health care practitioners need to compare the risks versus the benefits of therapeutic diets, especially when working with the older adult population. This effort will minimize the risk of under-nutrition and the related negative health effects, and to maximize their quality of life (Academy, 2005b). Facilities have adopted a variety of policies regarding liberalized diets, however, in an effort to comply with federal regulations, the diet being served to the patient must comply with the diet ordered in the medical record (Academy, 2013aa).
It is also required that the institution serving the diet to also meet the nutritional needs of patient/residential population (Academy, 2013w).

**Modified Diets**

**Modified Diets Defined**

A modified diet consists of adjustments in textures, consistency, or viscosity alterations in foods or liquids for safe swallowing practices to meet individualized patients’ needs (ASHA, 2009; Whitney et al., 2001).

**Reasons for Modified Diets**

There are many reasons for modifying food textures to help prevent a negative impact on health and nutrition status. These reasons may include inadequate chewing or mastication, dental status such as edentulous or having no teeth, or dysphagia (ASHA, 2009; Whitney et al., 2001). It is important for health care staff to be aware of any modifications made to a patient’s diet, and why those modifications were made (ASHA, 2009).

Chewing can be temporarily or permanently affected by many conditions ranging from “heavy sedation and pain to injuries, mouth ulcers, and missing teeth or ill-fitting dentures” (Whitney et al., 2001, pg. 357). For patients with inadequate chewing, modifying the textures of foods helps to make chewing easier, where tolerance varies greatly from patient to patient (Whitney et al., 2001).

Swallowing is a complex process which requires the involvement of “50 pairs of muscles and dozens of nerves” (Academy, 2014c). Occurring in the upper aero-digestive
tract, by starting in the mouth, muscle contractions push any foods, liquids, secretions, or medications into the stomach (Academy, 2014c; Ferrand & Bloom, 1997). The aero-digestive tract also functions for respiration and speech production, where it is the combination of structures from the airway tract and the gastrointestinal tract (Ferrand & Bloom, 1997). These structures include the nasal cavity, oral cavity, pharynx, larynx, and the upper esophagus (Ferrand & Bloom, 1997). It is essential for the aero-digestive tract to be able to transition “rapidly between an open airway for respiration and a closed airway for swallowing” to allow safe and efficient respiration, swallowing, and speech production (Ferrand & Bloom, 1997, pg.230).

Dysphagia is a disorder in which swallowing difficulties occur from an impairment or disturbance in the swallowing process (Academy, 2014c; Ferrand & Bloom, 1997). Swallowing disorders can occur at different stages in the swallowing process (Ferrand & Bloom, 1997). It can be in one or all stages which include the oral phase, the pharyngeal phase, and the esophageal phase (Academy, 2014c). The oral phase of swallowing is where sucking, chewing, and moving food or liquid into the throat occurs (ASHA, 2014). Once in the throat, the pharyngeal phase takes place and consists of three important processes. These include the initiation of swallowing, the application of pressure in order to push food down, and the closing of the larynx to protect the airway (ASHA, 2014; Ferrand & Bloom, 1997). The airway needs to be closed in order to prevent choking and aspiration, which occurs when food or liquid enter into the airway (ASHA, 2014). The esophagus, where the esophageal phase occurs, is a feeding tube where food is pushed through to the stomach (ASHA, 2014). During this, values on the
top and bottom of the esophagus are appropriately opened or closed by relaxing or tightening them (ASHA, 2014; Ferrand & Bloom, 1997).

Dysphagia can occur in any age ranging from newborn infants, young children, adolescents, and adults (Ferrand & Bloom, 1997). There are numerous medical etiological factors in which dysphagia can be a consequence from. It can be the result of damage to the structures of the head and neck or because of problems with neuromuscular control, examples include aging, nervous system diseases, injuries, developmental disabilities, and strokes and other cerebral vascular accidents (Ferrand & Bloom, 1997; Whitney et al., 2001). Other contributions to dysphagia include muscle weakness or incoordination, impaired gag or swallowing reflexes, impaired cough, and weakness from illness (Moore, 2005).

It is suggested that the occurrence of dysphagia is very high due to the result from numerous medical etiological factors, however, the exact prevalence is unknown (ASHA, 2008; Ferrand & Bloom, 1997; Howden, 2004). Studies have indicated the prevalence in those 55 years old may be up to 22%, and each year approximately ten million Americans with swallowing difficulties are evaluated (ASHA, 2008; Howden, 2004; Domench & Kelly, 1999). Studies have shown a significant variance in the prevalence of dysphagia among the following different settings: 23% in primary care (Wilkins, Gillies, Thomas & Wagner, 2007); 61% adults admitted to acute trauma centers (Murden, Ward, & Murdoch, 2003); 41% to rehab settings (Murden, Ward, & Murdoch, 2003); 25-30% to hospitals (Leslie, Carding, & Wilson, 2003; Spieker, 2000); and 30-75% in nursing homes (Howden, 2004; Domench, & Kelly, 1999; Rosenvinge & Stance, 2005).
Severity of dysphagia can range from mild to severe difficulty when swallowing (ASHA, 1994). Therefore, patients with dysphagia differ in their ability to initiate swallowing; chew foods while mixing with saliva; push foods to the back of the throat; push foods into the esophagus from interference with muscular contractions; or have the complete inability to consume anything by mouth (Swigert, 2007). Signs of chewing and/or swallowing problems when eating or drinking can include the following: swallowing one bite multiple times; coughing, gagging, and/or choking; drooling; spilling food from the mouth; and difficulty breathing difficulty (ASHA, 2009; 2010). Signs of dysphagia after eating include: gargoyle sounding voice; food still present in mouth or throat; and sounding congested (ASHA, 2009; 2010). Other signs displaying dysphagia include: unexplained weight loss; inability to gain weight; persistent unexplained fever; and frequent respiratory infections/pneumonia (ASHA, 2009; 2010).

**Treatment of Swallowing Disorders**

Speech-language pathologists (SLPs), or swallow therapists, are the experts of neurophysiology, swallowing physiology, as well as, the evaluation and treatment of swallowing disorders (Ferrand & Bloom, 1997). To determine where swallowing is impaired, SLPs evaluate the control of every involved anatomic, sensory, and motor components to further determine whether any insufficiency is present (Ferrand & Bloom, 1997). Treatment for swallowing disorders, hence, is based off of the “clinician’s knowledge of the patient’s swallow physiology, not on the symptoms of their disorders” (Ferrand & Bloom, 1997, pg.236). This makes the SLPs role critical in achieving successful outcomes regarding dysphagia treatment (Ferrand & Bloom, 1997).
SLPs may make the following possible recommendations for decreasing dysphagia: use of adaptive eating aids such as special utensils, cups, or dishes; specific eating procedures similar to small bites of food, two swallows before next bit, etc.; positions during eating such as sit upright, chin tucked down, etc.; altering food consistency; and thickening liquids (ASHA, 2009; 2010).

Complications with noncompliance. Dietitians, SLPs, and nursing staff collaborate as team in conjunction with the patient, family members, and caregivers in order to determine the foods and liquids that can be safely provided to the patient to consume (Whitney et al., 2001). Identification of these foods include those that are naturally soft, tender-cooked, ground or chopped, or purred (Whitney et al., 2001). This will allow the patient to have a stimulated appetite while decreasing risks for malnutrition (Whitney et al., 2001). It is recommended by Whitney et al. (2001) to provide naturally soft foods, tender-cooked foods, and ground or chopped foods, to a patient whenever possible. Whitney et al. (2001) also recommends to only provide pureed foods to a patient when inadequate amounts of the naturally soft foods, tender-cooked foods, and ground or chopped foods are consumed are being consumed due to chewing and swallowing difficulties.

Consequences of dysphagia can range anywhere from discomfort to choking or life threatening illness, therefore not following recommendations could be putting the patient’s life at risk (ASHA, 2009). Recommendations given by the SLP must be followed at all times without exceptions (ASHA, 2009). If there are feelings that a
patient’s swallow has improved, recommendations cannot be changed until another swallow study is completed (ASHA, 2009; Swigert, 2007).

According to the Agency for Health Care Policy and Research [AHCPR], each year there are over 60,000 deaths in America due to complications associated with swallowing difficulties (Agency for Healthcare Research & Quality [AHRQ], 1999). A large percentage of pneumonia develops from dysphagia making aspiration pneumonia its most common complication (AHRQ, 1999; ASHA, 2009). When patients with dysphagia aspirate the risk of acquiring pneumonia increases (Marik & Kaplan, 2003). It has been reported by Marik and Kaplan (2003) that 40 to 50% of stroke patients aspirate, putting these patients at increased risk. This has caused aspiration pneumonia to a rising cause of hospital admissions, as well as, one of the leading causes of death in Americans, especially among elderly (Heron, 2009; LaCroix et al. 1989). Aspiration may exhibit the obvious symptoms such as coughing, gagging, and breathing difficulties, however, silent aspiration can occur without notice (ASHA, 2009).

In addition to aspiration pneumonia, dysphagia also predisposes patients to complications such as choking; increased infection rate; poor wound healing; death from asphyxia; depression; less enjoyment of eating; embarrassment when eating because of drooling or other problems; dehydration; inadequate oral intake; unintended weight loss; malnutrition resulting in death; muscle wasting; physical debilitation; decreased rehabilitation potential; and decreased quality of life (Academy, 2014c; ASHA, 2010; Ferrand & Bloom, 1997; Lieu et al., 2001; Marik & Kaplan, 2003; Whitney et al., 2001).
Dysphagia involves both a physical and an emotional experience profoundly affected a patient’s quality of life, as reported by Watt (2003). Patients with dysphagia have reported under eating, feeling panicked at mealtimes, and avoidance of eating with others because of embarrassment (Ekberg et al., 2003). The loss of swallowing may cause a patient to become severely depressed due to the many disruptions and changes in these patients daily life activities (Ekberg et al., 2003). Severely dysphagic patients may require alternate means of nutrition such as a feeding tube, which is a primary treatment option for many with severe dysphagia (Ekberg et al., 2003). Those requiring a feeding tube experience distress from the inconvenience and discomfort from the pain (Ekberg et al., 2003).

Ineffective treatment of dysphagia also increases health care costs due to the reoccurrence of hospital readmissions, emergency room visits, extended hospital stays, long-term institutional care, and the need for respiratory and nutrition support (Academy, 2014c; Ferrand & Bloom, 1997). Managing a patient with a feeding tube has been reported to cost an average of over $31,000 per patient per year (Callahan et al., 2001; Roth et al., 2002). This cost increases further from complications, longer lengths of hospital stays, and other expenses (Callahan et al., 2001; Roth et al., 2002).

**Types of Modified Diets**

In 2002, the Academy published the National Dysphagia Diet (NDD) guidelines for standardization of dysphagia diets (Swigert, 2007). These guidelines provided four diet levels for solid and semi-solid foods labeled as puree, mechanically altered, dental soft, and regular diets. The guidelines also provided four diet levels for liquids including
suggestions for viscosity ranges, these levels as thin, nectar-, honey-, and pudding/spoon-thick (Strowd, Kyzima, Pillsbury, Valley, & Rubin, 2008; Swigert, 2007). Although these have become national guidelines, they are not universally accepted (Academy, 2014d; Swigert, 2007). It is necessary for the SLP to assess and evaluate each patient to establish any need texture modifications to the patient’s diet, in collaboration with other health professionals (Swigert, 2007). In this evaluation, sensitivity to foods should be taken into consideration to distinguish whether a patient responds better to foods that are cold, room temperature, or hot (Swigert, 2007). Throughout the treatment, continuous reassessment allows adjustments or advancements to the patient’s diet as they improve Swigert (2007).

**Puree.** Level one of the NDD is the Dysphagia Pureed diet which consists of foods that are pureed, homogenous, very cohesive, pudding-like foods that require very little chewing ability (Academy, 2013k; Russell, 2003). This is for those who have been diagnosed with a severe chewing and/or swallowing problem (Academy, 2013k). This diet consists of foods that are easy to swallow because they are blended, whipped, or mashed until they are a “pudding-like” texture (Academy, 2013k). All foods that are considered sticky, such as peanut butter, or non-cohesive, such as rice, are omitted on this level (Academy, 2013k; Swigert, 2007). This diet avoids any coarse textured foods such as raw fruits, vegetables, or nuts, and emphasizes that all foods should be smooth and free of lumps (Academy, 2013k). Fluid consistency is ordered separately from the meal plan and may be thin, nectar-thick, honey-thick or spoon thick (Academy, 2013k).
In an evidence-based practical resource for SLPs, the pureed diet is divided into two different levels which is different than the NDD levels (Swigert, 2007). Level I is defined as a modified pureed diet with runny, smooth textures, where all foods should have a honey consistency and similar textures (Swigert, 2007). Foods that are sticky or having multiple textures are omitted, as well as, nuts, seeds, and lumps (Swigert, 2007). Also in Level I, all liquids should be thickened to honey consistency, this includes water, broth and strained soups (Swigert, 2007). The resources provides rationale that this level is for those patients “with severely impaired swallowing who have significant residue in the hypopharynx with sticky foods” (Swigert, 2007, pg. 138). Level II is defined as a modified pureed diet with thick, smooth textures where all foods should have a pudding consistency (Swigert, 2007). Sticky and foods with multiple textures are also omitted on this level and all liquids should be thickened to pudding consistency (Swigert, 2007). The resource provides rationale that this level is for those “patients with severely impaired swallowing who are receiving swallowing therapy” and “may be appropriate for patients with severely reduced oral abilities and reduced laryngeal closure” (Swigert, 2007, pg. 139).

**Mechanically altered.** Level two of the NDD is the dysphagia mechanically altered diet in which some chewing is required (Academy, 2013l; 2013y; Russell, 2003). Foods in large chunks or foods that are too hard to be chewed thoroughly are to be avoided on this diet (Academy, 2013l; 2013y). This diet consists of foods that are mechanically altered by blending, chopping, grinding, or mashing so that they are easy to chew and swallow (Academy 2013l; 2013y). Foods should be cohesive, moist,
semisolid, and soft-textured for easy formation of a bolus (Academy 2013l; 2013y; Russell, 2003). Meats are grounded and served with gravy or sauce (Academy 2013l; 2013y). Fluid consistency is ordered separately and may be thin, nectar-thick, honey-thick, or spoon-thick (Academy 2013l; 2013y).

In the evidence-based practical resource for SLPs, this level is also divided into two different levels (Swigert, 2007). The first level, Level III, is characterized as provided majority of foods as pureed in addition the inclusion of textures that form a cohesive bolus (Swigert, 2007). Omitted are foods that are sticky, non-cohesive, and mixed consistencies (Swigert, 2007). All liquids on this level are thickened to either honey-thick, nectar-thick, or pudding-thick consistencies, this includes water (Swigert, 2007). The resource provides rationale that this level is for those patients with “impaired swallowing who can chew some very soft foods, but cannot swallow thin liquids safely” and “may be appropriate for patients with moderately impaired oral abilities and/or pharyngeal disorders” (Swigert, 2007, pg. 140). The second level of mechanically altered, or Level IV, is defined as a mechanical soft diet where foods should maintain a cohesive texture (Swigert, 2007). Textures are soft, and omitted consistencies are tough and stringy foods, nuts, seeds, and raw foods (Swigert, 2007). Meats should be grounded and all liquids should be thickened (Swigert, 2007). The resource provides rationale that this level is for those patients “whose oral skills have improved to the point that they can chew and form a bolus with many foods” however, “these patients would still be at risk with thin liquids and mixed consistency foods” (Swigert, 2007, pg. 141).
**Dental soft.** Level three of the NDD is dysphagia advanced which requires more chewing ability for moist, soft-solid foods, that are close to regular textured foods as possible (Academy, 2013m; 2013dd; 2013ee; Russell, 2003). Foods should be in “bite-size” pieces, ½ inch or smaller, at the oral phase of the swallow for easier swallowing (Academy 2013m; 2013dd; 2013ee). This level is often referred to as dental soft or soft foods because of the exceptions to this level being very hard, sticky, or crunchy foods (Academy 2013m; 2013dd; 2013ee). This diet is used as a transition to a regular diet, and requires adequate dentition and mastication (Academy 2013m; 2013dd; 2013ee). The textures of this diet are appropriate for individuals with mild oral and/or pharyngeal phase dysphagia (Academy 2013m; 2013dd; 2013ee). It is recommended that patients be assessed for tolerance of mixed textures because it is expected that mixed textures are tolerated on this diet (Academy 2013m; 2013dd; 2013ee).

In the evidence-based practical resource for SLPs, this is expressed as Level V. Level V is very similar to Level IV with the exception that it is designed for patients who can tolerate thin liquids safely (Swigert, 2007). This level calls for soft textures with the avoidance of tough and stringy foods, nuts, seeds, and raw, crisp or deep-friend foods (Swigert, 2007).

**Regular.** The fourth level of the NDD is the regular diet. This allows for any solid food texture, with no modifications (Russell, 2003).
Types of Modified Liquids

Changing consistencies of liquids is one of the hardest modifications made for patients with dysphagia (Academy, 2014a; Swigert, 2007). In addition to what can be drank from a cup, liquids also include soups, broths, and items that will melt in the mouth such as gelation or ice cream (Swigert, 2007). The viscosity of fluid that the patient can tolerate is recommended separately from solid food recommendations (Academy, 2014d).

Many patients do not tolerate thickened liquids well causing one of the most difficult challenges which is getting them to take in enough thickened liquids to meet their fluid needs (Academy, 2014a; Swigert, 2007). It has been recommended to work closely with RDs to use strategies that will help meet to the patient’s nutritional needs, for example, incorporating high-fluid content foods into the diet, such as pureed fruits, custards, gelatins, and frozen juice (Academy, 2014a; Swigert, 2007). The NDD includes ranges for four levels of standard liquid consistencies. The viscosity of thickened liquids are measure in centipoise (cP) and have broad definitions (Academy, 2014d).

