A QUALITATIVE STUDY OF DIETETIC PRECEPTORS TEACHING BOLUS FEEDING SKILLS

by

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DEDICATION

To the dietitian who felt they had to figure it all out on their own. This work is for you. For every time you had to piece together skills from experience, observation and trial by fire. For the long shifts, quite doubts and moments you wished someone had the “right” answer.
Your struggles matter and you will always be enough. May the next generation of dietitians find stronger support, clearer guidance, and mentors who remember what it felt like to learn alone and choose to do it differently.

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ABSTRACT

The number of patients transitioning from hospital to home with enteral nutrition (EN), a method of delivering nutrients through a feeding tube, continues to rise. Most of these patients receive care under what is known as home enteral nutrition (HEN). Bolus feeding, the most common form of HEN, is a method of nutrition delivery provided in set volumes several times per day. As this form of nutrition support becomes more common, registered dietitian nutritionists (RDNs) are expected to provide patient education and clinical management. However, current dietetics education provides limited guidance on how dietetic interns should be trained in these skills, especially during supervised practice. This lack of clarity raises questions about the consistency and adequacy of intern preparation.

This study explored how RDN preceptors in the Northwestern United States (Montana, Idaho and Colorado) teach bolus feeding techniques to dietetic interns. Two virtual focus group interviews were conducted with eight preceptors who had experience supervising interns in clinical settings. Participants responded to five open-ended focus group questions about their strategies, perceived nutrition support competency and their own background. Data was analyzed using a thematic analysis approach.

The findings revealed a complex and nuanced set of practices and beliefs, which were organized into six major themes: (1) practicing nutrition support skills; (2) contextual logistics that shape intern exposure; (3) ambiguity of intern competency; (4) generational influence on precepting; (5) preceptor competence; and (6) Preceptor are human.

The findings suggest that dietetic interns receive inconsistent training in bolus feeding, often shaped by the individual preceptor's experience and setting, rather than by clear educational standards. Preceptors, especially in rural or resource limited settings, often use creative strategies to offer learning opportunities despite limited time or patient access. This study highlights the experiences of rural preceptors in teaching bolus feeding and their desire for more support and training. Strengthening these areas across the health care system may help prepare future RDNs and support preceptors to confidently manage this increasingly common form of nutrition care.

CHAPTER ONE

INTRODUCTION

Overview of Home Enteral Nutrition (HEN)

The use of home enteral nutrition (HEN) has been steadily increasing, with an estimated 440,000 Americans currently relying on this form of enteral nutrition to meet individual nutrition needs.[1-4] HEN involves delivering enteral nutrition formula directly into the digestive system, via a feeding tube placed in the gastrointestinal (GI) tract, to address or prevent malnutrition in patients who are unable to meet nutrition needs orally.[5] Malnutrition, a complex condition characterized as a decline in body fat and/or lean body mass resulting from prolonged inadequate nutrient intake over a specific timeframe, is especially prevalent in older adults due to factors such as chronic disease, appetite decline and dysphagia.[6,7] Malnutrition remains a public health concern, leading to increased morbidity and mortality, decreasing patient quality of life, increasing hospital length of stay, and contributing to higher healthcare costs.[4,8]

For adults with a functioning gastrointestinal tract who are unable to meet nutrition needs orally, enteral nutrition (EN) can provide the patient with life sustaining nutrition therapy, resulting in improved quality of life, improved clinical outcomes and decrease the risk of malnutrition.[2,9] Research identifies EN as the preferred route of nutrition support in patients with functioning GI tracts.[10-12] EN can be administered through various methods, including continuous, cyclic, intermittent or bolus; bolus feeding is the preferred route for long term use.[10, 13-15] A recent study out of Poland found that 74% of all HEN patients were using bolus feeding, supporting this to be a prominent HEN strategy.[16] Further, the most predominant access routes

for HEN patients were percutaneous endoscopic gastrostomy (PEG) tubes (65%) and nasogastric (NG) tubes (14.3%).[16]

Advantages and Limitations of HEN

As identified by Mundi et al. and Hubbard et al, the use of HEN as a form of nutrition support for patients transitioning from hospital to home has been steadily increasing.[1,17] This rise in HEN utilization is particularly significant given that many recipients have multiple comorbidities, which heightens the importance of quality of life and the cost-effectiveness of the therapy. Inadequate education and training on HEN management have been associated with higher hospital readmission rates,[9] placing additional financial strain on both patients and the healthcare system.[18]

Despite its benefits, HEN is associated with a range of challenges and potential complications. Transitioning from hospital-based to home-based nutrition support involves a significant shift in responsibility, with over 30 daily tasks transferred from healthcare providers to patients and their caregivers.[8] Common complications include GI symptoms (e.g., nausea, vomiting, diarrhea, constipation), mechanical issues (e.g., tube occlusion, clogging, or dislodgement), metabolic abnormalities (e.g., electrolyte imbalances, dehydration), stoma-related complications (e.g., hyper granulation, cellulitis), unintended weight loss, and aspiration pneumonia.[8] If not managed appropriately, bolus feeding, the most common type of HEN, can not only increase risk of complications, but increase the risk of undernutrition, as the timing and volume of formula delivery must be carefully tailored to meet the patient's individual nutrition needs.[15,19]

In addition to clinical complications, HEN presents a significant economic burden for both individuals and the health care system. On average, the annual personal cost for a HEN patient ranges from $10,000 to $20,000 USD per year.[14,20,21] A study from Sandhu et al reported that fifty-three percent of patients in their sample were hospitalized for HEN related complications, resulting in a total cost of over $14 million USD for the Canadian healthcare system over six years.[8] Conversely, when properly managed, HEN can improve clinical outcomes and reduce costs associated with malnutrition related complications.[18,22]

Bolus feeding is commonly recommended for medically stable patients requiring HEN.[12] This method is favored for its practicality, offering benefits such as reduced cost, greater convenience, and increased patient mobility.[10-12,14,15] Bolus feeds are typically administered using a syringe to deliver a predetermined volume of formula at scheduled intervals over a short duration of time.[10,12,13-15] This approach is designed to mimic natural eating patterns, provide freedom of movement, and can be more convenient for active patients.[11,12,15] As the use of HEN and specifically bolus feeding continues to grow, the expertise of skilled healthcare professionals will become increasingly vital in supporting patients and optimizing both clinical economic outcomes.[1-4,23]

Nutrition Support Team Contribution to HEN Management

The effective management of HEN requires a multidisciplinary team approach to optimize clinical outcomes, minimize complications, and address emerging problems across care settings.[14,24] As the prevalence of HEN continues to rise, so too does the need for qualified healthcare professionals capable of delivering individualized patient education, supporting adherence to safe feeding practices and responding to evolving clinical needs.[1-4,25] These

professionals serve a critical function not only in navigating patients through the complexities of HEN but also in tailoring enteral nutrition regimens, educating both patients and caregivers, and facilitating the successful implementation of nutrition support to meet individualized nutritional needs.[4,5,19,22]

According to the European Society for Clinical Nutrition and Metabolism (ESPEN), members of a nutrition support team may vary based on setting and available resources but typically include a registered dietitian nutritionist (RDN), a physician, and a registered nurse (RN).[24] Collaboration with the patient's primary care provider is also essential to ensure continuity of care and timely interventions if complications arise.[24,25] The method of HEN administration, whether bolus, intermittent, cyclic or continuous should be determined collaboratively by the Nutrition Support Team (NST), considering the patient's disease state, type of feeding tube, tolerance and personal preference.[25] Routine follow-up and monitoring by qualified professionals is essential to adjust formulas, review lab values and assess the clinical effectiveness of HEN meeting nutritional needs.[10,24-26]

The RDN is a food and nutrition expert who has fulfilled rigorous academic and professional standards established by national accrediting organizations.[27-30] Within this NST, the RDN plays a pivotal role in the management of feeding tubes. Over the course of a clinical dietitian's career, they continue to develop specialized knowledge in EN, including the ability to support patients receiving HEN.[4-7,14,15,18,19,22,23,31] RDNs are responsible for calculating nutrient needs, developing individualized feeding plans, monitoring nutrition status, adjusting enteral formulas, and educating both patients and healthcare staff on safe feeding practices.[13,14,23] A scoping review by Byrnes et al. emphasized the contribution of RDNs to the nutrition care

process, highlighting their ability to improve quality of care, reduce EN related complications and lower healthcare costs through reduced hospital admissions.[31] RDNs' expertise are essential in minimizing complications and ensuring the success of HEN interventions.

Education and Training for the RDN

To become a Registered Dietitian Nutritionist (RDN), an individual must complete a graduate-level didactic program in dietetics, earn a master's degree, and successfully complete an ACEND-accredited supervised practice program.[28] Upon completion of these requirements, candidates are eligible to sit for the national registration examination administered by the Commission on Dietetic Registration (CDR).[29] The Accreditation Council for Education in Nutrition and Dietetics (ACEND) also sets the standards for dietetic education and training, requiring that supervised practice programs include qualified preceptors and offer diverse experiential learning opportunities.[28] These structured pathways aim to ensure professional readiness through the demonstration of specific, measurable skills outlined in the Competencies for Registered Dietitian Nutritionists (CRDNs).

However, the 2024 Scope and Standards of Practice for RDNs does not explicitly address bolus feeding education.[27] The omission of this specific HEN skill from current training expectations highlights a potential gap in how dietetic interns are prepared to deliver comprehensive enteral nutrition care. While interns are expected to demonstrate competence in broader nutrition support therapies, including enteral and parenteral nutrition, the lack of clear guidance on bolus feeding may lead to variability in how preceptors approach this topic during supervised practice.

Education and Training for HEN

Literature strongly supports the importance of proper education and training for safe and effective management of HEN for patients and their caregivers.[5,14,24,31,32] According to ASPEN and ESPEN, all healthcare professionals involved in HEN should receive training relevant to their role, and patients and families should be equipped with the knowledge necessary to manage feedings safely and confidently.[12,28] Education helps minimize complications and promotes adherence, which in turn supports positive outcomes for patients with HEN.[9,22,24]

A recent qualitative systematic review by Sandhu et al emphasized that the HEN experience varies greatly depending on the training, support, and coping mechanism available to users and caregivers.[9] Additionally, this review found that HEN patients often introduced significant physical, emotional, and social challenges.[9] Patients and caregivers who received proper education, had access to healthcare support, and developed practical coping strategies were more likely to view HEN as manageable and worthwhile.[9] In contrast, inadequate training or lack of support contributed to patients' feelings of isolation, fear, and poor adherence to HEN prescription. These findings reinforce that structured, accessible education, paired with ongoing clinical support, is essential to help families navigate the complexities of home tube feeding and achieve better outcomes.[9]

In addition to the benefits of adequate education Sandhu et al identified, several additional studies have identified inadequate education and support for HEN users.[15,22,31,32] In a multi-site survey across Ireland, Boland et al. found that although most patients reported feeling confident managing their tube feeding, nearly 30% turned to informal sources like YouTube and social media to fill gaps in their knowledge.[22] Only 22% received training from a hospital

dietitian, and follow-up care from community dietitians or public health nurses was limited. Nearly one-third of respondents rated their post-discharge support as “fair” or “poor”, and complications such as tube blockages and stoma infection were common.