**Thin liquids.** Thin liquids which are regular liquids with no adjustments needed (Academy, 2014a). Thin liquids are not tolerated by patients who have extremely poor tongue control because liquids will roll right over the back of the tongue prior to the patient having control of the bolus and before they are ready to begin swallowing (Swigert, 2007). Thin liquids are defined as 1-50 cP (Academy, 2014d). Thin liquids include clear liquids; milk; commercial nutritional supplements; water; tea; coffee; soda; beer; wine; broth; clear juice; and any foods that turn to liquid at room temperature such as ice cream, frozen yogurt, sherbet, and plain gelatin (Academy 2013k; Russell, 2003).
Patients that are able to tolerate thin liquids will also be able to tolerate foods that contain thin liquids, for example, grapefruit, watermelon, and oranges (Russell, 2003).

**Nectar-thick liquids.** The second level of liquids in the NDD are the nectar-thick liquids. Nectar-thick liquids are defined as 51-350 cP (Academy, 2014d). Nectar-thick liquids consist of a medium thickness that falls slowly from a spoon and can be sipped through a straw or from a cup (Academy, 2014a). Nectar-thick liquids, resemble tomato juice or buttermilk, include nectars, vegetable juices, and handmade milkshakes or shakes made with thickeners (Academy, 2014a; Russell, 2003).

**Honey-thick liquids.** The third level of NDD liquids are honey-thick liquids. Honey-thick liquids are defined as 351-1750 cP (Academy, 2014d). Honey-thick liquids are thicker than nectar-thick liquids and resembles the consistency of honey at room temperature (Russell, 2003). Honey-thick liquids, resemble tomato sauce, drops from a spoon, but are too thick to be sipped from a straw (Academy, 2014a).

**Pudding-/Spoon-thick liquids.** The fourth level are pudding-thick or spoon-thick liquids. Spoon-thick liquids are defined as >1750 cP (Academy, 2014d). This includes all high viscosity liquids, resembling pudding, that maintain shape and needs to be taken with a spoon because they are too thick for a straw and to drink (Academy, 2014a; Russell, 2003).

Commercial thickeners can be added to bring thin liquids to nectar-thick, honey-thick, or pudding-thick consistencies dependent on the amount of thickener added (Academy 2013l; Russell, 2003). Pre-thickened items may also be purchased (Academy
Commercial thickeners can also be used to thicken hot or cold foods by following the manufacturer’s instructions to achieve the desired consistency (Academy, 2014a). Foods other than commercial thickeners can be used to change the consistency of liquids such as instant or mashed potatoes, unflavored gelatin or baby rice cereal (Swigert, 2007). However, these may change the food flavor or texture (Swigert, 2007). Use of commercial thickeners should be cautioned since they add energy from carbohydrate (Academy, 2014a), therefore they may contain excess calories, and ASHA (2009) recommends to check with a RD.

Product consistency is one of the main challenges in management of dysphagia because significant variability in the consistency of both foods and liquids continues to exist (Adeleye & Rachal, 2007). As reported by Swigert (2007) and proven by Strowd, Kyzima, Pillsbury, Valley, and Rubin (2008), viscosity of liquids has been shown to be a difficult property to measure and “inter- and intra-rater reliability” in mixing thickened liquids is poor causing a lack of consistency. Viscosity can also change due factors such as temperature; continuous hydration of the thickening agent in the pre-thickened beverages; how long the liquid sits after being mixed with the thickening agent; the type of liquid (e.g. juices, milk); issues with instant food thickener continuing to thicken; and the manufacturer (type of modified starch, processing, etc.) because there is no consistency across product lines within manufacturers or between competitors (Academy, 2014d; Swigert, 2007). It is recommended that if a patient is not accepting thickened products to try a different thickening agent because it has been found that acceptability of thickened products can be affected by the type of thickening agent (Academy, 2014d;
Macqueen, 2003). Other factors helping to promote acceptable taste by the patient when using a thickener vary according to the type of liquid, thickener brand, product density desired, and time between mixing and digestion, as cited by Academy (2014d).

Modified Diets Combined with Therapeutic Diets

Dysphagia already contributes to a decrease in oral intake and enjoyment of eating (ADA, 2005b). Modified diets are often combined with therapeutic diets within the healthcare setting in an attempt to reduce the risks of choking and aspiration, as well as, in conjugation with disease management (Escott-Stump, 2012; Academy, 2012e). However, this combination causes more rigid dietary restrictions (ADA, 2013nn). These restrictions can contribute to decreased appetites and food intake, further leading to an increased risk of illness, infection, and weight loss (ADA, 2013nn).

Regardless of the diet prescribed, the health care team needs to observe the actual amount of food consumed by the patient (Mahan et al., 2012). This requires communication between the RD, food service staff, and nursing staff to accurately determine the patient’s intake (Mahan et al., 2012).

Patients who require texture modifications need to be monitored for adequate intake of both nutrients and fluid intake (Swigert, 2007). Monitoring needs to occur because the more restrictive the eating plan is, the more difficult it may be for patients to obtain adequate nutrition (Academy, 2014a). Another important factor to consider is using thickening products when planning a carbohydrate-restricted diet (Academy, 2014a). When adding thickening products to the liquids will increase the carbohydrate
content of the liquid (Academy, 2014a). Patients who have suffered from a stroke often develop significant problems with chewing and swallowing. Until the individual recovers, many patients require a diet that helps lower blood lipids, as well as, blood pressure, which further limits their menu (Escott-Stump, 2012).

Positive outcomes of therapeutics diets are only effective if they are consumed properly (ADA, 2005b). This is especially true when patients are non-compliant and do not support the prescribed MNT (ADA, 2005b). On the other hand, if a patient’s appetite is extremely poor, or if a substantial weight loss problem occurs, malnutrition becomes the primary concern (ADA, 2005b). Practical suggestions for improving intake in debilitated patients include liberalizing previous diet restrictions where safe and appropriate, while still addressing impaired identification and swallowing (Escott-Stump, 2012). Taking a liberalized approach to diet prescription can enhance both the patient’s quality of life and nutritional status (ADA, 2005b). In turn, the patient’s meal satisfaction increases, reducing the risks of malnutrition and weight loss (ADA, 2005b).

**Diet Orders**

**Clinical Privileging**

According to the CMS, a hospital’s governing body and medical staff must develop and implement a process that will ensure safe and quality patient care by reviewing not only proof of credentials of a health professional, but also their ability to demonstrate competence in patient care (CMS, 2004; Hager & McCauley, 2009). This evaluation process is completed each time clinical privileges are granted to a healthcare
professional (Academy, 2013b; Department of Health and Human Services [DHHS] & CMS, 2011). Clinical privileging is the “authorization granted by the appropriate authority to a practitioner to provide specific care services in an organization within well-defined limits, based on the following factors: license, education, training, experience, competence, health status, and judgment” (Myers, Barnhill, & Bryk, 2002).

The hospital’s governing body and the hospital’s medical staff are the two groups that partake in granting clinical privileges (CMS, 2004). The governing body of a hospital is held legally responsible for the hospital’s conduct and the medical staff is held accountable by the governing body for the quality of care that is provided to the patients (CMS, 2004). Both of these groups are considered responsible for making certain that all patient care is carried out in conjunction with a practitioner, or in accordance with orders provided by a practitioner, who has been granted privileges while working in the scope of those granted privileges (CMS, 2004). According to the State Operations Manual, only the governing body is able to grant privileges (DHHS & CMS, 2011). The medical staff will make recommendations to the governing regarding a particular practitioner (CMS, 2004). These recommendations are typically actions suggested to be taken in regard to specified privileges: grant, deny, continue, revise, discontinue, limit, or revoke (CMS, 2004). The governing body will in turn make the final decision in accordance with the established hospital medical staff criteria, and state and federal laws and regulations (CMS, 2004). A process granting privileges based on any guidance or direction outside of the medical staff and the demonstrated competencies would not comply with CMS requirements (DHHS & CMS, 2011).
The medical staff must be minimally composed of physicians who are doctors of medicine [MD] or doctors of osteopathy [DO] (DHHS & CMS, 2011). Other health care professionals listed under the definition of “physician” within the Social Security Act include: doctors of dental surgery or medicine, doctors of podiatric medicine, doctors of optometry, and chiropractors, are eligible to be part of the medical staff as determined by the governing body (DHHS & CMS, 2011). All must be legally authorized to practice within the hospital’s home state and provide services only within their authorized scope of practice (CMS, 2004). The governing body also has the authority, in accordance with state law, to appoint some types of non-physician practitioners to the medical staff as defined in the Social Security Act (DHHS & CMS, 2011). These may include: physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists, certified nurse-midwives, clinical social workers, clinical psychologists, and RDs or nutrition professionals (DHHS & CMS, 2011). It is possible to be granted medical staff privileges to practice activities authorized within one’s state scope of practice without actually being appointed as a member of the medical staff (DHHS & CMS, 2011).

**Current regulation.** Federal regulations are considered to be the minimum standards (Hager & Otto, 2006). State regulations, on the other hand, have the ability to meet or further intensify federal regulations (Hager & Otto, 2006). Hospitals and other healthcare facilities must be in compliance, demonstrated by the updated policies and procedures, with federal and state regulations in order to continue being licensed and reimbursed for patient care (Hager & Otto, 2006).
Physicians, as well as the hospital, are fully and legally accountable for the care of hospitalized patients (Hager, 2006). Ordering therapeutic diets for patients is a part of medical care in which physicians are required to hold certification and clinical privileges (Hager, 2006). The federal regulation pertaining to those able to order therapeutic diet orders, enacted via the Code of Federal Regulation (CFR), has been in existence since 1986 (Hager, 2006). The regulation is as follows:

§482.28(b)(1) – “Therapeutic diets must be prescribed by the practitioner or practitioners responsible for the care of the patients. Therapeutic diets must be:

- Prescribed in writing by the practitioner responsible for the patient’s care;
- Documented in the patient’s medical record (including documentation about the patient’s tolerance to the therapeutic diet as ordered);
- And, evaluated for nutritional adequacy” (DHHS & CMS, 2013).

In 2004 the State Operations Manual for surveyors included the term “qualified dietitian” as a party who must prescribe the therapeutic diet, however, there was never a change in the regulation (Hager, 2006). In August of 2005, CMS issued a letter to clarify that the “term “practitioner(s)” as referenced in §482.28(b)(1) specifically meant only the admitting or attending physician (MD or DO)” (Hager, 2006). It also stated, “in accordance with State law and hospital policy, a dietitian may assess a patients nutritional needs and provide recommendations or consultations for patients but the patient’s diet must be prescribed by the practitioner responsible for the patients care” (Hager, 2006). Many in the dietetic profession viewed this as a huge setback for the profession, leading
the Academy to work with CMS for established guidelines on how RDs could gain, or retain their therapeutic diet order writing privileges while meeting CMS requirements (Hager, 2006). In the following September, the Academy issued an advisory paper that described three ways therapeutic diet orders can be legitimately issued (American Dietetic Association [ADA], 2005a). The first is by delegation from the MDs/DOs in which they give order for a dietitian to perform a consult and write an order (ADA, 2005a). The second is a verbal order that can be used only from hospital approval and does not violate state law (ADA, 2005a). Dietitians must be included on the list of individuals who may send and receive verbal orders in the policies and procedures (ADA, 2005a). The third is a nutrition writing order protocol or policy approved by the hospital’s governing body that is included in the hospital’s policies and procedures and may assign specific clinical privileges to dietitians in accordance with state law and hospital policy (ADA, 2005a).

**Proposed changes to regulation.** In February of 2013, CMS announced proposed changes to the rule that would allow dietitians to become privileged by the hospital staff to independently order therapeutic diets for patients without requiring supervision or approval of a physician or other practitioner (Medicare & Medicaid Programs, 2013). It would also allow dietitians, in accordance with state laws, to order laboratory tests for monitoring the effectiveness of dietary plans and orders and make modifications based on the laboratory results (Medicare & Medicaid Programs, 2013). These changes were projected to take effect later the year and would only apply to already privileged RDs (Academy, 2013c; 2013d). According to the Director of
Regulatory Affairs of the Academy, Pepin Tuma, “CMS has yet to finalize the proposed rule that would allow RDs in the hospital setting to become privileged to order therapeutic diets, but it could conceivably come at any time” (P. Tuma, personal communication, 2014).

CMS stated they “believe that RDs are the professionals who are best qualified to assess a patient’s nutritional status and to design and implement a nutritional treatment plan in consultation with the patient’s interdisciplinary care team” (Medicare & Medicaid Programs, 2013). The proposal clarifies that RDs may be included on the medical staff as they “have equally important roles to play on a medical staff and on the quality of medical care provided to patients in the hospital” (Medicare & Medicaid Programs, 2013). There is no straight-forward definition for “qualified dietitian” in the hospital setting, however interpretive guidelines indicate that “qualification is determined on the basis of education, experience, specialized training, state licensure or registration when applicable, and maintaining professional standards of practice” (Medicare & Medicaid Programs, 2013). The Academy continues to work with CMS to develop a consistent definition across the continuum of care (Academy, 2013d).

Rationale from CMS included that the proposed changes would “save hospitals significant resources by permitting registered dietitians to order patient diets independently, which they are trained to do, without requiring the supervision or approval of a physician or other practitioner, thus freeing up time for physicians and other practitioners to care for patients” (Medicare & Medicaid Programs, 2013). The Academy has been working with CMS for over two years and submitted formal comments to CMS
in December of 2011 that provided the evidenced-based rationale used in the proposed rule by CMS (Academy, 2013d). There were many studies used by CMS to base their rationale, and estimated savings and benefits on. The first study used was a 2010 retrospective cohort study of 1,965 patients which demonstrated a reduction in medically inappropriate parental nutrition usage when RDs were granted ordering privileges (Medicare & Medicaid Programs, 2013; Peterson et al., 2010). This reduction exhibited an annual savings of $135,233 to the hospital which allowed CMS to estimate reduced costs for hospitals of $169,000 from the proposed changes (Medicare & Medicaid Programs, 2013; Peterson et al., 2010). Another rationale was that 5%, or 245, of all hospitals were estimated by CMS were noncompliant with regulations (Medicare & Medicaid Programs, 2013). This rationale was backed by Weil, Lafferty, Keim, Sowa, and Dowling (2008) who had surveyed 1,500 clinical nutrition managers in nationwide acute healthcare facilities on barriers faced by RDs to obtaining prescriptive authority. Regulatory agencies was a prominent barrier reported by 15% of the respondents (Weil et al., 2008). From this study, CMS established that of the affected hospitals, 735 hospitals (15%) to 4,655 (95%) hospitals would benefit from savings of the proposed rule (Medicare & Medicaid Programs, 2013).

With these two studies provided evidence-based information, CMS had estimated savings from these changes would be $33,546,135 to $212,458,855 (Medicare & Medicaid Programs, 2013). Other savings from the proposed rule were recognized by CMS. These included decreased length of stays, quicker recovery times, and reduced incidents of readmission after discharge from the hospital (Medicare & Medicaid Programs, 2013).
CMS also argued that RDs granted with ordering privileges are able to provide medical nutrition therapy and other nutrition services at lower costs when compared to physicians, APRNs, and physician assistants (Medicare & Medicaid Programs, 2013). Factors considered in this rationale was the significant differences in average salaries and time savings (Medicare & Medicaid Programs, 2013). These savings were estimated to range from $49,803,600 to $315,422,800 annually thus bringing the total savings estimated from the proposed changes to be $83,349,735 to $527,881,655 annually (Medicare & Medicaid Programs, 2013).

Another study looked at the number and types of errors and time delays that occurred immediately before and after implementing a policy allowing RDs non-medication order entry privileges (Imfeld et al., 2012). After the policy change, findings showed a 15% reduction in errors, 8% reduction in improper transcription of diet orders, and a significant decrease in improper terminology and comments in order messages (Imfeld et al., 2012). Other important findings were the 39% time reduction in the average time delay and a substantial improvement in the overall accuracy of reviewed orders (Imfeld et al., 2012). “Efficient and effective nutrition interventions implemented in a timely manner” can increase patients’ nutritional status, potentially decrease length of stay, and positively affect overall costs, where negative incidents have impact on overall satisfaction (Imfeld et al., 2012).

**Additional Health Care Professionals Involved**

In addition to doctors and RDs, nurses and SLPs also have an involvement with patient diets are nurses and SLPs. Due to therapeutic diet orders being viewed as part of
the medical care of a patient, these practitioners are held to the same standards as dietitians based on federal and state regulations, scope of practice, and facility policies, procedures, and protocols (DHHS & CMS, 2013).

**Nurses.** Nurses must have the orders of an authorized practitioner or a standing order which has been already reviewed and approved by a practitioner (DHHS & CMS, 2013). The ordering practitioner is generally the practitioner(s) who is responsible for the care of the patient and who documents and signs the orders (DHHS & CMS, 2013). This can also include other practitioners who have been authorized by hospital policy and medical staff bylaws, federal and state regulations, and scope of practice (DHHS & CMS, 2013). The OBN (2011) states that RNs and LPNs may both administer medications and treatments that have been authorized by an approved prescriber or health care provider. RNs may also execute a regimen authorized by health care providers. When a RN is directing LPN practice, the RN is the one who establishes the nursing regimen and communicates the nursing practice needs of the client (OBN, 2011).

**Speech-Language Pathologists (SLPs).** Some facilities allow for SLPs to work independently and do not require a physician’s order for providing services (ASHA, 2013). This is different in healthcare settings where physician’s orders are used to initiate referrals dependent on a facility’s policies and procedures and requirements for both public and private reimbursement purposes (ASHA, 2013).