Similarly, Madrid-Paredes et al found that although nutritional status improved over time in a large cohort of Spanish HEN patients, nearly 40% of participants experienced complications during their first six months of HEN.[5] These included GI symptoms and tube-related complications, some of which were likely preventable with more robust patient and caregiver education. While most patients adhered to the prescribed nutrition plan, the persistence of complications suggests that current education efforts may not be adequately preparing patients to manage HEN independently.[5] Together, these findings highlight a fragmented system globally in which the quality, consistency and accessibility of education and support for HEN patients remain highly variable.

In addition to the gaps identified by patients and caregivers, several studies have raised concerns about healthcare professionals’ preparedness to support HEN in their communities. Byrnes et al. conducted a systematic review that revealed many clinicians, including registered nurses (RNs) and dietitians (RDNs), reported feeling underprepared to manage HEN due to limited experience and a lack of formal training.[31] These gaps in professional education contribute to continued fragmented care, with providers acknowledging that patients are often discharged on EN without adequate support or clear guidance for home management.[31] These findings align with broader concerns about variability in provider expertise, particularly in rural settings where specialized nutrition support services are limited.[33,34] Additionally, Gramlich et al

emphasized that evidenced-based standards of care for HEN remain limited, especially when it comes to the specific roles and responsibilities of RDNs.[14]

Although recent updates from the Academy of Nutrition and Dietetics (AND) and the American Society for Parenteral and Enteral Nutrition (ASPEN) offer revised standards for nutrition support practice, bolus feeding is not explicitly addressed in these guidelines.[27] The 2024 Scope and Standards of Practice for RDNs does state that RDNs should be competent in enteral and parenteral nutrition support, including tube placement and patient education; however, it continues to provide little detailed standards of education on HEN.[29] This ambiguity further highlights the need for clearer educational pathways and professional development resources that address the complexities of HEN delivery in the home setting for not just the NST, but the RDN standards of practice as well.

RDN Preceptor and Dietetic Intern Relationship

Registered Dietitian nutritionists (RDNs), who serve as preceptors, are essential to shaping intern competence in all areas of dietetic practice, including clinical nutrition support.[27,28] Through supervised practice experiences in clinical, community and foodservice settings, preceptors help interns translate theoretical knowledge from their academic programs into practical skills. They offer real-time feedback, assessment of competencies and model evidence-based decision making to ensure interns meet established professional standards.[28] Given the increasing demand of HEN and the expanding role of RDNs in delivering and managing this care, it is critical that interns receive hands-on training in nutrition support skills, such as bolus feeding, under the guidance of experienced preceptors.[13-15,18,22] This mentorship not only ensures continuity and quality of patient care but also contributes to the long-term

sustainability of the profession by preparing competent dietitians to meet complex patient needs.

According to CDR, a preceptor is defined as an experienced RDN who supervises and mentors' dietetic interns during their supervised practice year.[29] Although no universally accepted definition of "preceptor," exists, Benoit et al. observe that many allied health professions characterize preceptors as both educators and mentors, key roles in bridging the gap between academic preparation and clinical competence.[35] These well-trained RDNs serve as knowledgeable preceptors, passing on their expertise to the next generation of practitioners and ensuring continued excellence in patient care.[18,22] Moreover, the quality and depth of EN training that dietitians receive directly shapes the intern-preceptor relationship, establishing a foundation for skill development and enhancing professional confidence.[36]

During the clinical rotation, dietetic interns gain experience with essential components of EN, including conducting nutrition assessments, selecting appropriate formulas, developing individualized care plans, and troubleshooting feeding intolerances.[12,13,27] Preceptors guide interns through EN calculations and decision-making processes, while also modeling how to educate patients and caregivers on tube feeding techniques, including continuous, cyclic, bolus and intermittent feeding, and ensuring safe administration across inpatient and homecare settings.[10] However, despite the central role of preceptors in this process, limited research exists on how dietetic preceptors specifically teach bolus feeding techniques within the context of HEN to dietetic interns. This gap in literature raises important questions about the consistency and depth of intern training in this critical area of practice.

While several studies have explored preceptor/intern relationships within dietetics education,[35-38] there remains limited attention to the specific instructional methods RDN preceptors use when teaching HEN skills. Despite the rising prevalence of HEN in the United States, few studies have examined how dietetic preceptors train interns how to administer and manage this mode of nutrition support. This gap in literature not only restricts the availability of evidenced-based guidance for preceptors but also limits efforts to strengthen dietetic education and professional preparation in this area. Investigating how RDN preceptors educate dietetic interns on bolus feeding techniques, one of the most common HEN modalities, offers an important opportunity to identify effective teaching strategies, enhance intern competence and ultimately improve patient outcomes.

Unique Rural Context and RDN Preceptor Shortages

The limited number of RDNs in rural regions of the Northwestern US, particularly in Montana, Idaho and Colorado, poses significant challenges for the training and supervision of dietetic interns. According to the Nutrition and Dietetic Educators and Preceptors (NDEP), approximately 1,350 dietetic preceptors are registered with the Academy of Nutrition and Dietetics (AND);[39] however, this number likely underestimates the total pool, as RDNs are not required to register as preceptors with the Academy. The precise number of dietetic preceptors in these states remains unclear, but anecdotal evidence and professional experience suggest a pronounced preceptor shortage in Montana.

Rural healthcare settings present distinct structural and logistical challenges, including workforce shortages, resource constraints, and the expectation that healthcare providers serve in multiple capacities.[40] For RDNs, this often means managing responsibilities that span inpatient

clinical care, outpatient counseling, and community nutrition education. In this context, the ability to maintain specialized clinical skills, such as proficiency in EN, including bolus feeding skills, can be difficult. A limited number of dietetic preceptors may have a disproportionately large impact on intern training compared to states with denser provider networks. Ensuring that dietetic interns in rural areas receive high-quality, hands-on training is essential for preparing them to meet the demands of these under-resourced settings.