Dependent on the facility, SLPs may write verbal orders from the physician within a patient’s chart, recommendations for diet textures, or other orders for the physician to sign if required (ASHA, 2013). ASHA (2013) recommends practitioners
contact their state agencies to determine which state regulations need to be adhered to and currently do not have policies that prohibit SLPs in their scope of practice to write orders. The final decision is made by the facility if granting ordering privileges to SLPs as an acceptable practice and developing necessary polices (ASHA, 2013). Medicare allows physicians, physician assistants, and nurse practitioners to write orders (ASHA, 2013). Other payers may have their own guidelines about who can write orders or authorize treatment (ASHA, 2013). Some facilities have physicians who write very broad orders that allow SLPs to requests diets, such as “diet as determined by speech pathology”, however; a policy is required to be in place for this method (ASHA, 2013).

ASHA (2013) has recommended that SLPs who are allowed to write orders be especially careful that they do not go outside of their scope of practice. SLPs should not be requesting dietary restrictions because according to ASHA (2013), this is outside of the SLP’s scope of practice. ASHA (2013) provides the following example: “if a SLP needs to change a patient’s diet to mechanical soft and that patient is also on a low sodium diet, the order will most likely need to address both issues-texture and dietary restrictions.” ASHA (2013) cautioned SLPs to be aware of the hospital Medicare conditions of participation for food and dietetic services [42 section 482.28(b)(1)], stating that “therapeutic diets must be prescribed by the practitioner or practitioners responsible for the care of the patients” because for Medicare purposes, these practitioners do not include SLPs.
Advancing Diet Orders

Clinical judgments. The licensed nurse is held legally responsible and accountable for knowing their defined scope of nursing practice (OBN, 2004). In response to the Nurse Practice Act, the OBN (2004) developed a decision making model to facilitate the nurse’s decision-making regulating the practice of nursing. Laws and rules require those licensed to provide nursing care in only circumstances “which are consistent with one’s preparation, education, experience, knowledge and demonstrated competency” (OBN, 2004).

Standards/Manuals/Handbooks

There are currently no set nutrition-related standards, manuals, or handbooks required to be taught or used in nursing school program curriculums or health care settings (P. McKnight, personal communication, 2013-2014). The materials found to be commonly used for nursing education are listed and described in Table 10.

Table 10. Commonly Used Nutrition-Related Nursing Resources in Nursing School Program Curriculums or Health Care Settings

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Bowes &amp; Church’s Food Values of Portions Commonly Used by Jean A. T. Pennington PhD RD, Judith S. Sprungen MS RD</td>
<td>A nutrition guide covering nutritional content data for common foods, less popular foods, current brand names and general foods. Content data includes: calorie content, weight, water, protein, fat, monounsaturated fat, cholesterol, carbohydrate and sugars, dietary fiber, and major vitamins and minerals.</td>
</tr>
<tr>
<td>Discovering Nutrition by Paul Insel Jones, Don Ross, Kimberley McMahon, and Melissa Bernstein</td>
<td>Introductory nutrition text specific for non-nutrition major students with material covering the following: digestion, metabolism, chemistry, life cycle nutrition, 2010 Dietary Guidelines for Americans and MyPlate, vitamin and mineral supplements, hypertension, celiac disease, and multicultural food guides.</td>
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<tr>
<td>Book Title</td>
<td>Description</td>
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<tr>
<td>Handbook of Child Nutrition by B. L. Wardley, J.W. L. Puntis, L.S. Taitz, and B.I. Wardley</td>
<td>Text specific for community health care workers involved in childhood nutrition. Material covered include the following: general introduction to nutrition in childhood; giving age appropriate dietary advice for both healthy and ill children; normal infant and premature infant feeding practices; current healthy eating issues in children and adolescents; feeding problems; food allergies; obesity; dietary management of children with chronic diseases; growth in children; and enteral tube feeding and parenteral nutrition.</td>
</tr>
<tr>
<td>Nutrition &amp; Diet Therapy by Ruth A. Roth</td>
<td>Text designed for nurses to provide effective care to help improve patient nutrition and overall health by introducing the essentials of nutrition concepts, good health, and client care. Material covered include the following: fundamentals of nutrition, how to maintain good health through nutrition, and nutrition therapy concepts specific to nursing.</td>
</tr>
<tr>
<td>Nutrition and Diet Therapy for Nurses by Sheila Tucker</td>
<td>Text specific to nursing practice by covering all aspects of nutrition. Also covers medical nutrition therapy material and patient education.</td>
</tr>
<tr>
<td>Nutrition and Diet Therapy Reference Dictionary by Rosalina T. Lagus, Virginia S. Claudio, Springer</td>
<td>Covers all aspects of nutrition, including assessment, drug-nutrient interactions, laboratory interpretations, enteral and parenteral nutrition support, community and public health nutrition programs, and nutrition throughout the life cycle.</td>
</tr>
<tr>
<td>Nutrition and Diet Therapy: Self-Instructional Approaches by Peggy S. Stanfield</td>
<td>Text designed for traditional text or self-instructional text for distance-learning and self-paced instruction. Material covered includes the fundamentals of basic nutrition and both adult and pediatric nutrition therapy.</td>
</tr>
<tr>
<td>Nutrition Counseling Skills for Medical Nutrition Therapy by Linda G. Snetselarr</td>
<td>Book for nutrition professionals that addresses nutrition counseling for conditions such as obesity, heart disease, diabetes, renal disease, hypertension, cancer, eating disorders, and pregnancy.</td>
</tr>
<tr>
<td>Nutritional Assessment by Robert Lee, David Nieman</td>
<td>Describes the four major methods of nutritional assessment which are dietary, anthropometric, biometric and clinical. It covers assessment of hospitalized individuals. It also serves as a resource to nutrition professionals working areas of public health and community nutrition, corporate health, and sports medicine.</td>
</tr>
<tr>
<td>Perspectives in Nutrition by Gordon M. Wardlaw, Jeffrey S. Hampl, Robert A. Desilvestro</td>
<td>Introductory textbook that covers all aspects of nutrition including the following: nutrition basics, energy-yielding nutrients and alcohol, vitamins and minerals, energy production and balance, nutrition and the life cycle, and putting nutrition knowledge into practice.</td>
</tr>
<tr>
<td>Rapid Reference for Nurses: Nutrition by Nancie Herbold, Sari Edelstein</td>
<td>Pocket guide designed for nurses providing information allowing both students and professionals to reference for specific nutrition needs, and decisions on which foods are appropriate to consume by the patient.</td>
</tr>
<tr>
<td>Book Title</td>
<td>Description</td>
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<tr>
<td>Nutritional Foundations and Clinical Applications: A Nursing Approach 5e by Michele Grodner EdD CHES, Sara Long Roth PhD RD LD, Bonnie C. Walkingshaw, MS RN</td>
<td>Text specific to nurses’ roles in the nutritional needs, therapy, wellness, and health promotion in the clinical setting.</td>
</tr>
<tr>
<td>IV Therapy Notes: Nurse’s Clinical Pocket Guide by Lynn D. Phillips</td>
<td>Guide covering IV therapy specific safe administration, types of intravenous fluids and their contents, and rules for calculating infusion rates, fluids and electrolytes.</td>
</tr>
<tr>
<td>Understanding Nutrition by Eleanor Noss Whitney, Sharn Rady Rolfe</td>
<td>Introductory nutrition text to teach basic concepts and applications of nutrition. Topics discussed include: diet planning, macronutrients, vitamins and minerals, diet and health, fitness, life span nutrition, food safety, and world hunger.</td>
</tr>
<tr>
<td>Nutrition: Concepts and Controversies by Frances Sizer and Ellie Whitney</td>
<td>Text for non- and mixed-nutrition majors covering nutrition misconceptions while provided guidance to make informed nutrition choices.</td>
</tr>
<tr>
<td>Academy of Nutrition and Dietetics, Nutrition Care Manual (NCM)</td>
<td>The NCM is an internet-based therapeutic diet manual and professional practice manual for RDs, dietetic technicians, registered, and allied health professionals. This care manual is available for adult, pediatric, and sports nutrition. This manual provides current evidence- and knowledge-based nutrition information.</td>
</tr>
<tr>
<td>American Diabetes Association</td>
<td>The American Diabetes Association provides practice resources for physicians, nurses, diabetes educators and other healthcare professionals, and students with reliable, scientifically verified information, data on diabetes, the most current information about breakthroughs in diabetes research and treatment options.</td>
</tr>
<tr>
<td>American Heart Association, American Stroke Association</td>
<td>The American Heart Association and American Stroke Association publish medical scientific statements on various cardiovascular disease and stroke topics. Also provided are the following: heart and overall health eating guidelines, heart-smart shopping tips, healthy cooking tips, heart-healthy recipes, and cookbooks. Health Guides for consumer publications with information on increasing physical activity, maintaining a healthful weight and improving overall heart health is available as well.</td>
</tr>
<tr>
<td>Mosby’s Pocket Guide to Nutritional Assessment and Care, 6e, (Nursing Pocket Guides) by Mary Courtney Moore PhD, RN, RD, CNSN</td>
<td>Resource for all levels of nurses for performing thorough nutrition assessments and interventions. Material covered includes the following: importance of weight control and physical activity; health effects of overweight and obesity; cultural and ethnic nutrition; diet and lifestyle planning; the Nutrition Care Process; drug-nutrient interactions; nutrition interventions and education; and enteral and parenteral nutrition support.</td>
</tr>
</tbody>
</table>
The Academy of Medical Surgical Nurses (AMSN) provides resources of evidence-based practices and tools on nutrition to help improve patients’ outcomes. Information is available through nutrition-related journal articles and the “Nutrition to Improve Outcomes” column in the official member newsletter that will help improve patients’ outcomes in practice.

Nutrition Essentials for Nursing Practice by Susan G. Dudek

Reference for all levels of nurses covering the importance of nutrition in nursing practice and what is nutrition knowledge is necessary. While focusing on nursing practice, evidence-based practice, nutrition recommendations, and patient education is covered.

Nutrition for Health and Health Care by Linda K. DeBruyne, Kathryn Pinna, and Sharon R. Rolfes

Text specific for nursing and other health care students for the clinical nutrition and/or diet therapy nutrition course. Material covered include the following: basic nutrition concepts and clinical topics organized by organ systems; linking nutrition to different disease states such as diabetes, renal disease, and liver disorders; and clinical practice guidelines for addressing nutrition concerns and incorporating nutrition into care plans.

While commonly used sources are helpful, significant improvement in provider knowledge and patient care could be achieved with a standardized set of materials. For instance, the risk for aspiration in patients with dysphagia can be minimized by appropriate nutrition interventions, but there are many differences in terminology and clinical standards addressed in the commonly used materials (Cook, 2003; Matthers-Schmidt, 2003; Stroud, 2002; McCullough, 2001). Regarding dysphagia nutrition therapy, Geil, Ryker, and Lloyd (1996) reported that dietitians and dysphagia specialists were using 40 different terms for describing solid textures and 18 different terms for defining viscosity of liquids. This example illustrates the extreme variation amongst terms and standards making continuum of care across healthcare facilities nearly impossible (Academy, 2014d).

The descriptions of these sources were taken from the websites administered by Amazon, MedSurg Nursing, The Academy of Nutrition and Dietetics, The American Diabetes Association, The American Heart Association, and The American Stroke Association and various other sources.

While the publication of the National Dysphagia diet appears to have been the first step taken in standardizing dietary definitions, the diet has not been universally implemented. A 2006 survey identified that only 30% of respondents had implemented the National Dysphagia diet in their organizations (Academy, 2014d; National Dysphagia Diet Task Force, 2002). The Academy (2014d) reported that facilities had not implemented standards because they (1) used a modified version of the diet; (2) used the diet with different terminology or used more descriptive terminology; (3) did not use the same levels or numbers; (4) continued to use the prior dysphagia diet; (5) used custom individualized written diets for patients; (6) used institution-specific diets; (7) used SLP specific diets; (8) followed corporate diet mandates; or (9) did not have set protocols or policies on dysphagia. The National Dysphagia Diet Task Force, composed of ASHA and Academy members, declined to make changes in the diet, because there was a lack of evidence-based research after examination of new studies and information (Academy, 2014d).

**The Alliance to Advance Patient Nutrition (Alliance)**

The Alliance to Advance Patient Nutrition (Alliance) is making efforts to streamline nutrition principles in health care settings. The Alliance, made public in 2013, is an interdisciplinary association composed of members from The Academy of Medical-Surgical Nurses, The Academy of Nutrition and Dietetics, The Society of Hospital Medicine, and Abbott Nutrition (Alliance to Advance Patient Nutrition [Alliance], 2013b; Tappenden et al., 2013). The members include over 100,000 healthcare professionals,
such as dietitians, nurses, and both hospital physicians and other physicians (Alliance, 2013b).

The Alliance is, “dedicated to the advancement of effective hospital nutrition practices through identification of malnutrition and patients at risk for malnutrition, early nutrition intervention and treatment, and inclusion of nutrition as a standard component of all care processes” (Tappenden et al., 2013, pg.148). The purpose of the Alliance (2013b) is to raise awareness on how medical outcomes can be positively impacted by proper nutrition, and to provide tools and resources to be used by hospitals for effective nutrition practices (Alliance, 2013b). The Alliance’s mission is to ultimately, “transform patient care through the power of prescriptive nutrition” (Alliance, 2013b).

The Alliance emphasizes that malnutrition continues to be unrecognized and untreated in many hospitalized patients (Alliance, 2013b). One in three patients who are seen at hospitals are already malnourished, which puts the patient at risk for a poor outcome, hospital-acquired health conditions, and longer lengths of stay (Alliance, 2013b; Tappenden et al., 2013b). A nutrition intervention for malnourished patients is a low-risk, cost-effective strategy, that would improve quality of hospital care. But such an intervention would require, “interdisciplinary nutrition partnerships,” and, “integration of comprehensive strategies to prevent or treat hospital malnutrition” (Tappenden et al., 2013).

The Alliance has published a consensus paper which overviews malnutrition and the critical role of nutrition-intervention in clinical care, and also provides recommended steps to improve patient outcomes (Tappenden et al., 2013). Most importantly, the
Alliance offers a Nutrition Care Model (Figure 1) to drive the improvement of nutrition. This model emphasizes six principles and the translation of these principles into a practical interdisciplinary nutrition care algorithm, which is shown in Figure 2. The first principle is to create an institution culture by making nutrition a priority. To further this principle, the Alliance stresses that nutrition and nutrition education improves patients’ outcomes; nutrition treatment plans should be addressed with the same consistency and rigor as other therapies, and that hospital administrators will achieve a financial benefit by providing optimal nutrition care (Tappenden et al., 2013). The second principle is to redefine clinicians’ roles to include nutrition care. To do this, the Alliance recommends that dietitians have the power to order diets and provide oral nutrition supplements, vitamins, and calorie counts. This will eliminate inefficacies and prevent delays in food and/or nutrient delivery. Also, nutrition should be included in the daily problem list for a patient, and providers should work together as a team on nutrition goals. Furthermore, nurses should learn nutrition risk factors, be empowered by hospital policies to provide nutrition care, because prompt nursing action can reduce malnutrition (Tappenden et al., 2013). The third principle is to recognize and diagnose all patients at risk by using validated screening tools and ensure accountability for malnutrition identification by becoming familiar with the Academy and A.S.P.E.N characteristics for identification and documentation of malnutrition. They should also add specific electronic health record fields for the Academy and A.S.P.E.N. malnutrition characteristics so that there is clear communication to the health care team (Tappenden et al., 2013). The fourth principle is to rapidly implement comprehensive nutrition interventions and continued monitoring by
making prompt nutrition intervention for all malnourished patients a high priority. For example, a hospital should establish a policy to feed patients within 24 hours of an “at-risk” screen, establish a process that is triggered upon a positive screening in EHR, and monitor patient’s food and oral nutritional supplement consumption (Tappenden et al., 2013). The fifth principle is to communicate nutrition care plans by formally documenting nutrition care in the center of the medical record or in the EHR, and ensure care discussions include nutrition (Tappenden et al., 2013). The sixth principle is to develop a discharge nutrition care and education plan by including nutrition information in the discharge plan, educating patients and families/caregivers, and communicating with the patient’s health care providers (Tappenden et al., 2013). Notably, the Alliance has created a helpful downloadable toolkit that includes resources for clinicians such as screening tools, feeding tips, fact sheets, case studies, and patient discharge materials (Alliance, 2013b).
Figure 1: The Alliance Nutrition Care Model. Adapted from “Alliance Nutrition Care Model and Toolkit,” by The Alliance to Advance Patient Nutrition [Alliance], 2013a.
CHAPTER III

METHODOLOGY

Study Design

This study was a quantitative, comparative, descriptive, post-test only design approved by Kent State University’s Internal Review Board (Appendix A). The purpose of this study was to assess self-reported nutrition-related education, knowledge, and roles in feeding assistance by nurses in the state of Ohio. The independent variable, type of nurse, formed three grouping variables (registered nurse (RN), licensed practical nurses (LPN), and advanced practice registered nurses (APRN)). The dependent variable measured was the summed diet knowledge score for therapeutic and modified diets (regular/house; cardiac/heart healthy; low salt; low sodium; carbohydrate consistent; renal; nothing by mouth (NPO); clear liquids; full liquids; fluid restrictions; dental soft; mechanically altered; puree; and modified liquids).

Sample

A stratified sample of actively licensed Ohio RNs, LPNs, and APRNs willing to complete an electronic questionnaire made available through the Kent State University Qualtics website was utilized. RNs, LPNs, and APRNs are each defined by the ORC Chapter 4723 of the Nurse Practice Act. RNs are defined as “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a registered nurse” (ORC, 2012). LPNs are defined as “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a licensed
practical nurse” (ORC, 2012). APRNs are defined as “a certified registered nurse anesthetist, clinical nurse specialist, certified nurse-midwife, or certified nurse practitioner” (ORC, 2012). A “certificate of authority” is a certificate issued to an APRN by the OBN when all requirements of the board have been completed (ORC, 2012).

Participants were recruited through the utilization of an email list serve of all currently licensed nursing professionals in Ohio made available by the OBN and Public Information Request Tracking (PIRT). Emails were not delivered separately to APRNs since they are also registered as RNs. Access links to the questionnaire were successfully delivered by email to 106,633 Ohio nurses (56,101 RNs; 50,532 LPNs). A link to the survey was also available to all Ohio Nursing Association members who received the electronically delivered monthly membership newsletter for February, 2013 (Appendix B). When participants clicked on the survey access links, they were first directed to the informed consent page (Appendix C) which included an introduction, study purpose, procedures, and informed consent. When participants choose to continue with the study the “Agree” option was clicked. This documented informed consent and advanced participants to the questionnaire.

Participants who reported holding active licenses as RNs, LPNs, or APRNs, in Ohio, were included in this study. Those excluded from this study, were those participants who held a degree in nutrition; who did not provide their current type of nursing licensure; and those who did not complete the majority of the questionnaire.
**Instrument**

An online electronic version of the Nursing Focused: Nutrition-Related Education, Knowledge, & Participation Questionnaire available through the Kent State University Qualtics website was utilized in this study (Appendices D and E). Appendix D exhibits the questionnaire utilized by the researcher, in which Part III contained titles for differentiation of each diet and the correct responses for each diet statement. Appendix E displays the questionnaire received by the participants, where these titles and answers were omitted. This questionnaire was developed by the researcher using advisement and concepts from previous studies (Cutler, 1986; Lindseth, 1997; Mowe et al., 2007; Park et al., 2010; Stotts et al., 1987; Vickstrom & Fox, 1976; Xia & McCutcheon, 2005).

**Part I: Demographics**

Part I of this questionnaire utilized 11 questions for the obtainment of participants’ demographic information, inclusion criteria, and classification of the independent variables or nurse type. Reported data for holding a nutrition-focused degree and undetermined nurse type pulled out the participants who were excluded. Demographic data was attained through closed-ended questions for the following areas: age; gender; type of employment (full-time; part-time; per diem; not currently employed); highest nursing degree earned; and whether a nutrition degree was obtained. Demographic data gathered through use of closed-ended questions with the option of elaboration by participants included: type of nurse; number of years in practice; type of practice setting; type of practice area; obtainment of additional non-nursing degrees;
completion of special certifications. Concepts were used from previous studies regarding demographic characteristics of nursing professionals (Park et al., 2010; Stotts et al., 1987; Vickstrom & Fox, 1976).

**Part II: Nutrition-Related Education**

Part II totaled 22 questions, divided into two subcategories to examine nutrition-related education specific to nursing program curriculum and continuing education (CE). Concepts were used from previous studies regarding nursing nutrition-related education characteristics (Cutler, 1986; Lindseth, 1997; Mowe et al., 2007; Park et al., 2010; Stotts et al., 1987; Vickstrom & Fox, 1976).

**Nursing program curriculum.** The nursing program curriculum subcategory totaled nine questions. Data was obtained through closed-ended questions for the following: completion of nutrition course; offerings of nutrition elective courses; nutrition-focused courses offered solely, integrated, or both; coverage of therapeutic diets, modified diets, and feeding assistance; and perception on preparation to answer patient questions in regard to therapeutic and modified diets. Closed-ended questions with the option of elaboration by the participant were utilized for: number of clinical hours practicing only nutrition; and recollection of textbooks/manuals/handbooks titles used for nutrition-related education within nursing programs.

**Continuing education (CE).** The CE subcategory consisted of 13 questions that examined CE topics specific to therapeutic diets, modified diets, and meal assistance. Closed-ended questions were utilized for the following information focusing on
therapeutic diets, modified diets, and meal assistance: perception of becoming better prepared to work with patients after completion of CE courses; perception of employer provided handbooks/manuals/guidelines/standards offering adequate information on these topics; and participants perception of current preparation to assist patients with therapeutic diets, modified diets, and during meals. Closed-ended questions with the option of elaboration by participants were utilized for: completion and number of hours of CE courses covering therapeutic diets, modified diets, and feeding assistance; titles of employer provided handbooks/manuals/guidelines/standards; employer provided in-service training covering therapeutic diets, modified diets, and meal assistance and material topics discussed.

**Part III: Diet Knowledge**

Part III consisted of 56 total statements of 14 subcategories of commonly used diets in healthcare settings to examine nurses’ knowledge of these diets (regular/house diet; cardiac/heart healthy diet; low salt diet, low sodium diet; carbohydrate consistent diet; renal diet; NPO; clear liquid diet; full liquid diet; fluid restriction; dental soft diet; mechanically altered diet; puree diet; and modified liquids).

There were four statements for each diet subcategory which were developed by using patient education resources as a foundation. Resources were used from the Academy Nutrition Care Manual which is one of the most often used online diet manuals in healthcare settings (Academy 2012a; 2012b; 2012c; 2012d; 2013c; 2013d; 2013e; 2013f; 2013g; 2013i; 2013j; 2013k; 2013l; 2013m; 2013n; 2013o; 2013p; 2013q; 2013r; 2013s; 2013t; 2013u; 2013v; 2013x; 2013y 2013z; 2013bb; 2013cc; 2013dd; 2013ee;
2013ff; 2013ii; 2013ll; 2013mm; 2014a; 2014d). This concept was used to ensure evaluation of nurses’ ability to demonstrate their knowledge in relation to the information patients received who were prescribed these diets.

All diet knowledge statements were given a five minute time restriction and were asked through closed-ended questions. Participants had the option of selecting “Agree”, “Disagree” or “I don’t know” for their response to the statement. The “I don’t know” option was included to reduce bias induced by guessing, a concept used by Park et al., (2010), and taken into consideration when responses were scored. This concept is based on the assumption that those nurses who “don’t know” are also “unaware” of the “correct response at the time of data collection” (Park et al., 2010). Responses to the diet knowledge questions were scored as follows: correct response = 1, incorrect response = 0, and “don’t know” = 0 (Park et al., 2010). A summed score was determined to evaluate the nurses’ overall knowledge of each of the 14 diet subcategories.

**Part IV: Meal Assistance**

Part IV consisted of 11 total questions which examined the frequency of nurses assisting in different meal or feeding situations. This section consisted of all closed-ended questions with responses based on a five point Likert Scale. Participants had the option to select the following responses: “Very Rarely”, “Sometimes”, “Often”, “Almost Always”, and “All the Time”. Questions were developed to gather data on nursing participation frequency in assisting patients in the following areas: before and during meals; ordering meals; making snack and beverage choices; and retrieving snacks and beverages. Frequency of participants were also examined on the following: asked
questions regarding prescribed diets; providing education on prescribed diets to patients and/or family; approving foods items not normally recommended on prescribed diets of patients; and allowing patients to exceed their daily restrictions. Concepts were used from a previous study regarding meal assistance provided by nurses (Xia & McCutcheon, 2005).

**Procedures**

The survey material was developed utilizing the Kent State University Qualtrics online-survey creation tool and was also available to participants through this website. The questionnaire was composed of four sections focusing on components of demographics, nutrition-related education, knowledge of therapeutic and modified diets, and participation in patient meal assistance. Totaling 100 questions, the questionnaire would typically take participants 15 – 20 minutes to complete in its entirety.

Participants were recruited through the utilization of an email list serve of all currently licensed nursing professionals in Ohio made available by the Ohio Board of Nursing (OBN) and Public Information Request Tracking (PIRT). The OBN provided the necessary codes for the list serves of the needed groups of licensed RNs and LPNs. Since APRNs are also registered as RNs it was not necessary to request a separate list serve. These codes were utilized in the submitted request to PIRT, which is contracted by OBN. PIRT fulfilled the request by electronically delivering the list serves held within Excel sheets.
The email list serves for currently active RN licensees were divided into two Excel sheets labeled Registered Nurse A (RNA) and Registered Nurse B (RNB) due to the large number of individuals listed. RNA contained 95,150 listed individuals and RNB with 87,376 individuals, combined totaling 182,526 listed active licensed RNs in the state of Ohio. The email list serve for currently active LPN licensees was held within one Excel sheet, totaling 58,333 listed active licensed LPNs in the state of Ohio. On all three Excel sheets, there were a number of individuals whom did not have an email address provided.

In the Qualtrics survey program the available email addresses were divided and entered into panels. A total of nine panels were created for RNs and seven panels were created for LPNs. Following this, all invalid and duplicated email addresses were removed. This left a total of 178,357 possible emails to be sent to RNs (93,206 from RNA; 85,151 from RNB) and a total of 55,658 possible emails to be sent to LPNs.

Upon approval by the Kent State University Institutional Review Board, a total of 106,633 (56,101 RNs; 50,532 LPNs) emails containing links to the questionnaire were successfully electronically delivered to participants. A link to the survey was also available to all Ohio Nursing Association members who received the electronically delivered monthly membership newsletter for February, 2013. Survey responses were collected for two weeks time and data was summarized in early March, 2014.
Data Analysis

Diet knowledge scores were downloaded from Qualtrics into an Excel spreadsheet, grouped by diet type, and summed for analysis. The sum of the diet knowledge score was calculated from a given minimal score of zero and a maximum score of four. Demographic data and diet knowledge summed scores were entered into the SPSS software version 19.0 (IBM, New York) with a p-value selected a priori 0.05 for significance. Descriptive statistics were utilized to describe frequencies, standard deviations, and means of participants’ responses for demographic data, nutrition-related education data, diet knowledge scores between groups and as a whole, and frequency in patient meal assistance.

Intergroup comparisons of summed diet knowledge scores were determined from an ANOVA. This was calculated from the three grouping levels (RN, LPN, APRN) of the independent variable, nurse type and the dependent variable which was summed diet knowledge score. This compared knowledge scores between groups and as a whole group. A post-hoc analysis using Bonferroni significance was used to assess the analysis to determine which means differed between the types of nurses by each diet to ensure validity between groups.
CHAPTER IV

JOURNAL ARTICLE

Introduction

Nursing staff are often the initial, and most prevalent, contact for patients in any doctoral care visit. Due to their direct interactions and communications with patients, nurses receive frequent requests for information regarding nutritional care (Gittens et al., 2012; Murphy & Girot, 2013; Vickstrom & Fox, 1976). This has led to the nursing staff often being referred to as, “informal nutrition educators”, “adjunct nutrition educators”, and “coordinators of health services” (Gittens et al., 2012; Vickstrom & Fox, 1976). In conjunction with a registered dietitian (RD), nurses are positioned to be key facilitators in the “application of nutrition in patient care” furthering the RD’s goal of patients “achieving life-style modifications through dietary behavior changes” (P. McKnight, personal communication, 2013-2014; Murphy & Girot, 2013; Xia & McCutcheon, 2005).

While it is evident that the roles of nurses in the nutritional care of patients has increased (Johnson, 2011; Xia & McCutcheon, 2005), it is not evident that nutrition is a subject matter in which nurses have received proper training and education. Nutrition is assumed to be a basic requirement in nursing education, however, basic nutrition content has decreased in nursing preparation courses due to a lack of standards, attempts to integrate nutrition into other courses, and elimination of stand-alone nutrition or diet therapy courses (Cutler, 1986; Johnson, 2011; P. McKnight, personal communication, 2013-2014; Stotts et al, 1987). There also continues to be a lack of current research on
nutritional educational strategies and their effectiveness on the modern day nurses overall knowledge of therapeutic and modified diets.

One of the important roles a nurse plays in the nutritional care of a patient is in the area of feeding (Johnson, 2011; Xia & McCutcheon, 2005). To be able to effectively implement a successful feeding program for a patient, a nurse must have received adequate training and education in therapeutic diets and modified diets. However, the recent concerns of nurses losing nutrition education has raised the question on whether these diets are being properly, and safely, implemented. There is a need for baseline data covering what nurses currently know about therapeutic and modified diets and how to properly implement the prescribed diet plans. The lack of this baseline data hinders the ability to develop much needed nutrition education guidelines and clarification on the responsibilities and roles nurses have in the nutritional care of patients.

Therefore, there is a definitive need for current research on this subject matter. It is vital that the knowledge of nursing professionals of different educational levels be measured in this area due to the inarguable fact they have the most impactful role in direct patient care. Their ability to influence patient nutrition-related behaviors by their encouragement and support also lends credence to this need.

The purpose of this study was to assess self-reported nutrition-related education, knowledge, and roles in feeding assistance regarding therapeutic and modified diets of nursing staff in Ohio. In the present study, the research hypothesis was that there would be a difference in the knowledge of therapeutic and modified diets between different
levels of nurses. This study will also describe current educational strategies regarding nutrition and nursing involvement in assisting patients with nutritional outcomes.

**Methodology**

**Study Design**

This study was a quantitative, comparative, descriptive, post-test only design approved by Kent State University’s Internal Review Board. The purpose of this study was to assess self-reported nutrition-related education, knowledge, and roles in feeding assistance by nurses in the state of Ohio. The independent variable, type of nurse, formed three grouping variables, registered nurse (RN), licensed practical nurses (LPN), and advanced practice registered nurses (APRN). The dependent variable measured was the summed diet knowledge score for therapeutic and modified diets (regular/house; cardiac/heart healthy; low salt; low sodium; carbohydrate consistent; renal; nothing by mouth (NPO); clear liquids; full liquids; fluid restrictions; dental soft; mechanically altered; puree; and modified liquids).

**Sample**

A stratified sample of Ohio actively licensed RNs, LPNs, and APRNs willing to complete an electronic questionnaire made available through the Kent State University Qualtrics website was utilized. RNs, LPNs, and APRNs are each defined by the Ohio Revised Code (ORC) Chapter 4723 of the Nurse Practice Act. RNs are defined as “an individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a registered nurse” (ORC, 2012). LPNs are defined as “an
individual who holds a current, valid license issued under this chapter that authorizes the practice of nursing as a licensed practical nurse” (ORC, 2012). APRNs are defined as “a certified registered nurse anesthetist, clinical nurse specialist, certified nurse-midwife, or certified nurse practitioner” (ORC, 2012).

Participants were recruited through the utilization of an email list server containing all currently licensed nursing professionals in Ohio made available by the Ohio Board of Nursing (OBN) and Public Information Request Tracking (PIRT). Emails were not delivered separately to APRNs since they are also registered as RNs. Access links to the questionnaire were successfully delivered by email to 106,633 Ohio nurses (56,101 RNs; 50,532 LPNs). A link to the survey was also available to all Ohio Nursing Association members who received the electronically delivered monthly membership newsletter for February, 2013. When participants clicked on the survey access links, they were first directed to the informed consent page which included an introduction, study purpose, procedures, and informed consent. When participants chose to continue with the study, the “Agree” option was clicked. This documented informed consent and advanced participants to the questionnaire.

Participants who reported holding active licenses as RNs, LPNs, or APRNs, in Ohio, were included in this study. Those excluded from this study, were those participants who held a degree in nutrition; who did not provide their current type of nursing licensure; and those who did not complete the majority of the questionnaire.
Instrument

An online electronic version of the Nursing Focused: Nutrition-Related Education, Knowledge, & Participation Questionnaire available through the Kent State University Qualtrics website was utilized in this study. This questionnaire was developed by the researcher using advisement and concepts from previous studies (Cutler, 1986; Lindseth, 1997; Mowe et al., 2007; Park et al., 2010; Stotts et al., 1987; Vickstrom & Fox, 1976; Xia & McCutcheon, 2005).

Part I: Demographics. Part I of this questionnaire utilized 11 questions for the obtainment of participants’ demographic information, inclusion criteria, and classification of the independent variables, or nurse type. Reported data for holding a nutrition-focused degree and undetermined nurse type pulled out the participants who were excluded. Demographic data was attained through closed-ended questions, as well as, through the use of closed-ended questions with the option of elaboration by participants. Concepts were used from previous studies regarding demographic characteristics of nursing professionals (Park et al., 2010; Stotts et al., 1987; Vickstrom & Fox, 1976).

Part II: Nutrition-related education. Part II totaled 22 questions, divided into two subcategories to examine nutrition-related education specific to nursing program curriculum and continuing education (CE). Questions for both subcategories contained both closed-ended questions and closed-ended questions with room for elaboration by the participant. Questions focused on gathering information on current strategies used regarding nutrition in nursing program curriculums and CE programs. Concepts were
used from previous studies regarding nursing nutrition-related education characteristics (Cutler, 1986; Lindseth, 1997; Mowe et al., 2007; Park et al., 2010; Stotts et al., 1987; Vickstrom & Fox, 1976).

**Part III: Diet knowledge.** Part III consisted of 56 total statements of 14 subcategories of commonly used diets in healthcare settings to examine nurses’ knowledge of these diets (regular/house diet; cardiac/heart healthy diet; low salt diet, low sodium diet; carbohydrate consistent diet; renal diet; NPO; clear liquid diet; full liquid diet; fluid restriction; dental soft diet; mechanically altered diet; puree diet; and modified liquids).

There were four statements for each diet subcategory which were developed by using patient education resources as a foundation. Resources were used from the Academy of Nutrition and Dietetics [Academy] Nutrition Care Manual which is one of the most often used online diet manuals in healthcare settings (Academy of Nutrition and Dietetics [Academy] 2012a; 2012b; 2012c; 2012d; 2013c; 2013d; 2013e; 2013f; 2013g; 2013i; 2013j; 2013k; 2013l; 2013m; 2013n; 2013o; 2013p; 2013q; 2013r; 2013s; 2013t; 2013u; 2013v; 2013x; 2013y 2013z; 2013bb; 2013cc; 2013dd; 2013ee; 2013ff; 2013ii; 2013ll; 2013mm; 2014a; 2014d). This concept was used to ensure evaluation of nurses’ ability to demonstrate their knowledge in relation to the information patients received who were prescribed these diets.