Some programs, such as Montana Dietetic Internship (MDI), are actively working to address this need by partnering with preceptors across rural Montana. The MDI program has a strong track record of placing interns in rural settings, and many of the preceptors interviewed for this study currently host or have hosted MDI interns. Evidenced from broader rural health professions literature suggests that rural clinical training can increase the likelihood that graduates will remain in or return to rural areas for practice, highlighting the value of supporting robust training experiences in rural settings.[33,41]

Theoretical Framework

This study is informed by Social Cognitive Theory (SCT) and the Hersey-Blanchard Situational Leadership Model, two frameworks that together provide a comprehensive understanding of how dietetic interns learn nutrition support skills over time and how preceptors adapt their teaching approaches to support the dietetic intern.

Social Cognitive Theory (SCT)

Developed by Albert Bandura, SCT emphasizes the role of observational learning, modeling and self-efficacy in skills development and behavior change.[42] SCT argues that

individuals acquire knowledge and skills to succeed as future dietitians by observing others, particularly those perceived as competent or authoritative. In the context of dietetic education, this cognitive learning process occurs throughout the student's education, however, is particularly highlighted in the supervised practice year, where dietetic interns observe, imitate and receive feedback from experienced preceptors.

A central concept within SCT is self-efficacy within the behavior factors dimension, which is an individual's belief in their ability to perform a specific task. SCT suggests this belief is shaped by several sources, including mastery experiences, verbal persuasion and vicarious learning. In the context of EN education, preceptors' model clinical reasoning and technical skills, such as bolus feeding, while also offering feedback that strengthens intern's self-efficacy. These interactions help shape an intern's confidence and skill in managing EN education with their patients, especially in the context of HEN.

The rural healthcare setting introduces an additional environmental factor that shapes behavior within the SCT framework. Due to staffing constraints, interns often have fewer opportunities for observational learning and must instead rely heavily on individualized mentorship and simulated practice with their dietetic preceptor. SCT offers a useful lens for understanding how preceptors support the development of interns' competence and confidence in these contexts of cognitive, behavioral, and environmental factors.

Hersey-Blanchard Situational Leadership Model

To complement SCT, this study also draws on the Situational Leadership Model developed by Hersey and Blanchard (1972).[43] This model describes how leaders (or educators)

adjust their teaching or supervision style based on the learner's readiness level. This model outlines four leadership styles, telling, selling, participating and delegating, each appropriate for a different stage of learner development. A preceptor may begin with a "telling" approach for interns who are unfamiliar with EN, offering step-by-step instruction and high levels of direction. As interns gain experience and confidence, preceptors may shift to "selling", combining guidance with supportive feedback. Eventually, the preceptor may adopt a "participating or "delegating" style, allowing the intern to take greater initiative while remaining available for consultations, but ultimately the final step is for the preceptor to fully delegate the task of bolus feeding education to the intern.

The adaptability described in the Situational Leadership Model reflects the real-world flexibility required of preceptors who teach within these dynamic practice environments provided by each student intern's experience within the SCT model. Moreover, this model helps explain the variation in teaching strategies reported by dietetic preceptors in this study.

Together, SCT and the Hersey-Blanchard Situational Leadership Model offer a robust conceptual framework for examining the complex preceptor-intern dynamic throughout the supervised practice year. SCT focuses on how interns build self-efficacy through modeling and feedback, which Situational Leadership explains how preceptors make instructional decisions based on the interns' developmental stage. These frameworks support an investigation into not only what preceptors are teaching, but how they determine the appropriate methods, timing, and level of supervision to use. Ultimately, these frameworks inform a deeper understanding of intern learning, preceptor decision making, and the dynamic of the preceptor intern relationship.

Statement of Purpose

This study aims to explore how RDN preceptors in the Northwestern US, specifically Montana, Idaho and Colorado, approach the teaching of bolus feeding techniques to dietetic interns during supervised practice. As HEN becomes more prevalent, there is growing concern about the variability in intern preparation, especially those training in under resourced or solo practitioner environments. Despite the 2024 Scope and Standards of practice for RDNs including a competency for the placement and education of nasogastric feeding tubes during the supervised practice year, there is little detail and guidance on how HEN, including bolus feeding skills, should be taught during this time. As a result, preceptors and internship directors are left to determine how and whether to teach these skills, often without formal guidance. This study aims to understand *what type of education dietetic preceptors in the northwestern states provide when teaching interns about bolus feeding techniques, particularly in the context of home enteral nutrition (HEN)?* By documenting the lived experiences of preceptors, this research will identify opportunities to inform preceptor development efforts, clarify educational expectations for HEN, and support more training opportunities in nutrition support across diverse clinical settings.

CHAPTER TWO

METHODS

Study Design

This study used a retrospective cohort qualitative research design to explore how registered dietitian preceptors teach dietetic interns nutrition support skills, specifically focusing on bolus feeding techniques within HEN. Two focus group discussions were conducted via Microsoft Teams and analyzed using a thematic analysis approach. This study aimed to understand what strategies, methods and experiences preceptors use to inform their instruction of interns during their dietetic internship. IRB approval was received via the Montana State University institutional review board.

Recruitment

Participants in this study were registered dietitians involved in precepting and training dietetic interns within clinical dietetics settings in the northwestern United States. Recruitment focused on dietitians from Montana, Idaho, and Colorado. Participants were identified through a listserv of current and past preceptors affiliated with the MDI program to ensure an understanding of rural preceptors supporting potential future rural RDNs. Additionally, snowball sampling was used to expand recruitment by encouraging participants to refer eligible colleagues. To meet eligibility for this study, participants needed direct experience teaching nutrition support practices to dietetic interns. Those without such experiences were excluded. Recruitment was conducted via email, which included study details, consent information, and a

survey link to screen eligibility. Eligible participants were contacted via group or individual email depending on context and requested to schedule a virtual focus group interview.