All diet knowledge statements were given a five minute time restriction and closed-ended questions were utilized. Participants had the option of selecting “Agree”,
“Disagree”, or “I don’t know”, as an answer that best fit their response to the statement. The “I don’t know” option was included to reduce bias induced by guessing, a concept used by Park et al. (2010), and taken into consideration when responses were scored. This concept is based on the assumption that those nurses who, “don’t know”, are also “unaware” of the “correct response at the time of data collection” (Park et al., 2010). Responses to the diet knowledge questions were scored as follows: correct response = 1, incorrect response = 0, and “don’t know” = 0 (Park et al., 2010). A summed score was determined to evaluate the nurses’ overall knowledge of each of the 14 diet subcategories.

**Part IV: Meal assistance.** Part IV consisted of 11 total questions which pertained to the frequency of participants partaking in assistance to patients during different aspects of feeding. These were all closed-ended questions based on a five point Likert Scale. Participants had the option to select the following responses: “Very Rarely”, “Sometimes”, “Often”, “Almost Always”, and “All the Time”. Concepts were used from a previous study regarding meal assistance provided by nurses (Xia & McCutcheon, 2005).

**Procedures**

The survey material was developed utilizing the Kent State University Qualtrics online-survey creation tool and was also available to participants through this website. The questionnaire was composed of four sections focusing on components of demographics, nutrition-related education, knowledge of therapeutic and modified diets,
and participation in patient meal assistance. Totaling 100 questions, the questionnaire
would typically take participants 15 – 20 minutes to complete in its entirety.

Participants were recruited through the utilization of an email list server of all
currently licensed nursing professionals in Ohio made available by the Ohio Board of
Nursing (OBN) and Public Information Request Tracking (PIRT). For the Ohio active
licensed nursing professionals, lists servers containing 182,526 RNs and 58,333 LPN
were provided. A separate list server for APRNs was not necessary to obtain since they
are also licensed as RNs. Email addresses were not available for every listed licensed
nurse, in addition, all invalid and duplicated email addresses were removed. This left a
total of 178,357 possible emails to be sent to RNs (93,206 from RNA; 85,151 from RNB)
and a total of 55,658 possible emails to be sent to LPNs.

Upon approval by the Kent State University Institutional Review Board, a total of
106,633 (56,101 RNs; 50,532 LPNs) emails containing links to the questionnaire were
successfully electronically delivered to participants. A link to the survey was also
available to all Ohio Nursing Association members who received the electronically
delivered monthly membership newsletter for February, 2013. Survey responses were
collected for two weeks’ time and data was summarized in early March, 2014.

Data Analysis

Diet knowledge scores were downloaded from Qualtrics into an Excel
spreadsheet, grouped by diet type, and summed for analysis. The sum of the diet
knowledge score was calculated from a given minimal score of zero and a maximum
score of four. Demographic data and diet knowledge summed scores were entered into the SPSS software version 19.0, (IBM, New York) with a p-value selected a priori 0.05 for significance. Descriptive statistics were utilized to describe frequencies, standard deviations, and means of participants’ responses for demographic data, nutrition-related education data, diet knowledge scores between groups and as a whole, and frequency in patient meal assistance.

Intergroup comparisons of summed diet knowledge scores were determined from an ANOVA. This was calculated from the three grouping levels (RN, LPN, APRN) of the independent variable, nurse type, and the dependent variable which was summed diet knowledge score. Knowledge scores were compared between separate groups and as a whole group. The overall total summed diet knowledge score across all nursing types is shown in Table 10. A post-hoc analysis using Bonferroni significance was used to assess the analysis to determine which means differed between the types of nurses by each diet to ensure validity between groups.

<table>
<thead>
<tr>
<th>Diet</th>
<th>( \bar{x} )</th>
<th>SD</th>
<th>( % (n)^3 )</th>
<th>% (n) ( ^4 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular/House</td>
<td>2.4</td>
<td>0.94</td>
<td>3.5(107)</td>
<td>9(271)</td>
</tr>
<tr>
<td>Cardiac</td>
<td>3.4</td>
<td>0.80</td>
<td>1.2(37)</td>
<td>51.7(1,563)</td>
</tr>
<tr>
<td>Low Salt</td>
<td>3.2</td>
<td>0.88</td>
<td>1.3(39)</td>
<td>44.8(1,354)</td>
</tr>
<tr>
<td>Low Sodium</td>
<td>3.2</td>
<td>0.90</td>
<td>1.8(53)</td>
<td>44.3(1,339)</td>
</tr>
<tr>
<td>Carbohydrate Consistent</td>
<td>2.2</td>
<td>1.14</td>
<td>8.2(247)</td>
<td>13.4(406)</td>
</tr>
<tr>
<td>Renal</td>
<td>2.1</td>
<td>1.05</td>
<td>8.1(245)</td>
<td>6.7(202)</td>
</tr>
<tr>
<td>NPO</td>
<td>3.5</td>
<td>0.90</td>
<td>4.4(133)</td>
<td>63.3(1,913)</td>
</tr>
<tr>
<td>Clear Liquids</td>
<td>2.5</td>
<td>0.88</td>
<td>5.3(159)</td>
<td>5.0(151)</td>
</tr>
<tr>
<td>Full Liquid</td>
<td>2.9</td>
<td>1.24</td>
<td>8.4(254)</td>
<td>42.9(1,295)</td>
</tr>
<tr>
<td>Fluid Restriction</td>
<td>2.7</td>
<td>1.05</td>
<td>6.0(182)</td>
<td>23.7(715)</td>
</tr>
<tr>
<td>Dental Soft</td>
<td>3.1</td>
<td>1.09</td>
<td>6.1(184)</td>
<td>43.9(1,328)</td>
</tr>
<tr>
<td>Diet Type</td>
<td>Score</td>
<td>Frequency Distribution</td>
<td>Maximum Score</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------</td>
<td>------------------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>Mechanically Altered</td>
<td>1.7</td>
<td>18.7(566)</td>
<td>4.9(147)</td>
<td></td>
</tr>
<tr>
<td>Puree</td>
<td>2.2</td>
<td>11.4(343)</td>
<td>16.8(509)</td>
<td></td>
</tr>
<tr>
<td>Modified Liquids</td>
<td>2.6</td>
<td>8.8(267)</td>
<td>23.2(700)</td>
<td></td>
</tr>
</tbody>
</table>

1. Scores of all nursing types (RN, LPN, and APRN) as a whole
2. Means of scores were summed by correct response=1; incorrect response=0; “I don’t know” = 0; minimum score possible=0; maximum score=4
3. Frequency distribution of participants who scored the minimum possible score=0 by answering 0 questions correct for that diet
4. Frequency distribution of participants who scored the maximum possible score=4 by answering 4 questions correct for that diet

**Results**

The purpose of this study was to examine the Ohio nursing staffs nutrition-related education and competency of therapeutic plans, with regard to therapeutic and modified diets. This study was completed to also describe the current educational strategies regarding nutrition and nursing involvement in assisting patients with nutritional outcomes.

A total of 106,633 emails were sent and successfully delivered to 56,101 RNs and 50,532 LPNs. A total of 3,974 responses were received from the survey access link available through the delivered emails and through the Ohio Nursing Association monthly membership newsletter. Exclusion criteria included those who held a nutrition degree (n=18). After exclusion, the final response rate to the questionnaire was 3.7% (n=3,956). In addition to the number of questionnaires completed, there was a combined nearly 400 additional emails and telephone calls regarding this study.

**Sample Characteristics**

Table 12 depicts the demographic distributions for the participants in this study. The majority of the population was female (n=2814, 93.1%), licensed as an RN (n=2048,
67.8%), working as full-time (n=1990, 65.9%) in an acute care setting (n=1558, 51.6%). Areas reported where participants were practicing in are shown in Appendix F. Of the participants, 75% (n=2,755) did not hold any additional non-nursing degrees, and 25% reported holding a non-nursing degree. There were slightly more participants who reported they did not hold a special certification then those who did (n=2,139, 59%; n=1,487, 41%, respectively).

Table 12. Demographic Data of Participants Completing the Nursing Focused: Nutrition-Related Education, Knowledge, and Participation Questionnaire (n=3,956)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>% (n)</th>
<th>x ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>46.7 ± 13.1</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6.1 (184)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>93.1 (2,814)</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN</td>
<td>67.8 (2,048)</td>
<td></td>
</tr>
<tr>
<td>LPN</td>
<td>28.2 (853)</td>
<td></td>
</tr>
<tr>
<td>APRN</td>
<td>3.7 (112)</td>
<td></td>
</tr>
<tr>
<td>Years in Practice</td>
<td></td>
<td>19.4 ± 13.95</td>
</tr>
<tr>
<td>Working</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>65.9 (1,990)</td>
<td></td>
</tr>
<tr>
<td>Part-time</td>
<td>16.1 (488)</td>
<td></td>
</tr>
<tr>
<td>Per Diem</td>
<td>6 (181)</td>
<td></td>
</tr>
<tr>
<td>Not Currently Employed</td>
<td>11.5 (349)</td>
<td></td>
</tr>
<tr>
<td>Practice Setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Care Hospital</td>
<td>51.6 (1,558)</td>
<td></td>
</tr>
<tr>
<td>Long Term Care</td>
<td>26.5 (802)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>19.2 (580)</td>
<td></td>
</tr>
<tr>
<td>Highest Degree Obtained in Nursing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certificate/Diploma</td>
<td>31 (1,121)</td>
<td></td>
</tr>
<tr>
<td>Associate Degree</td>
<td>22 (820)</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>32 (1,192)</td>
<td></td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>13 (485)</td>
<td></td>
</tr>
<tr>
<td>Ph.D./DNP</td>
<td>1 (51)</td>
<td></td>
</tr>
</tbody>
</table>

% = percentage as defined by frequency

**Significant Differences in Diet Knowledge Scores**

Table 13 shows the mean differences of summed diet knowledge scores between the three nursing type groups (RN, LPN, and APRN). Only two of the 14 types of diets
showed statistical significant differences between groups which were the dental soft diet and modified liquids. Post hoc analysis showed RNs scored significantly lower than LPNs in the dental soft diet (p=0.001). No difference was found between APRNs of either group. This was also found in modified liquid diet knowledge where RNs scored significantly lower than LPNs (p≤0.001), with no difference found with APRNs. Post hoc analysis showed a trend towards significant difference in the renal diet, where LPNs scored higher than the RNs (p=0.069).

For the overall summed diet knowledge score, post hoc analysis showed a trend towards statistical significance between RNs and LPNs (p=0.068), where again LPNs scored slightly higher than RNs. Although this trend was found, all three groups, RNs, LPNs, and APRNs, scored similarly (\( \bar{x} = 37.5 \pm 8.65; \bar{x} = 38.1 \pm 7.19; \bar{x} = 38.5 \pm 6.44 \), respectively).

Table 13. Mean Differences of Summed Diet Knowledge Score between Nursing Groups (n=3,956)

<table>
<thead>
<tr>
<th>Diet</th>
<th>Nurse Type</th>
<th>n</th>
<th>( \bar{x} )</th>
<th>SD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular/House</td>
<td>RN</td>
<td>2048</td>
<td>2.4</td>
<td>0.96</td>
<td>0.185</td>
</tr>
<tr>
<td></td>
<td>LPN</td>
<td>853</td>
<td>2.3</td>
<td>0.92</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APRN</td>
<td>112</td>
<td>2.5</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td>RN</td>
<td>2048</td>
<td>3.4</td>
<td>0.82</td>
<td>0.222</td>
</tr>
<tr>
<td></td>
<td>LPN</td>
<td>853</td>
<td>3.4</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APRN</td>
<td>112</td>
<td>3.5</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Low Salt</td>
<td>RN</td>
<td>2048</td>
<td>3.2</td>
<td>0.89</td>
<td>0.944</td>
</tr>
<tr>
<td></td>
<td>LPN</td>
<td>853</td>
<td>3.2</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APRN</td>
<td>112</td>
<td>3.2</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Low Sodium</td>
<td>RN</td>
<td>2048</td>
<td>3.2</td>
<td>0.92</td>
<td>0.242</td>
</tr>
<tr>
<td></td>
<td>LPN</td>
<td>853</td>
<td>3.2</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APRN</td>
<td>112</td>
<td>3.3</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Carbohydrate Consistent</td>
<td>RN</td>
<td>2048</td>
<td>2.2</td>
<td>1.15</td>
<td>0.433</td>
</tr>
<tr>
<td></td>
<td>LPN</td>
<td>853</td>
<td>2.2</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>Diet Type</td>
<td>RN</td>
<td></td>
<td></td>
<td>APRN</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Renal</td>
<td>112</td>
<td>2.3</td>
<td>1.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>2048</td>
<td>2.1</td>
<td>1.07</td>
<td>0.069**</td>
<td></td>
</tr>
<tr>
<td>Clear Liquids</td>
<td>853</td>
<td>2.2</td>
<td>1.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Liquids</td>
<td>112</td>
<td>2.2</td>
<td>0.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid Restriction</td>
<td>2048</td>
<td>2.7</td>
<td>1.07</td>
<td>0.285</td>
<td></td>
</tr>
<tr>
<td>Dental Soft</td>
<td>853</td>
<td>3.0</td>
<td>1.11</td>
<td>0.001*</td>
<td></td>
</tr>
<tr>
<td>Mechanically Altered</td>
<td>112</td>
<td>2.8</td>
<td>1.01</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td>Puree</td>
<td>2048</td>
<td>2.7</td>
<td>1.17</td>
<td>0.651</td>
<td></td>
</tr>
<tr>
<td>Modified Liquids</td>
<td>112</td>
<td>1.8</td>
<td>1.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>38.5</td>
<td>8.65</td>
<td>0.068**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Shows Post Hoc statistical significant difference where statistical significance was set at p≤0.05
** Shows Post Hoc trend toward significant difference
<table>
<thead>
<tr>
<th>Nutritional Knowledge Score Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated as a summed diet knowledge score where minimum score=0 and maximum score=4 for all diet types; correct response=1; incorrect response=0; “I don’t know”=0.</td>
</tr>
<tr>
<td>Shows all statistical significant differences were found between RNs and LPNs</td>
</tr>
</tbody>
</table>

**Nutrition-Related Education**

Nutrition-related education received from nursing programs and employers is shown in Table 14. The majority of participants reported taking a nutrition course.
(n=3,105, 86%) in their nursing program, however, 73% (n=2,620) reported nutrition elective courses were not offered in their program. Nutrition topics were reported by 47% (n=1,703) of participants as being integrated into other topics. The majority of participants reported therapeutic (n=2,771, 78%) and modified diets (n=2,751, 78%) and patient meal assistance were covered in the nursing program curriculum (n=2,338, 66%). On the other hand, this does not seem to be in balance with continuing education on these topics. Results showed that a minimal number of participants reported completion of continuing education courses specific to therapeutic diets (n=484, 16.6%) and modified diets (n=320, 10.6%). Even a smaller number reported completion of continuing education courses specific to assisting patients during meals (n=152, 5%).

<table>
<thead>
<tr>
<th>Nutrition-Related Education</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nursing Program Curriculum</strong></td>
<td></td>
</tr>
<tr>
<td>Took Nutrition Course(^1)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>86 (3,105)</td>
</tr>
<tr>
<td>No</td>
<td>14 (513)</td>
</tr>
<tr>
<td>Nutrition Elective Courses Offered(^1)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27 (983)</td>
</tr>
<tr>
<td>No</td>
<td>73 (2,620)</td>
</tr>
<tr>
<td>Nutrition Topics Covered As(^2)</td>
<td></td>
</tr>
<tr>
<td>Solely</td>
<td>24 (864)</td>
</tr>
<tr>
<td>Integrated</td>
<td>47 (1,703)</td>
</tr>
<tr>
<td>Both</td>
<td>28 (1,020)</td>
</tr>
<tr>
<td>Therapeutic Diets Covered</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78 (2,771)</td>
</tr>
<tr>
<td>No</td>
<td>22 (794)</td>
</tr>
<tr>
<td>Modified Diets Covered</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78 (2,750)</td>
</tr>
<tr>
<td>No</td>
<td>22 (780)</td>
</tr>
<tr>
<td>Meal Assistance Covered</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>66 (2,338)</td>
</tr>
<tr>
<td>No</td>
<td>34 (1,189)</td>
</tr>
<tr>
<td>Number of Clinical Hours Practicing Nutrition Only(^3)</td>
<td></td>
</tr>
<tr>
<td>0 hours</td>
<td>37 (1,294)</td>
</tr>
</tbody>
</table>
### Participation Frequency in Meal Assistance

“Very rarely” was the most frequently chosen response to assisting patients in all aspects listed on the questionnaire regarding patient meal assistance, as shown in Table 15. Participants more often reported “very rarely”, and “sometimes”, when being asked questions about a patient’s prescribed diet, (n=1,104, 39%; n=918, 33%, respectively), and educating the patient and/or their family about the diet (n=870, 31%; n=844, 30%, respectively). “Often” being asked questions (n=548, 19%) and educating about prescribed diets (n=687, 24%) was the second highest chosen response. Participants reported approving non-recommended food items on a prescribed diet “very rarely”
(n=2,174, 77%) and “sometimes” (n=485, 17%). Approving patients to exceed their daily restrictions for their prescribed diets was reported very rarely by 86% (n=2,408).

Table 15. Frequency Distributions of Nurses’ Assistance to Patients in Different Activities of Mealtime (n=3,956)

<table>
<thead>
<tr>
<th>Meal Activity</th>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (n)</td>
<td>% (n)</td>
<td>% (n)</td>
<td>% (n)</td>
<td>% (n)</td>
</tr>
<tr>
<td>Before Meals</td>
<td>55 (1,572)</td>
<td>20 (569)</td>
<td>15 (426)</td>
<td>5 (156)</td>
<td>5 (134)</td>
</tr>
<tr>
<td>During Meals</td>
<td>63 (1,794)</td>
<td>22 (614)</td>
<td>10 (269)</td>
<td>3 (72)</td>
<td>3 (77)</td>
</tr>
<tr>
<td>Ordering Meals</td>
<td>62 (1,739)</td>
<td>24 (685)</td>
<td>11 (299)</td>
<td>2 (57)</td>
<td>1 (41)</td>
</tr>
<tr>
<td>Making Snack Choices</td>
<td>55 (1,552)</td>
<td>28 (778)</td>
<td>13 (379)</td>
<td>3 (72)</td>
<td>1 (41)</td>
</tr>
<tr>
<td>Snack Retrieval</td>
<td>55 (1,559)</td>
<td>25 (708)</td>
<td>14 (387)</td>
<td>3 (89)</td>
<td>3 (72)</td>
</tr>
<tr>
<td>Making Beverage Choices</td>
<td>47 (1,324)</td>
<td>29 (820)</td>
<td>18 (506)</td>
<td>4 (103)</td>
<td>2 (63)</td>
</tr>
<tr>
<td>Beverage Retrieval</td>
<td>50 (1,405)</td>
<td>23 (645)</td>
<td>18 (515)</td>
<td>5 (138)</td>
<td>4 (108)</td>
</tr>
<tr>
<td>Snack Retrieval</td>
<td>55 (1,559)</td>
<td>25 (708)</td>
<td>14 (387)</td>
<td>3 (89)</td>
<td>3 (72)</td>
</tr>
<tr>
<td>Asked Questions on Diet</td>
<td>39 (1,104)</td>
<td>33 (918)</td>
<td>19 (548)</td>
<td>5 (127)</td>
<td>4 (125)</td>
</tr>
<tr>
<td>Educate on Diet</td>
<td>31 (870)</td>
<td>30 (844)</td>
<td>24 (687)</td>
<td>8 (229)</td>
<td>7 (202)</td>
</tr>
<tr>
<td>Approve Non-Recommended Foods</td>
<td>77 (2,174)</td>
<td>17 (485)</td>
<td>3 (98)</td>
<td>1 (30)</td>
<td>1 (23)</td>
</tr>
<tr>
<td>Approve Exceed Daily Restrictions</td>
<td>86 (2,408)</td>
<td>11 (307)</td>
<td>2 (61)</td>
<td>1 (18)</td>
<td>0 (7)</td>
</tr>
</tbody>
</table>

% = percentage as defined by frequency

1 Frequency distributions were based on a five-point Likert scale where Very Rarely=1; Sometimes=2; Often=3; Almost Always=4; All the Time=5

Perceptions of Participants

Frequency distributions of participants self-reported perceptions regarding preparation of therapeutic diets, modified diets, and patient meal assistance is exhibited in Table 16. Participants were evenly distributed on their feelings of preparation from their nursing program to answer patient questions regarding therapeutic and modified diets (50%). When asked how nurses currently felt, 87% (n=2,783) of participants reported they were more prepared to assist patients with these diets and 65% (n=2,091) felt prepared to assist patients during meals.
Table 16. Frequencies of Nurses’ Self-Reported Perceptions on Preparation of Therapeutic Diets, Modified Diets, and Patient Meal Assistance (n=3,956)

<table>
<thead>
<tr>
<th>Perceptions</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared to Answer Questions about Therapeutic &amp; Modified Diets</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>50 (1,756)</td>
</tr>
<tr>
<td>No</td>
<td>50 (1,761)</td>
</tr>
<tr>
<td>Therapeutic/Modified Diet CE Courses Better Prepared Participants in Working with Diets</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18 (605)</td>
</tr>
<tr>
<td>No</td>
<td>3 (98)</td>
</tr>
<tr>
<td>Have not completed CE courses</td>
<td>80 (2,748)</td>
</tr>
<tr>
<td>Therapeutic/Modified Diet CE Courses Better Prepared Participants in Working with Diets</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (204)</td>
</tr>
<tr>
<td>No</td>
<td>2 (72)</td>
</tr>
<tr>
<td>Have not completed CE courses</td>
<td>92 (3,130)</td>
</tr>
<tr>
<td>Handbooks/Manuals/Guidelines/Standards on Therapeutic/Modified Diets Provided Adequate Information</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>44 (1,241)</td>
</tr>
<tr>
<td>No</td>
<td>56 (1,598)</td>
</tr>
<tr>
<td>Handbooks/Manuals/Guidelines/Standards on Patient Meal Assistance Provided Adequate Information</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28 (753)</td>
</tr>
<tr>
<td>No</td>
<td>72 (1,932)</td>
</tr>
<tr>
<td>Currently Feel Prepared to Assist Patient with Therapeutic and Modified Diets</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65 (2,091)</td>
</tr>
<tr>
<td>No</td>
<td>35 (1,135)</td>
</tr>
<tr>
<td>Currently Feel Prepared to Assist Patients During Meals</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>87 (2,783)</td>
</tr>
<tr>
<td>No</td>
<td>13 (428)</td>
</tr>
</tbody>
</table>

% = percentage as defined by frequency

Discussion

The research hypothesis stated that the nursing staff levels examined would have different knowledge levels concerning therapeutic and modified diets. This hypothesis was partially accepted due to the findings of the current investigation. This investigation examined, and compared, three types of nursing professionals’ knowledge of therapeutic
and modified diets commonly used within healthcare settings in Ohio. The findings of this investigation indicated: 1.) a significant difference in diet knowledge between RNs and LPNs for two diets (dental soft and modified liquids); and 2.) that overall, regardless of nurse type, diet knowledge scores for all diet types were low.

This study’s findings demonstrated that LPNs were statistically significantly more knowledgeable than RNs in regards to both the dental soft and modified liquids diets. This result could occur because LPNs may have more experience with modified textured foods, as they are more prevalent in long term facilities. Overall, diet knowledge scores were low for all diets types across all education levels of RNs, LPNs, and APRNs, a result that was not expected by the researcher. The summed diet knowledge score for all nurses’ who participated in this study was 37.7±8.19, indicating that education on therapeutic and modified diets is lacking.

Therapeutic diets are part of the intervention used to manage chronic diseases. However, positive outcomes of therapeutic diets are only effective if they are consumed and implemented properly (ADA, 2005b). Nurses are in frequent contact with patients and play a primary role in patient acceptance of nutrition care Therefore, nurses need to be aware of the role that nutrition care provides to patients (Whitney et al., 2001). The ranking of therapeutic diets from highest to lowest overall determined by the summed knowledge scores from this study are as follows: NPO, cardiac, low salt, low sodium, full liquid, fluid restrictions, clear liquids, regular/house, carbohydrate consistent, and renal.
The low knowledge scores suggest that these interventions are not being properly implemented, further hindering the management of chronic diseases.

Modified diets are used to alter the consistencies, textures, or viscosities in foods to provide safe swallowing practices, as well as, to help prevent a negative impact on the health and nutrition status of patients (ASHA, 2009; Whitney et al., 2001). Consequences of not following swallowing precautions and recommendations can range from discomfort, to malnutrition, choking, aspiration, or death (ASHA, 2009; Swigert, 2007). The ranking of modified diets from highest to lowest overall based on summed knowledge scores are as follows: dental soft, modified liquids, puree, mechanically altered diet. The results displaying nurses low scores on all modified diets are especially concerning because the patient’s safety is at risk.

Only nine percent of nurses answered all four questions for the regular/house diet correctly. A result that was not expected by the researcher. This finding coincides with the findings of Vickstrom & Fox (1976), where nurses were possessed more experience with regards to special diets. Vickstrom & Fox (1976) suggested these findings may be attributed to the greater emphasis placed on the role nutrition contributes when part of a patient’s care plan when on a therapeutic or modified diet. The nutrition status of patients on a regular/house diet is often overlooked, most likely because the role nutrition plays in the treatment of all patients may not be realized (Phillips, 1967; Vickstrom & Fox, 1976).
The OBN still requires nutrition content in nursing program curriculums. However, because it can be integrated into other nursing topics, many programs have eliminated the stand alone nutrition course. This elimination began when nurses of different education program levels were performing equally well on the NCLEX-RN licensure exam (Johnson, 2011). Nevertheless, this similarity in scoring should be expected, because all nursing educational pathways lead to the same licensure exam, measuring the minimum standards for safe practices (Johnson, 2011). Additionally, the number and type of questions vary greatly, and are dependent on the nurse’s score, making it a poor standard for measuring nutritional knowledge of nurses (Johnson, 2011).

This study displays the effects that have occurred due to the reduction, and integration of, nutrition content in nursing educational strategies. In 1976, though they showed a low degree of certainty with their answers, nurses answered 77% of questions regarding foods allowed or restricted on therapeutic diets correctly (Vickstrom & Fox, 1976). This present day study, showed a decrease in modern day nurses’ knowledge, which can be attributed to the decrease in nutrition education and the lack of continued training across all nursing types.

This study confirmed an increase in the integration of nutrition topics by nursing programs. While therapeutic diets, modified diets, and assistance during mealtimes were covered in nursing programs, it is more likely these were not primary topics focused on to obtain a degree. Therefore, the actual number of hours spent on nutrition content in nursing program curriculums is unknown, further raising concerns that nutrition content
is becoming lost in the other topics. Cutler (1986) found considerable variations in the amount of hours actually spent covering nutrition topics when they were integrated into other nursing courses, though none were close to the equivalence of a three-credit semester course. Not only is nutrition content minimal in the classroom, but this present study confirms that exposure during practice hours is also minimal. Studies have shown that nursing programs have reduced the time designated to nutrition only in clinical practice, as compared to the average 3.3 hours spent on nutrition in 1987 (Stotts et al., 1987). This suggests that actual application and implementation of these concepts are undesirable due to a lack of practical experience, training, and continuing education.

Self-reported frequency of assistance in different meal activities was low in this study, which was not expected by the researcher. Previous research suggested reasons for this included workload, as well as, confusion of roles and responsibilities in this area (Bjerrum, Tewes, & Pederson, 2012; Kim & Choue, 2009; Kowanko, Simon, & Wood, 1999). However, findings of this present investigation, showed that nurses require assistance in these areas because they are lacking the knowledge required. In turn, the lack of knowledge is due to the deficiency in education, continued training, and adequacy of materials being provided.

The controversial nature of this study was another outcome that was unexpected by the researcher. There were nearly 400 additional responses, both in the form of emails and telephone calls, from nurses to help demonstrate the controversy. The nurses’ responses showed the wide spectrum of opinions regarding this research topic. While
many nurses were supportive of this research, whether expressing gratitude for examining nutrition as a topic, providing personal experiences, or offering informative reasons for their not taking the study, there were many nurses who were weary of this study, and were unwilling to participate. Their reasons included a misunderstanding of licensure, and a fear that tests would develop additional workload and/or having their licensure removed. This present study suggests there is currently an imbalance between the importance of nursing and their role in the nutritional care of patients.

Applications

Since 1967, nurses have expressed their dissatisfaction with their experiences during nutrition and diet therapy education (Newton et al., 1967). To this day, their dissatisfaction continues to be problematic in formulating nutrition educational strategies for nurses. Insufficient nutrition education leads to inadequate nutrition knowledge, which in turn can cause negative attitudes towards nutrition. If this occurs, there is the possibility for escalation into insufficient nutritional care putting patients’ health at risk (Mowe et al., 2007; Vickstrom & Fox, 1976). To stop this cycle, opportunities for nurses to gain knowledge on nutrition must be available. The knowledge gained will lead to an increase in confidence, which can then lead to an overall improvement in the nurses’ attitudes toward the importance of nutritional care for patients (Cadman & Findlay, 1998; Pederson, Tewes, & Bjerrum, 2012; Kowanko, Simon, & Wood, 1998; Mowe et al., 2007; Vickstrom & Fox, 1976).
The first step should be addressing the inaccuracy of nutrition educational strategies being delivered. Although previous literature has referred to nursing staff as being, “adjunct nutrition educators,” they are currently lacking the necessary base knowledge to properly implement therapeutic and modified diets. Their lack of knowledge could be secondary to nurses having not received practical nutrition education used in actual practice situations in their curriculum or during their nursing practice. When nutrition is integrated into other topics, its impact and importance is diminished (D. Herazo, personal communication from P. McKnight, 2013). It is expected that if the trend of eliminating stand-alone nutrition courses continues in the United States, an RN could progress from an associate nursing degree to doctor of nursing practice without ever taking a nutrition course by an instructor (D. Herazo, personal communication from P. McKnight, 2013; Johnson, 2011). This present study highlights the need to reevaluate the integration of nutrition concepts into other courses. The Academy has proposed that continuing education may assist health care professionals who had limited basic nutrition in their academic curriculum, however, this continuing education is currently not available to nursing professionals (ADA, 1991). It can be reasoned that increasing time devoted to nutrition in nursing educational strategies, could enhance the, “general availability of nutrition in clinical settings and improve the quality of nutrition information provided to the public” (ADA, 1991, pg. 612).

This present study also highlights the need to identify priorities within nutrition content that ought to be covered in nursing program curriculums, continuing education, and resources. These priorities are needed in order to develop standards for these three
educational pathways. Developing and implementing these standards would ensure that modern day nurses are receiving sufficient education. During the development of these standards, the following should be kept in mind: (a) the inclusion of content related to therapeutic diets, modified diets, and patient meal assistance, (b) reinstating stand-alone nutrition courses as a requirement in nursing program curriculum, (c) establishing the amount of hours where nutrition content is to be solely covered in both classroom, clinical practice, and continuing education courses, (d) having nutrition content delivered in all areas by RDs.

In a previously posted position statement, the Academy emphasized that dietetic professionals are the individuals needed to deliver nutrition based services. Furthermore, they ought to be prepared to be an effective member of a multidisciplinary care team (ADA, 1991). The Academy has also stated that other healthcare professionals, including nurses, should recognize that nutrition is an important component in patient care, especially with respect to health promotion, disease prevention, and disease treatment (ADA, 1991). An important component for the success of these standards is following through with the collaboration of nursing professionals and dietetic professionals. The findings presented in this investigation show that collaborative care is not happening because, “getting our people to work with their people and getting movement at higher levels of leadership between nursing and dietetics has failed” (D. Herazo, personal communication from P. McKnight, 2013). Communication between nurses and dietitians is essential for adequately implementing nutritional care. Therefore, this study points out the need for these two professions to sit down and work out a plan of action. Taking
action in the direction of this goal would be the first step in creating greater satisfaction towards nutrition education experiences and emphasize the importance of providing collaborative care.

Dietetic professionals need to recognize the necessity of actively being involved in the nutritional education of all health care professionals. Additionally, they need to be the ones involved in teaching all healthcare professionals the importance of nutrition and its role in health promotion and disease prevention (ADA, 1991). Furthermore, dietetic professionals need to be active in the development and implementation of nutrition educational strategies for other health care professionals (ADA, 1991).

This present research has also demonstrated the need for the development of standardized nutrition care pathways, as well as, terminology needs higher priority. Types of therapeutic and modified diets and their components need to be defined across all health care settings. These standards and terminology definitions should not differ from acute care settings to long term settings. The differences in interpretation is only impeding the effectiveness of health care professions education and their understanding of the diets. Which in turn is further hindering the continuum of care for patients, patient safety, and patient understanding of their prescribed diets.

This is the first study known that has examined nursing staffs’ knowledge of the diets commonly prescribed in healthcare settings within the United States. Therefore, reevaluating nutrition educational strategies of all healthcare professionals and the development of standardized terminology for therapeutic and modified diets should be
further investigated. Furthermore, future studies should determine the current presence of RDs in the educational settings of healthcare settings. Steps taken in these areas would create stronger communication, which would further enhance the quality of nutritional services being provided to patients and their needs. This in turn would create a stronger health care system across the country (ADA, 1991).

Limitations

This study has several limitations. Firstly, the survey was only available to participants for two weeks. Many participants responded they were interested in the study but were unable to complete it before it closed. Also, although researchers were provided email addresses for actively licensed Ohio nurses, information to determine who was actively practicing at the time was unavailable. This topic was found to be controversial among Ohio nursing professionals which may have caused participants from declining to participate in this study.

There are limitations associated with the questionnaire used in this study. The validity of this questionnaire is a limitation because it was developed by the researcher and the reliability of this questionnaire has not been tested. Although participants were asked whether therapeutic diets, modified diets, and feeding assistance were covered in their nursing program curriculum, information of what components of these were covered was not asked. This should be investigated in future studies. Additionally, the questionnaire did not include “never” or “non-applicable” on the five-point Likert scale while asking about the frequency of participation in feeding assistance. This may have
skewed results in this area due having to choose “very rarely”. This could have made a
difference in those who work late shifts or in settings where snacks or beverages are not
available.

Lastly, terminology and standards of diets are not continuous across all health
care facilities causing many facilities to interpret diets differently. This could be in terms
of amounts of nutrients being restricted, or whether a facility follows a more liberalized
approach to therapeutic and modified diets. This may have caused differentiation in
answering statements on the diets in this study.