Phenomenon of Interest

To guide this investigation, a set of five focus group questions were developed through a combination of literature review, expert consultation, and preliminary discussions with experienced registered dietitians. The focus group questions were intentionally designed to be open-ended, encouraging participants to share their experiences, perspectives, and unique teaching approaches. Open-ended questions allowed for interactive discussion and the emergence of codes that may not have been captured through a rigid question structure.

Data Collection

Upon obtaining participant consent, data for this study was collected using a multi-step process that included participant recruitment, survey distribution, screening, and focus group interviews. Once eligible, participants were contacted via email and invited to schedule a virtual focus group meeting. Focus groups were approximately 45-60 minutes in length and conducted virtually (via Microsoft Teams). The focus group design aimed to allow participants to build on one another's perspectives with the flexibility to share their strategies, identify gaps in training, and reflect on their confidence in teaching nutrition support to dietetic interns.

To guide this investigation, a set of five open ended, focus group questions (table 1) were developed through a combination of literature review, expert consultation, and preliminary discussions with experienced registered dietitians. The focus group questions were intentionally

designed to be open-ended to allow for interactive discussion and the emergence of codes that may not have been captured through a rigid question structure. Probing questions were used to follow-up and expand the depth of conversations. Participants were invited to share their experiences as both preceptor and intern with bolus feeding education, their unique teaching approaches, and perceived best practices or ideal supports.

Table 1: Focus Group Questions

Question Number	Focus Group Question
Q1	Please describe what you see as best practices for supporting dietetic interns in developing nutrition support skills while in rotation with you.
Q2	Tell me about any experiences you had with bolus feeding as a dietetic intern.
Q3	What is entry-level competence for bolus feeding?
Q4	Describe how you would ideally support an intern in learning bolus feeding techniques during their time with you. What does that education look like?
Q5	How have you adjusted your teaching strategies with dietetic interns over time, and why?

All focus group discussions were recorded with participants' consent. Two to three members of the research team attended the live focus group. One researcher conducted the focus group as the lead facilitator, and the second and third researchers acted as the note taker. A research team debrief discussion was conducted immediately after each focus group to discuss emerging codes/themes. Audio recordings were transcribed verbatim via Microsoft Teams to ensure accurate representation of participants' responses. This audio recording was reviewed for accuracy by the research members that attended the focus group. The primary researcher then

entered the focus group transcriptions into Microsoft Excel line-by-line and created three identical spreadsheets for the research team. To maintain clarity, each open-ended focus group question was coded separately to maintain focus on its specific area of inquiry.

All data underwent deidentification during initial transcription edits, with identifying information removed to maintain anonymity. Participants' confidentiality was strictly maintained throughout the study. Each participant was given a unique identifier recorded in correspondence to the survey, interview, and recordings. This process was upheld throughout the coding and analysis phases, ensuring participant privacy and ethical research practices. Transcript text was then entered into an excel document line by line for thematic coding by the research team.

Data Analysis

Thematic analysis was used to identify key themes from the focus group discussions to examine and identify recurring patterns, themes, and lived experiences shared by participants when teaching home enteral nutrition (HEN). Data analysis followed a structured, multi-phase process. Initially, the research team reviewed and familiarized themselves with the focus group transcription through transcription review, debriefing and interviewer note-taking before beginning open coding. In the first round of open coding, the research team systematically reviewed transcripts to inductively identify recurring concepts and unique attributes that emerged throughout the discussion. Codes were applied separately to text segments within each of the five focus group questions. Each researcher independently developed codes and determined code definitions. Line-by-line coding was used, and multiple codes could be assigned to a single text segment when applicable.

Prior to merging the independent codes, across the five focus group questions, the primary researcher met with the research team to discuss initial findings and begin consolidation of overlapping codes. For each focus group question, the primary researcher consolidated the three sets of independent codes into an initial master coding list for each interview question. Color coding was used to help visualize patterns, allowing the research team to identify overlapping codes and merge similar definitions. At this stage, a finalized code list was developed to encompass codes from all five focus group questions.

After an additional review session with experts in the field regarding the first round of emerging codes, a second round of coding was conducted independently for each question utilizing the finalized code set. The research team met to discuss patterns, refine coding categories, and establish clear code descriptions to ensure consistency. In cases where coders initially differed in their code definitions or application, discrepancies were resolved through group discussion, revisiting the data, and ultimately reaching a unanimous consensus on the code name and definition. After an additional review session with faculty regarding the first round of emerging codes and themes, a second round of coding was then applied using this finalized framework.

The research team sorted codes to find commonality across the research team codes and worked to develop themes. Common codes were grouped together, and the research team engaged in collaborative discussions to explore similarities and differences, working toward a shared understanding of the data. Through this iterative process, the team reached consensus on the interpretation and relevance of emerging themes. The team finalized the themes and developed clear, operational definitions for each. Thematic groups were further examined to

identify overarching themes and patterns that aligned with the study's research question. All coding and thematic developments were documented in a shared Excel spreadsheet, ensuring transparency and accessibility among the research team.

Reflexivity

The primary researcher is a registered dietitian and board-certified nutrition support clinician (CNSC) with precepting experience in Montana and Idaho. Additional research supports were current dietetic interns, dietetic internship program director, and a non-clinically practicing faculty dietitian. These varying professional experiences provided a variety of considerations to understand perceptions, learning strategies, and the preceptor intern relationship. The research team maintained critical reflexivity, through team discussion and debriefing to ensure that coding and theme identification were rooted in participant data rather than researcher assumptions.

CHAPTER THREE

RESEARCH FINDINGS

The research team heard from a diverse and experienced group of dietetic preceptors (see Table 2). A total of eight RDNs participated in the focus groups (Group 1: *n=5*; Group 2: *n*= 3), with six practicing in Montana, one in Idaho and one in Colorado. Most participants (*n*=6) had between 6-10 years of experience as a registered dietitian, while two participants had over 11 years. Experience as preceptors also varied: two participants had served as preceptors for more than eleven years, while one had recently begun in this role (0-1 year). Participants represented a range of practice settings, including inpatient hospitals, outpatient clinics and home healthcare. The most common setting was inpatient care (*n*= 5), followed by outpatient setting *(n*=3). Across these settings participants help varied perspectives on what constitutes intern competency for enteral nutrition, reflecting differences in clinical practice and teaching expectations. Consistent with national trends in the profession, all participants identified as female. When asked to rate their confidence in teaching bolus feeding on a scale from 1 to 5, most participants (*n*=6) reported high levels of confidence, while two described their confidence as neutral or low.

Table 2: Characteristic Overview of Focus Group Participants

Participant	Years of RDN Experience	Years as Dietetic Preceptor	Work Setting	Clinical Population Focus	Level of confidence teaching bolus feeding education (1-5)	Bolus feeding Competency Level (perception)
RDN 1	6-10 years	6-10 years	Hospital/Inpatient	Adult, oncology, ICU	5-very confident	Expert

Table 2: Characteristic Overview of Focus Group Participants Continued.

Participant	Years of RDN Experience	Years as Dietetic Preceptor	Work Setting	Clinical Population Focus	Level of confidence teaching bolus feeding education (1-5)	Bolus feeding Competency Level (perception)
RDN 2	11 or more years	11 or more years	Hospital/Inpatient	Adult, Oncology, Gastrointestinal, Bariatrics, Critical care/ICU, Geriatrics, Diabetes, Cardiovascular, Renal	5- very confident	Proficient
RDN 3	11 or more years	11 or more years	Outpatient clinical	Adult, oncology	5- very confident	Entry level
RDN 4	6-10 years	6-10 years	Hospital/inpatient	Adult	3 –Neutral	Proficient
RDN 5	6-10 years	2-5 years	Hospital/inpatient	NICU/Pediatrics, Adult	4- Confident	Entry level
RDN 6	6-10 years	6-10 years	Hospital/inpatient, outpatient, Home Healthcare setting (DME)	Adult, oncology, NICU, ICU, gastrointestinal, bariatrics, Geriatrics, DM, CVD, renal	5- very confident	Entry Level
RDN 7	6-10 years	2-5 years	Outpatient clinic	Adult, oncology, gastrointestinal, Bariatrics, DM, CVD, renal	4-confident	Proficient
RDN 8	6-10 years	0-1 year	Outpatient clinic	Adult, geriatrics	2- somewhat confident	Proficient

Nutrition support education during the dietetic internship is not a one-size-fits-all experience. As identified by this research, preceptors' teaching strategies can be shaped by a

complex mix of clinical demands, institutional context, personal experiences and evolving expectations for intern competence. Six major themes were identified (see table 3): (1) practicing nutrition support skills; (2) contextual logistics that shape intern exposure; (3) ambiguity of intern competency; (4) generational influence on precepting; (5) preceptor competence; and (6) Preceptors are human. Additionally, these themes identify how preceptors' own training backgrounds, access to continuing education, and collaborative teaching relationships influence the way nutrition support skills are taught and reinforced.

Table 3: Summary of Key Themes Identified in Focus Group Analysis

Theme	**Subtheme**
Practicing Nutrition Support Skills	*Calculations* *Case Studies* *Nutrition Support Practice* *Tube Feeding Equipment Exposure*
Contextual Logistics	*Hospital-Specific Opportunities* *Situational Learning Opportunities* *Length of Rotation*
Ambiguity of Intern Competency	*Competency* *Competent vs Confidence*
Generational Influence on Precepting	*Preceptor's Internship Experience* *Preceptor Confidence* *RDN Generational Difference*
Preceptor Competence	*Professional Roles* *Role & Scope* *Good Dietitian Does Note Equal Good Preceptor* *Skill Development* *Solo Dietitian*
Preceptors are Human	*Teach Through Guidance* *Humanizing The Learning Process* *Support Over Struggle* *Two-Way Learning Process* *Adapt Teaching Styles* *Intern Development Stage*

Practicing Nutrition Support Skills

Preceptors described offering structured, hands-on learning experiences to help dietetic interns build competency in nutrition support skills during the supervised practice year. They emphasized the importance of moving beyond observation to active engagement, where interns practice specific skills such as administering bolus feeds, performing water flushes and handling enteral nutrition supplies. These experiential learning opportunities were often scaffolded through demonstration, verbal instruction, and guided practice. One preceptor, who practice with inpatient adults explained, "*Definitely giving support and instruction but letting them get a piece of it too... it's another level to pour the water flush in or look at the tube site versus kind of peeking over the shoulder."* This approach echoes how several preceptors were themselves and reflected in a shared belief that hand-on experience fosters a deeper understanding and confidence for the intern.