**Conclusion**

In conclusion, this study demonstrated the overall therapeutic and modified diet
knowledge among all educational levels of nurses is poor. This lack of knowledge is
secondary to the lack of nutrition education and practice specific to therapeutic and
modified diets provided to this profession. Possibly more concerning, nurses scored
especially low on modified diets putting patient safety at risk. All educational levels of
nursing need nutrition-related educational strategies to be revised in order to instill a
strong knowledge base and perceptions of nutrition and its importance in the care of
patients. These findings also suggest nursing and dietetic professionals need to come
together to ensure collaborative care is being provided to patients across all healthcare
settings.
APPENDICES
APPENDIX A
IRB APPROVAL
APPENDIX A
IRB APPROVAL

IRB Level I, category 2 approval for Protocol application #14-117 - please retain this email for your records

RAGS Research Compliance < researchcompliance@kent.edu>       Wed, Feb 26, 2014 at 12:10 PM
To: "CAINE, NATALIE" <ncaine@kent.edu>, "pgonzi@kent.edu" <pgonzi@kent.edu>

RE: Protocol #14-117 - entitled “Assessment of Nursing Staffs' Self-Reported Nutrition-Related Education, Knowledge, and Roles in Feeding Assistance Regarding Therapeutic and Modified Diets”

The Kent State University Institutional Review Board has reviewed and approved your Application for Approval to Use Human Research Participants as Level I/Exempt from Annual review research. Your research project involves minimal risk to human subjects and meets the criteria for the following category of exemption under federal regulations:

Exemption 2: Educational Tests, Surveys, Interviews, and Public Behavior Observations

This application was approved on February 25, 2014.

***Submission of annual review reports is not required for Level 1/Exempt projects.

If any modifications are made in research design, methodology, or procedures that increase the risks to subjects or includes activities that do not fall within the approved exemption category, those modifications must be submitted to and approved by the IRB before implementation.

Please contact an IRB discipline specific reviewer or the Office of Research Compliance to discuss the changes and whether a new application must be submitted. http://www.kent.edu/research/researchsafetyandcompliance/irb/index.cfm

Kent State University has a Federal Wide Assurance on file with the Office for Human Research Protections (OHRP); FWA Number 00001853.
If you have any questions or concerns, please contact us at Researchcomplaince@kent.edu or by phone at 330-672-2704 or 330-672.8058.

Respectfully,
Kent State University Office of Research Compliance
224 Cartwright Hall | fax 330.672.2658
Kevin McCreary | Research Compliance Coordinator | 330.672.8058 | kmccrea1@kent.edu
Paulette Washko | Manager, Research Compliance | 330.672.2704 | Pwashko@kent.edu
APPENDIX B

OHIO NURSING ASSOCIATION MONTHLY MEMBERSHIP NEWSLETTER
ISSUED FEBRUARY OF 2014
February 12, 2014

ONA Announcements

Research Request

A nutrition/dietetics graduate student is requesting participation in the following study: “Assessment of Nursing Staffs’ Self-Reported Nutrition-Related Education, Knowledge, and Roles in Feeding Assistance Regarding Therapeutic and Modified Diets”. Description: I am surveying currently licensed and practicing nurses on their nutrition-related education and knowledge of common therapeutic and modified diets used in healthcare. I am also looking at the roles of nursing staff during patient meals. I believe this research will truly help show the impact of nursing in the nutritional health of patients, as well as help look at standards in nutrition education. Participation in the study is strictly anonymous, and the survey will take about 15-20 minutes to complete.

Please follow this link to complete the study.

Did You Know?
87% of your 2013 dues payment may be used as a federal tax deduction in accordance with IRS regulations. (13% was attributed to expenses that are not deductible under IRS regulations) Please consult your tax adviser for more information.
APPENDIX C
CONSTENT FORM
APPENDIX C

CONSTENT FORM

Welcome to "Nursing Focused: Nutrition-Related Education, Knowledge, & Participation Questionnaire," an electronic survey that examines nutrition in nursing, specifically therapeutic and modified diets. Before taking part in this study, please read the consent form below and click on the "I Agree" button at the bottom of the page if you understand the statements and freely consent to participate in the study.

Consent Form

This study involves a web-based survey designed to understand the nutrition-related education provided to nursing professionals, as well as their knowledge and roles in therapeutic and modified diets, and patient assistance during meals. The study is being conducted by Professor Natalie Caine-Bish, Ph.D., R.D., L.D. and Patricia Gonzi of Kent State University, and it has been approved by the Kent State University Institutional Review Board. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

Participation in the study typically takes 15 – 20 minutes and is strictly anonymous. Participants begin by answering a series of questions about themselves and their nursing career. Once this is completed, participants will answer a series of questions regarding nutrition education covered in their nursing program curriculum as well as continuing education. Participants will then complete a timed series of knowledge-based questions on common prescribed diets used in healthcare settings. In the final part of the survey, participants will determine the frequency in which they assist patients during different aspects of meals.

Many individuals find participation in this study enjoyable, and no adverse reactions have been reported thus far. Participants will not receive monetary compensation or other incentives for completion of this study. Other visitors to this web site are welcome to complete the study, although they also will not receive monetary compensation or other incentives for their participation. Participation is voluntary, refusal to take part in the study involves no penalty or loss of benefits to which participants are otherwise entitled, and participants may withdraw from the study at any time without penalty or loss of benefits to which they are otherwise entitled.

If participants have further questions about this study or their rights, or if they wish to lodge a complaint or concern, they may contact the principal investigator, Professor Natalie Caine-Bish, Ph.D., R.D., L.D., at (330) 672 - 2148; or the Kent State University Institutional Review Board.
Institutional Review Board, at (330) 672-2704. If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the experiment.

I Agree  I Do Not Agree

○ ○
APPENDIX D

NURSING FOCUSED: NUTRITION-RELATED EDUCATION, KNOWLEDGE, & PARTICIPATION QUESTIONNAIRE WITH SECTION HEADERS AND CORRECT ANSWERS
APPENDIX D

NURSING FOCUSED: NUTRITION-RELATED EDUCATION, KNOWLEDGE, & PARTICIPATION QUESTIONNAIRE WITH SECTION HEADERS AND CORRECT ANSWERS

Directions: This survey has a total of four sections, and will take typically 15 – 20 minutes to complete. Please begin with Part I: Demographics by clicking the response that best fits your description. Designated questions will provide space for typing allowing further elaboration for your responses. When you are finished answering the designated question on your screen, please click “Next” to continue through the questionnaire. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed.

For the purposes of this questionnaire, the following definitions are provided:

*Therapeutic diets refer to cardiac heart healthy diet, renal diet, carbohydrate consistent diet, low sodium diet, etc.

*Modified diets refer to any food/liquid texture modifications made, for example puree, mechanically altered, thickened liquids, etc.

Part I: Demographics

What is your current age?

What is your gender?

☐ Male
☐ Female

What type of nurse are you currently licensed as?

☐ Registered Nurse
☐ Licensed Practice Nurse
☐ Other: Please provide name.

How many years have you been in practice? Please provide number of years.
Are you currently working as:
- Full-time
- Part-time
- Per Diem
- Not currently employed

What type of setting are you currently practicing?
- Acute Care Hospital
- Long Term Care
- Other: Please provide type(s).

What area are you currently practicing in? (e.g. Cardiology, Oncology, Intensive Care, etc.) Please provide name(s).

What is the highest degree you have obtained in nursing?
- Certificate/Diploma
- Associate degree
- Bachelor’s degree
- Master’s degree
- Ph.D./Doctor of Nursing Practices (DNP)

Do you hold any degrees other than nursing? If yes, please provide degree(s).
- Yes
- No

Do you have a degree in nutrition?
- Yes
- No

Do you hold any special certifications? If yes, please list them.
- Yes
- No
Part II: Nutrition Education

Directions: This section of the questionnaire will first ask a series of questions specific to the Nursing Program in which you attended. This will then be followed by a series of questions specific to completed Continuing Education throughout the course of your nursing career. Please click the response that best fits your description. Designated questions will provide space for typing allowing further elaboration for your responses. When you are finished answering the designated question on your screen, please click the “Next” to continue through the questionnaire. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed.

Part II: Nutrition Education - Nursing Programs

In your nursing program, did you take a nutrition course?
○ Yes
○ No

In addition to a required nutrition course, were nutrition courses also offered as elective classes?
○ Yes
○ No

Were nutrition-related topics covered solely or integrated into other courses?
○ Solely
○ Integrated
○ Offered both

Were therapeutic diets covered in the nutrition-related curriculum?
○ Yes
○ No

Were modified diets covered in the nutrition-related curriculum?
○ Yes
○ No

Was assisting patients during mealtimes covered in the nutrition-related curriculum?
○ Yes
○ No
In clinical hours, do you recall the amount of hours practicing nutrition only?
- 0 hours
- 1-2 hours
- 3-5 hours
- 6-8 hours
- Other: Please provide number of hours.

Do you feel your nursing program prepared you to answer patient questions about therapeutic and modified diets?
- Yes
- No

Do you recall the titles of any textbooks/manuals/handbooks used related to nutrition in your nursing program?
- Please provide titles

- I do not recall

Part II: Nutrition Education - Continuing Education

Have you completed any continuing education courses specific to therapeutic diets? If yes, please provide number of hours completed.
- Yes

- No

Have you completed any continuing education courses specific to modified diets? If yes, please provide number of hours completed.
- Yes

- No

If you have completed continuing education courses on therapeutic and modified diets, do you feel these have better prepared you in working with patients regarding their diets?
- Yes
- No
- I have not completed continuing education courses on therapeutic and modified diets.
Have you completed continuing education courses specific to assisting patients during meals? If yes, please provide number of hours completed.

☑ Yes

☐ No

If you have completed continuing education courses specific to assisting patients during meals, do you feel these have better prepared you in working with patients regarding their diets?

☑ Yes

☑ No

☑ I have not completed continuing education courses specific to assisting patients during meals.

At any time, has your employer provided you with any handbooks/manuals/guidelines/standards regarding therapeutic and modified diets? If yes, please also provide any titles that you can recall.

☑ Yes

☐ No

If your employer did provide you with any handbooks/manuals/guidelines/standards regarding therapeutic and modified diets do you feel these provided you with adequate information?

☑ Yes

☑ No

At any time, did your employer provide you with any handbooks/manuals/guidelines/standards regarding assisting patients during meals? If yes, please also provide any titles that you can recall.

☑ Yes

☐ No

If your employer did provide you with any handbooks/manuals/guidelines/standards regarding assisting patients during meals, do you feel these provided you with adequate information?

☑ Yes

☑ No
Has your employer ever provided in-service training covering therapeutic or modified diets? If yes, please briefly describe material covered.  
☐ Yes  
☐ No

Has your employer ever provided in-service training covering assisting patients during meals? If yes, please briefly describe material covered.  
☐ Yes  
☐ No

Do you currently feel you are prepared to assist patients with therapeutic and modified diets?  
☐ Yes  
☐ No

Do you currently feel you are prepared to assist patients during meals?  
☐ Yes  
☐ No

Part III: Diet Knowledge

Directions: This section of the questionnaire will first ask a set of questions for each commonly prescribed therapeutic and modified diet in healthcare settings. Click your chosen response to each question of “Agree”, “Disagree”, or “I do not know”. Please note it is ok to choose the “I do not know” response. Once you have your final response and you are ready for the next question, please click “Next”. **This section is timed where you will have five minutes to answer each question.** If the question remains unanswered when time runs out, the next question will begin automatically. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed.

*Regular/House Diet*

The regular/house diet is typically composed of foods low in fat, cholesterol, and sodium, and high in fiber.

Agree  ☐  Disagree  ☐  I do not know  ☐
The regular/house diet is a nutrition intervention that cannot be individualized to meet the nutrition needs of patients with conditions such as cardiovascular disease, diabetes, and obesity.

Agree  Disagree  I do not know

Ther e is no restriction on the amount of calories a patient consumes on the regular/house diet.

Agree  Disagree  I do not know

A patient on a regular/house diet may request sugar free desserts.

Agree  Disagree  I do not know

*Cardiac/Heart Healthy/DASH/TLC Diet*

For a patient prescribed a Cardiac Heart Healthy/DASH/TLC diet, cholesterol and sodium should be limited daily.

Agree  Disagree  I do not know

Whole milk would not be appropriate for a patient on a Cardiac Heart Healthy/DASH/TLC diet.

Agree  Disagree  I do not know

Sea salt packets are allowed to be given to a patient on a Cardiac Heart Healthy/DASH/TLC diet.

Agree  Disagree  I do not know

When ordering breakfast for a patient on a Cardiac Heart Healthy/DASH/TLC diet, it would be appropriate to order bacon and sausage.

Agree  Disagree  I do not know

*Low Salt Diet*

A low salt diet is intended to lower blood pressure.

Agree  Disagree  I do not know
Patients who are prescribed a low salt diet are not allowed to have any soup.

Agree  Disagree  I do not know
O  ●  ●

Salt packets are allowed to be provided to patients on a low salt diet.

Agree  Disagree  I do not know
●  O  ●

Hot dogs are not allowed to be provided to patients on a low salt diet.

Agree  Disagree  I do not know
●  O  ●

*Low Sodium Diet*

Sodium is limited for patients with heart failure.

Agree  Disagree  I do not know
●  O  ●

American cheese is not appropriate for a patient on the low sodium diet.

Agree  Disagree  I do not know
●  O  ●

Pepper and Mrs. Dash are both appropriate to give to a patient on a low sodium diet.

Agree  Disagree  I do not know
●  O  ●

Seasonings such as celery salt, onion salt, garlic salt, and sea salt, are allowed on a low sodium diet.

Agree  Disagree  I do not know
●  O  ●

*Carbohydrate Consistent Diet*

A patient on a carbohydrate consistent diet would count one cup of fat-free or reduced-fat milk as one carbohydrate serving or approximately 15 grams of carbohydrate.

Agree  Disagree  I do not know
●  O  ●

A patient's lunch consists of 2 oz. turkey slices, 2 slices of whole-wheat bread, 2 lettuce leaves, 4 celery sticks, 4 carrot sticks, 1 medium apple, and 1/2 cup of sugar free chocolate pudding, which equals a total of two carbohydrate servings.

Agree  Disagree  I do not know
O  ●  ●
A patient on a carbohydrate consistent diet can consume as much fruit juice as they want because it is not considered a carbohydrate-containing food.

Agree  Disagree  I do not know

A patient on a carbohydrate consistent diet should aim to eat various amounts (servings or grams) of carbohydrates for each meal and for snacks.

Agree  Disagree  I do not know

Renal Diet

Renal diets are extremely specialized.

Agree  Disagree  I do not know

Potatoes are low in potassium and are allowed on the renal diet.

Agree  Disagree  I do not know

Cheese is high in phosphorous and is restricted on the renal diet.

Agree  Disagree  I do not know

Chocolate milk would be appropriate to order for a patient on a renal diet.

Agree  Disagree  I do not know

Nothing By Mouth (NPO)

NPO stands for "no problems orally".

Agree  Disagree  I do not know

A patient who is NPO can have a glass of juice.

Agree  Disagree  I do not know

A patient who is NPO may have ice chips per doctors orders.

Agree  Disagree  I do not know
A patient who is NPO can have popsicles.

Agree  Disagree  I do not know

Clear Liquid Diet

A patient prescribed a clear liquid diet may have sherbet.

Agree  Disagree  I do not know

Orange juice, containing no pulp, is allowed on a clear liquid diet.

Agree  Disagree  I do not know

Patients on a clear liquid diet may be given cream for their morning coffee.

Agree  Disagree  I do not know

The clear liquid diet is nutritionally inadequate for patients of all ages.

Agree  Disagree  I do not know

Transitional/Full Liquid Diet

The transitional liquid/full liquid diet allows patients to consume toast.

Agree  Disagree  I do not know

Whipped potatoes are allowed on the transitional liquid/full liquid diet.

Agree  Disagree  I do not know

Ice cream is allowed to be provided to a patient on a transitional liquid/full liquid diet.

Agree  Disagree  I do not know

The transitional liquid/full liquid diet includes all foods allowed on the clear liquid diet with the addition of milk.

Agree  Disagree  I do not know
**Fluid Restriction**

When counting fluids for a patient on a fluid restriction, 1 cup of soda = 140 milliliters.

Agree [ ]

Disagree [ ]

I do not know [ ]

When counting fluids on for a patient on a fluid restriction, 1/2 of this pictured full Twinpop Popsicle = 45 milliliters.

Agree [ ]

Disagree [ ]

I do not know [ ]

Gelatin would be counted as a fluid for a patient who is on a fluid restriction.

Agree [ ]

Disagree [ ]

I do not know [ ]

When measuring fluids for a patient on a fluid restriction, all liquids are counted including water and anything that melts into a liquid at room temperature.

Agree [ ]

Disagree [ ]

I do not know [ ]

**Dental Soft Diet**

Breaded chicken tenders would be appropriate for someone on a dental soft diet.

Agree [ ]

Disagree [ ]

I do not know [ ]

Cooked corn is appropriate for a patient on the dental soft diet.

Agree [ ]

Disagree [ ]

I do not know [ ]

It would be appropriate to give a patient on a dental soft diet an uncooked, fresh apple for a snack.

Agree [ ]

Disagree [ ]

I do not know [ ]

A patient on a dental soft diet would receive foods that are soft, and easy to chew and swallow.

Agree [ ]

Disagree [ ]

I do not know [ ]
Mechanically Altered Diet

Yogurt with granola is appropriate for a patient on a mechanically altered diet.
Agree  Disagree  I do not know

Soft, ripe bananas are the only uncooked fresh fruit allowed on the mechanically altered diet.
Agree  Disagree  I do not know

A patient prescribed a mechanically altered diet is allowed well-cooked spaghetti with meat sauce for lunch.
Agree  Disagree  I do not know

A patient on a mechanically altered diet is allowed to have peanut butter.
Agree  Disagree  I do not know

Puree Diet

Chunky applesauce is allowed to be given to a patient on a puree diet.
Agree  Disagree  I do not know

Oatmeal is appropriate for breakfast for a patient on a puree diet.
Agree  Disagree  I do not know

Cottage cheese is allowed to be given to a patient on a puree diet.
Agree  Disagree  I do not know

A patient prescribed a puree diet is allowed to have yogurt with pieces of fruit in it.
Agree  Disagree  I do not know

Modified Liquids

Thin liquids may include ice cream, soda, and fruit juices.
Agree  Disagree  I do not know
If a patient is prescribed to have a honey-thick liquids only, it would be appropriate to give them sugar free gelatin as a snack.

Agree  ☐  Disagree  ☐  I do not know  ☐

Ice chips are appropriate for a patient on a pudding thick fluid consistency.

Agree  ☐  Disagree  ☐  I do not know  ☐

Fluid consistency may be ordered as thin, nectar-thick, honey-thick, or spoon/pudding thick.

Agree  ☐  Disagree  ☐  I do not know  ☐

Part IV: Meal Assistance

Directions: This last section of the questionnaire will ask a series of questions to determine how often you help assist patients during common feeding situations. Click your chosen response of “Very Rarely”, “Sometimes”, “Often”, “Almost Always”, or “All the time”. Once you have your final response and you are ready for the next question, please click “Next”. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed. Upon finishing the survey, please click “Submit” for your responses to be recorded.

How often do you assist patients with eating before meals (tray set-up, opening containers, etc.)?

Very Rarely  ☐  Sometimes  ☐  Often  ☐  Almost Always  ☐  All the time  ☐

How often do you assist patients with eating during meals (feeding)?

Very Rarely  ☐  Sometimes  ☐  Often  ☐  Almost Always  ☐  All the time  ☐

How often do you assist patients in ordering their meals?

Very Rarely  ☐  Sometimes  ☐  Often  ☐  Almost Always  ☐  All the time  ☐

How often do you assist patients in making snack choices?

Very Rarely  ☐  Sometimes  ☐  Often  ☐  Almost Always  ☐  All the time  ☐
<table>
<thead>
<tr>
<th>Question</th>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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</thead>
<tbody>
<tr>
<td>How often do you assist patients in snack retrieval?</td>
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<td>How often do you assist patients in making beverage choices?</td>
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<td>How often do you assist patients in beverage retrieval?</td>
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<tr>
<td>How often do patients ask you questions regarding their prescribed diet?</td>
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<tr>
<td>How often do you educate the patient and/or family regarding the patient's prescribed diet?</td>
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<tr>
<td>How often do you approve food items that are not normally recommended on a patient's prescribed diet?</td>
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<tr>
<td>How often do you approve a patient to go over their daily restrictions by allowing extra items/meals, e.g. extra carbohydrates, extra fluids, extra sodium?</td>
<td>☐</td>
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APPENDIX E

NURSING FOCUSED: NUTRITION-RELATED EDUCATION, KNOWLEDGE, & PARTICIPATION QUESTIONNAIRE
APPENDIX E

NURSING FOCUSED: NUTRITION-RELATED EDUCATION, KNOWLEDGE, & PARTICIPATION QUESTIONNAIRE

Directions: This survey has a total of four sections, and will take typically 15 – 20 minutes to complete. Please begin with Part I: Demographics by clicking the response that best fits your description. Designated questions will provide space for typing allowing further elaboration for your responses. When you are finished answering the designated question on your screen, please click “Next” to continue through the questionnaire. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed.

For the purposes of this questionnaire, the following definitions are provided:
*Therapeutic diets refer to cardiac heart healthy diet, renal diet, carbohydrate consistent diet, low sodium diet, etc.

*Modified diets refer to any food/liquid texture modifications made, for example puree, mechanically altered, thickened liquids, etc.

Part I: Demographics

What is your current age?

What is your gender?
- Male
- Female

What type of nurse are you currently licensed as?
- Registered Nurse
- Licensed Practice Nurse
- Other: Please provide name.

How many years have you been in practice? Please provide number of years.
Are you currently working as:
☐ Full-time
☐ Part-time
☐ Per Diem
☐ Not currently employed

What type of setting are you currently practicing?
☐ Acute Care Hospital
☐ Long Term Care
☐ Other: Please provide type(s).

What area are you currently practicing in? (e.g. Cardiology, Oncology, Intensive Care, etc.) Please provide name(s).

What is the highest degree you have obtained in nursing?
☐ Certificate/Diploma
☐ Associate degree
☐ Bachelor’s degree
☐ Master’s degree
☐ Ph.D./Doctor of Nursing Practices (DNP)

Do you hold any degrees other than nursing? If yes, please provide degree(s).
☐ Yes

☐ No

Do you have a degree in nutrition?
☐ Yes
☐ No

Do you hold any special certifications? If yes, please list them.
☐ Yes

☐ No
Part II: Nutrition Education

Directions: This section of the questionnaire will first ask a series of questions specific to the Nursing Program in which you attended. This will then be followed by a series of questions specific to completed Continuing Education throughout the course of your nursing career. Please click the response that best fits your description. Designated questions will provide space for typing allowing further elaboration for your responses. When you are finished answering the designated question on your screen, please click the “Next” to continue through the questionnaire. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed.

Part II: Nutrition Education - Nursing Programs

In your nursing program, did you take a nutrition course?
- Yes
- No

In addition to a required nutrition course, were nutrition courses also offered as elective classes?
- Yes
- No

Were nutrition-related topics covered solely or integrated into other courses?
- Solely
- Integrated
- Offered both

Were therapeutic diets covered in the nutrition-related curriculum?
- Yes
- No

Were modified diets covered in the nutrition-related curriculum?
- Yes
- No

Was assisting patients during mealtimes covered in the nutrition-related curriculum?
- Yes
- No
In clinical hours, do you recall the amount of hours practicing nutrition only?
- 0 hours
- 1-2 hours
- 3-5 hours
- 6-8 hours
- Other: Please provide number of hours.

Do you feel your nursing program prepared you to answer patient questions about therapeutic and modified diets?
- Yes
- No

Do you recall the titles of any textbooks/manuals/handbooks used related to nutrition in your nursing program?
- Please provide titles
- I do not recall

Part II: Nutrition Education - Continuing Education

Have you completed any continuing education courses specific to therapeutic diets? If yes, please provide number of hours completed.
- Yes
- No

Have you completed any continuing education courses specific to modified diets? If yes, please provide number of hours completed.
- Yes
- No

If you have completed continuing education courses on therapeutic and modified diets, do you feel these have better prepared you in working with patients regarding their diets?
- Yes
- No
- I have not completed continuing education courses on therapeutic and modified diets.
Have you completed continuing education courses specific to assisting patients during meals? If yes, please provide number of hours completed.

- Yes
- No

If you have completed continuing education courses specific to assisting patients during meals, do you feel these have better prepared you in working with patients regarding their diets?

- Yes
- No
- I have not completed continuing education courses specific to assisting patients during meals.

At any time, has your employer provided you with any handbooks/manuals/guidelines/standards regarding therapeutic and modified diets? If yes, please also provide any titles that you can recall.

- Yes
- No

If your employer did provide you with any handbooks/manuals/guidelines/standards regarding therapeutic and modified diets do you feel these provided you with adequate information?

- Yes
- No

At any time, did your employer provide you with any handbooks/manuals/guidelines/standards regarding assisting patients during meals? If yes, please also provide any titles that you can recall.

- Yes
- No

If your employer did provide you with any handbooks/manuals/guidelines/standards regarding assisting patients during meals, do you feel these provided you with adequate information?

- Yes
- No
Has your employer ever provided in-service training covering therapeutic or modified diets? If yes, please briefly describe material covered.

☐ Yes  
☐ No

Has your employer ever provided in-service training covering assisting patients during meals? If yes, please briefly describe material covered.

☐ Yes  
☐ No

Do you currently feel you are prepared to assist patients with therapeutic and modified diets?

☐ Yes  
☐ No

Do you currently feel you are prepared to assist patients during meals?

☐ Yes  
☐ No

Part III: Diet Knowledge

Directions: This section of the questionnaire will first ask a set of questions for each commonly prescribed therapeutic and modified diet in healthcare settings. Click your chosen response to each question of “Agree”, “Disagree”, or “I do not know”. Please note it is ok to choose the “I do not know” response. Once you have your final response and you are ready for the next question, please click “Next”. This section is timed where you will have five minutes to answer each question. If the question remains unanswered when time runs out, the next question will begin automatically. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed.

The regular/house diet is typically composed of foods low in fat, cholesterol, and sodium, and high in fiber.

Agree  Disagree  I do not know

☐  ☐  ☐
The regular/house diet is a nutrition intervention that cannot be individualized to meet the nutrition needs of patients with conditions such as cardiovascular disease, diabetes, and obesity.

Agree  Disagree  I do not know

There is no restriction on the amount of calories a patient consumes on the regular/house diet.

Agree  Disagree  I do not know

A patient on a regular/house diet may request sugar free desserts.

Agree  Disagree  I do not know

For a patient prescribed a Cardiac Heart Healthy/DASH/TLC diet, cholesterol and sodium should be limited daily.

Agree  Disagree  I do not know

Whole milk would not be appropriate for a patient on a Cardiac Heart Healthy/DASH/TLC diet.

Agree  Disagree  I do not know

Sea salt packets are allowed to be given to a patient on a Cardiac Heart Healthy/DASH/TLC diet.

Agree  Disagree  I do not know

When ordering breakfast for a patient on a Cardiac Heart Healthy/DASH/TLC diet, it would be appropriate to order bacon and sausage.

Agree  Disagree  I do not know

A low salt diet is intended to lower blood pressure.

Agree  Disagree  I do not know

Patients who are prescribed a low salt diet are not allowed to have any soup.

Agree  Disagree  I do not know
<table>
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<tr>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt packets are allowed to be provided to patients on a low salt diet.</td>
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<td>Hot dogs are not allowed to be provided to patients on a low salt diet.</td>
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<td>Pepper and Mrs. Dash are both appropriate to give to a patient on a low sodium diet.</td>
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<tr>
<td>Seasonings such as celery salt, onion salt, garlic salt, and sea salt, are allowed on a low sodium diet.</td>
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<tr>
<td>A patient on a carbohydrate consistent diet would count one cup of fat-free or reduced-fat milk as one carbohydrate serving or approximately 15 grams of carbohydrate.</td>
<td></td>
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</tr>
<tr>
<td>A patient's lunch consists of 2 oz. turkey slices, 2 slices of whole-wheat bread, 2 lettuce leaves, 4 celery sticks, 4 carrot sticks, 1 medium apple, and 1/2 cup of sugar free chocolate pudding, which equals a total of two carbohydrate servings.</td>
<td></td>
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</tr>
<tr>
<td>A patient on a carbohydrate consistent diet can consume as much fruit juice as they want because it is not considered a carbohydrate-containing food.</td>
<td></td>
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</tr>
</tbody>
</table>
A patient on a carbohydrate consistent diet should aim to eat various amounts (servings or grams) of carbohydrates for each meal and for snacks.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Renal diets are extremely specialized.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Potatoes are low in potassium and are allowed on the renal diet.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Cheese is high in phosphorous and is restricted on the renal diet.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
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</thead>
<tbody>
<tr>
<td></td>
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</table>

Chocolate milk would be appropriate to order for a patient on a renal diet.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
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<tbody>
<tr>
<td></td>
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</table>

NPO stands for "no problems orally".

<table>
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<th>Disagree</th>
<th>I do not know</th>
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<tbody>
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<td></td>
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</tbody>
</table>

A patient who is NPO can have a glass of juice.

<table>
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</tr>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

A patient who is NPO may have ice chips per doctor's orders.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
</tr>
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<tbody>
<tr>
<td></td>
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</table>

A patient who is NPO can have popsicles.

<table>
<thead>
<tr>
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<th>Disagree</th>
<th>I do not know</th>
</tr>
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<tbody>
<tr>
<td></td>
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</table>

A patient prescribed a clear liquid diet may have sherbet.

<table>
<thead>
<tr>
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<th>Disagree</th>
<th>I do not know</th>
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<tbody>
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</table>

Orange juice, containing no pulp, is allowed on a clear liquid diet.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>I do not know</th>
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</table>
Patients on a clear liquid diet may be given cream for their morning coffee.

Agree  Disagree  I do not know

The clear liquid diet is nutritionally inadequate for patients of all ages.

Agree  Disagree  I do not know

The transitional liquid/full liquid diet allows patients to consume toast.

Agree  Disagree  I do not know

Whipped potatoes are allowed on the transitional liquid/full liquid diet.

Agree  Disagree  I do not know

Ice cream is allowed to be provided to a patient on a transitional liquid/full liquid diet.

Agree  Disagree  I do not know

The transitional liquid/full liquid diet includes all foods allowed on the clear liquid diet with the addition of milk.

Agree  Disagree  I do not know

When counting fluids for a patient on a fluid restriction, 1 cup of soda = 140 milliliters.

Agree  Disagree  I do not know

When counting fluids on for a patient on a fluid restriction, 1/2 of this pictured full Twinpop Popsicle = 45 milliliters.

Agree  Disagree  I do not know

Gelatin would be counted as a fluid for a patient who is on a fluid restriction.

Agree  Disagree  I do not know

When measuring fluids for a patient on a fluid restriction, all liquids are counted including water and anything that melts into a liquid at room temperature.

Agree  Disagree  I do not know
Breaded chicken tenders would be appropriate for someone on a dental soft diet. Agree  Disagree  I do not know

Cooked corn is appropriate for a patient on the dental soft diet. Agree  Disagree  I do not know

It would be appropriate to give a patient on a dental soft diet an uncooked, fresh apple for a snack. Agree  Disagree  I do not know

A patient on a dental soft diet would receive foods that are soft, and easy to chew and swallow. Agree  Disagree  I do not know

Yogurt with granola is appropriate for a patient on a mechanically altered diet. Agree  Disagree  I do not know

Soft, ripe bananas are the only uncooked fresh fruit allowed on the mechanically altered diet. Agree  Disagree  I do not know

A patient prescribed a mechanically altered diet is allowed well-cooked spaghetti with meat sauce for lunch. Agree  Disagree  I do not know

A patient on a mechanically altered diet is allowed to have peanut butter. Agree  Disagree  I do not know

Chunky applesauce is allowed to be given to a patient on a puree diet. Agree  Disagree  I do not know

Oatmeal is appropriate for breakfast for a patient on a puree diet. Agree  Disagree  I do not know
Cottage cheese is allowed to be given to a patient on a puree diet.

Agree  Disagree  I do not know

A patient prescribed a puree diet is allowed to have yogurt with pieces of fruit in it.

Agree  Disagree  I do not know

Thin liquids may include ice cream, soda, and fruit juices.

Agree  Disagree  I do not know

If a patient is prescribed to have a honey-thick liquids only, it would be appropriate to give them sugar free gelatin as a snack.

Agree  Disagree  I do not know

Ice chips are appropriate for a patient on a pudding thick fluid consistency.

Agree  Disagree  I do not know

Fluid consistency may be ordered as thin, nectar-thick, honey-thick, or spoon/pudding thick.

Agree  Disagree  I do not know

Part IV: Meal Assistance

Directions: This last section of the questionnaire will ask a series of questions to determine how often you help assist patients during common feeding situations. Click your chosen response of “Very Rarely”, “Sometimes”, “Often”, “Almost Always”, or “All the time”. Once you have your final response and you are ready for the next question, please click “Next”. If you wish to save your responses and return at a later time to finish this questionnaire, please click “Save and Continue Later”. Please note after 72 hours, a partially completed survey will be closed. Upon finishing the survey, please click “Submit” for your responses to be recorded.

How often do you assist patients with eating before meals (tray set-up, opening containers, etc.)?

Very Rarely  Sometimes  Often  Almost Always  All the time
How often do you assist patients with eating during meals (feeding)?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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How often do you assist patients in ordering their meals?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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How often do you assist patients in making snack choices?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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How often do you assist patients in snack retrieval?

<table>
<thead>
<tr>
<th>Very Rarely</th>
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<th>Often</th>
<th>Almost Always</th>
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How often do you assist patients in making beverage choices?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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How often do you assist patients in beverage retrieval?

<table>
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<th>Very Rarely</th>
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</table>

How often do patients ask you questions regarding their prescribed diet?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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How often do you educate the patient and/or family regarding the patient’s prescribed diet?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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How often do you approve food items that are not normally recommended on a patient’s prescribed diet?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
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</table>

How often do you approve a patient to go over their daily restrictions by allowing extra items/meals, e.g. extra carbohydrates, extra fluids, extra sodium?

<table>
<thead>
<tr>
<th>Very Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
<th>All the time</th>
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APPENDIX F

AREAS PRACTICING IN AS REPORTED BY OHIO NURSES
APPENDIX F

AREAS PRACTICING IN AS REPORTED BY OHIO NURSES

<table>
<thead>
<tr>
<th>Area Practicing In</th>
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<tbody>
<tr>
<td>Academia/CE/Training</td>
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<tr>
<td>Addiction Recovery/Detox</td>
<td>9</td>
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<tr>
<td>Administration/Legal/Regulatory/Quality</td>
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<tr>
<td>All Areas/Float/Pool</td>
<td>35</td>
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<tr>
<td>Allergy/Immunology/ENT</td>
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<td>Alternative Medicine/Natural Health</td>
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<tr>
<td>Alzheimer’s/Dementia/Memory Care</td>
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<tr>
<td>Autonomic Disorders</td>
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<td>Clinics</td>
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<td>Dentistry/Ophthalmology/Optometry</td>
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<td>Disabilities/Developmental Disabilities</td>
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<tr>
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<td>Management/Progressive Care</td>
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<td>General/Primary Care/Office</td>
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<tr>
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<td>Health Education/Counseling</td>
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<td>Infusion/IV Therapy/Vascular Access</td>
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<td>LTC/LTACH/Skilled/Assisted/Rehab</td>
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<td>Reproductive &amp; Sexual Health</td>
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REFERENCES
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