Preceptors reported using a range of strategies to facilitate this practical learning. These included practicing tube feeding calculations, reviewing case studies, engaging in role-play with the preceptor, and creating structured opportunities to practice nutrition support education both with and without patient involvement. Several preceptors, including RDN 3, described using "dummies" or mock tubes in their office to allow interns to become familiar with extension sets and syringes before seeing them used on a patient. RDN 2 similarly explained that interns could interact with various supplies, syringes, connectors, or transition tips; "S*o they can kind of do some of that in our office before we get into the patient room."*

Most dietitians referenced using some form of verbal demonstration/instruction and use of tube feeding calculation practice when teaching interns. RDN 6 and 7, who worked in larger

hospital settings, specialized in oncology, and had an average of 6–10 years of dietetics experience, reported using patient case studies and role-play experiences to help interns practice nutrition support skills before entering a patient room. Additionally, RDN 6 emphasized the importance of assessing an intern's baseline knowledge before introducing nutrition support calculations. She noted that understanding what an intern already knows helps tailor the teaching approach and prevents them from feeling overwhelmed or confused when observing more advanced skills. Several preceptors emphasized the importance of providing interns with hands-on experience to build confidence and familiarity with nutrition support equipment before supporting real patients. RDN 2 who worked in a rural hospital setting with 11 plus years of experience as a RDN and dietetic preceptor shared, *"I think they gain a lot of confidence knowing that they can do it versus just talk about it... I like to let them get in there so they can kind of do some of that in our office before we get into the patient room."*

Contextual Logistics

Preceptors described external conditions and environments that had a role in shaping how interns were exposed to and how they gained nutrition support skills during their internship year. These include hospital-specific factors such as setting (rural vs higher level care), clinical teaching conditions, and the length of the intern rotation with the preceptor. RDN 4 explained that the small size of her rural hospital impacts how she teaches nutrition support, since opportunities to work with actual patients can vary. Due to unpredictable patient needs (or likelihood to see multiple bolus feeding patients during the interns rotation) for tube feeding, she describes a collaborative approach that lets the intern obtain hands-on experience, but also has them practice multiple ways to increase exposure: *"We typically will have interns start by*

coming up with what [tube feeding regimen] they're going to provide the patient with… and then compare it to what [the preceptor] had."

RDN 2 emphasized that the short length of the rotation at her site limits the opportunities for advanced skill development. Explaining, *"We're getting brand new interns. They're only there for a short amount of time, and then they're on to the real thing."* As a result, her focus is on building confidence and a foundational understanding of the clinical setting and preparing the intern for more complex rotations later in the internship. RDN 3 also tied expectations to rotation length, noting that interns at her site are typically presents for four weeks. Her goal is to help the intern reach a basic level of proficiency in tasks like patient education: *"My expectation by the end of the fourth week was to be able to do some basic education with cancer patients..."* She contrasted this with personal past inpatient experience where longer rotations allowed for broader exposure and skill-building, though she acknowledged these expectations were less structured. Together, these insights highlight how time limitations, site-specific structures, and patient exposure influence how and what nutrition support content interns are exposed to during supervised practice.

Ambiguity of Intern Competency

Preceptors reflected on the ambiguity and variation in how entry-level competence is defined, taught and evaluated between preceptors. Preceptors' responses varied in whether they viewed execution of nutrition support skills as essential for passing the rotation or simply as desirable exposure. A key pattern that emerged was the variation in how participants perceived the expected competency level for bolus feeding education. Half of the participants believed that bolus feeding education should be an entry-level or proficient skill by the time an intern

completes their internship. Only one participant identified this skill to be considered as expert. This divergence highlights differing expectations among preceptors regarding whether bolus feeding education falls within the scope of entry-level practice for dietetic interns.

RDN 3 emphasized that while some RDNs may feel out of practice, skills like bolus feeding and tube feed calculations should be considered core competencies, comparable to standard nutrition education topics such as heart healthy education or carbohydrate counting. Only three of the eight dietitians identified bolus feeding education as an entry-level competency on the pre-focus group survey. RDN 2 expressed uncertainty about expecting full competence of interns by the end of the internship, particularly given the short duration of time she precepts interns in her clinical rotation. She reflected, *"I think it would be so cool if everybody finished the internship and they knew how to do that [bolus feeding education] ... So easy for me to say, right? Because people come for like two to three weeks."* This RDN also reflected on her own internship experience feeling underprepared as a new RDN and emphasized the importance of post-internship support, acknowledging that interns often gain true confidence and skill after graduation, especially when working in supportive, interdisciplinary environments. They suggested that if interns are interested in clinical nutrition, they should seek out opportunities during training but questioned whether full competence in specialized skills like nutrition support should be expected of all interns. RDN 5 explained,

> *I think, that there's a difference between basic competency and being confident and feeling very knowledgeable of bolus feeds. I think there's a difference between saying you've had experience doing this and you could do it if you needed… and saying you feel confident to go in there [patient room] and be able to answer any questions and troubleshoot any issues.*

Ultimately after RDN 5 provided this context, the rest of the RDNs in focus group 1 agreed with RDN 5 that the interns need to at least have some familiarity with the process of providing a bolus feeding to a patient.

In contrast, preceptors in focus group 2 provided a more detailed view of what baseline competence should include, particularly for interns planning to work in a clinical setting. These participants emphasized that new dietitians should at least be able to calculate a basic tube feeding regimen, whether continuous or bolus, understand the process to transition patients to home tube feeding, assess for appropriateness of feeding method (e.g., pump vs gravity), and provide patient education. These skills were considered essential considering real-world care gaps, such as virtual-only support from home infusion companies and limited staff training in skilled nursing facilities. One preceptor, drawing from experience as both a nurse and dietitian, recounted witnessing errors in enteral feeding administration during her nursing schooling, supporting the need for interns to enter practice with at least strong foundational knowledge.

Generational Influence on Precepting

Preceptors described their approaches to teaching nutrition support skills as shaped by their own dietetic internship experiences. Preceptors discussed how their personal internship experiences affected their growing confidence as an intern as well as their perspectives on their role as a preceptor today. For example, RDN 1 recalled a memory of being encouraged by her oncology preceptor to administer a bolus feed independently. She reported, *"...That kind of inspired my teaching style. I still remember it as such a core memory and that's kind of what I want to give back to the interns."*. Similarly, half of the participants reported having some form

of hands-on experience with nutrition support education during their dietetic internship. RDN 2 recalled learning from a confident and hands-on preceptor who was deeply involved in tube feeding care. She reported feeling too overwhelmed as an intern to fully appreciate the experience, but in hindsight recognized how fortunate she was to have been able to observe such strong clinical competence, which shaped her early impression of the preceptor's role.

In contrast, several other participants noted a lack of exposure to nutrition support skills education during their internship, which they felt delayed their skill development as an intern and shaped how they approach teaching interns. RDN 5 explained that when she was an intern, she did not interact with G-tubes or PEG tubes until she was working as a dietitian, saying, *"Then my first clinical experience was in a critical access hospital in Alaska. So that was me teaching myself and figuring out how to do it, because I was the only dietitian."* RDN 4 and RDN 8 reported similar experiences and contributed this lack of experience to how confident they felt at teaching interns' nutrition support skills. RDN 8, who has 6-10 years of experience as an RDN, but 0-1 years of experience precepting noted, *"... I still don't feel confident in it [bolus feeding education] because it's just not my world and I didn't learn it in my internship. It's still something that I don't think I could successfully educate a patient on even now."*

Many preceptors noted that their teaching style evolved over time. RDN 2, a rural inpatient dietitian who has worked as a preceptor for over 11 years, reflected on how her teaching strategies have evolved with both clinical experience and years of working with interns. Early in her career, she focused on teaching only what she felt confident in, but over time, she learned to prioritize key concepts and share more openly about mistakes. *"You can only teach what you know… with more clinical experience too, you learn what's important to focus on and*

what you can maybe focus less on." She also noted that her increased comfort in naming past errors helps normalize the learning process for interns: *"I don't think in my early career I would have talked about my mistakes a lot, but now… I have no issues saying, 'Oh my, I've done that before too.'"*

While some participants described internship exposures affected their own confidence in precepting, others pointed to a broader generational shift in dietetic practice. Tasks once considered outside of the RDN's role at the time many of these preceptors were in their internship, like bolus feeding, are now expected competencies for new interns. RDN 3 shared that she had no hands-on experience with nutrition support skills during her internship, stating, *"It's been a while since I did my internship, so back then* [10-15 years ago] *I think it was a little bit more old school. As far as dietitians being more hands-on with actually giving bolus feeds... It was calculation city and then that was the nurses' job to do the bolus feeds."*

Preceptor Competence

In contrast to *Generational Influence,* preceptors' differing perceptions on teaching nutrition support skills are also shaped by their current professional competence. Factors such as clarity in their role and scope of practice, access to continuing education, and the presence of support systems all influence how confident and prepared preceptors felt to teach bolus feeding techniques to dietetic interns. RDN 7 described how working across different hospital systems and a home infusion company influenced her higher level of comfort and skill with nutrition support education. She is now working in a community hospital with limited tube feeding experience among hospital staff (MD, RN, etc.). She recounted a critical incident where a nurse's mistaken bolus resulted in a patient needing an ICU transfer. She reflected on how important it is

for dietitians to not only feel confident in their own bolus feeding knowledge and skills but also be able to educate nursing staff within their role. She noted, *"It just kind of reiterates the importance of dietitians teaching the staff [RNs] in different ways, whether it's via pump or syringe bolus or gravity bolus."*

In some cases, preceptors described having to self-educate on nutrition support skills due to limited formal training or minimal support in their work environment. RDN 5, the dietitian who started out in rural Alaska without internship experience, noted that without a team to consult in her first professional job, she relied on independent research and informal connections with community dietitians to develop her practice. She explained, "*I did a lot of... reading references and looking up information before I did it [bolus feeding] ... I was the only one. And I was a new grad, so you know. Learned a lot, but kind of trial by fire.*" Similarly, RDN 4 described limited exposure to practical skills during her internship, despite being responsible for patients transitioning from continuous feeds to bolus feeds in her first professional position. In her current hospital, this dietitian felt unprepared after her internship experience and sought external training, stating, *"We've had OptionCare (Durable Medical Supplies Company) come in and give us [preceptors] training just so that we feel more equipped to train interns."*

Preceptors are Human

The learning exchange between interns and preceptors is a bidirectional relationship where preceptors guide interns through clinical reasoning, while also learning from new perspectives and knowledge from the interns. Preceptors' teaching approaches were described as adaptive, based on interns' confidence, ability, and developmental stage, as well as fostering mutual growth and a supportive learning environment throughout the rotation experience.

Several preceptors emphasized the importance of modeling humility to create a supportive and safe environment where mistakes may happen in the spirit of learning. RDN 3, who practices as a solo dietitian in an oncology clinic, shared how she normalizes mistakes during hands-on teaching moments, using humor and openness to demonstrate that even experienced clinicians can make errors. She shared how she models learning for interns, *"Sometimes you're showing a patient how to flush their feeding tube, and you forget to take the clamp off- water sprays everywhere and you think it's clogged. Then you realize, 'nope', just tired or rushing. I laugh and say, 'it happens!' and show the intern it's not the end of the world – we just clean it up and move on."*

Additionally, several preceptors emphasized the importance of creating a supportive learning environment that prioritizes psychological safety for interns and mutual growth. Rather than placing interns in high-pressure situations that could lead to unnecessary stress, preceptors described the value of gradually building skills and confidence over time. As RDN 8 put it, *"I don't want to throw them into situations where they're terrified… it's just easing them into these things and not giving them PTSD.*" RDN 7 and RDN 8 echoed this sentiment. RDN 7 reflected on past experiences where both patients and providers were left feeling unprepared and now, she uses these insights to better support interns: *"I really stress how to declog a tube… it's the kind of information I didn't know as an intern, but now I make sure to share it."*

This commitment to support also goes together with recognizing interns as valuable sources of knowledge. RDN 6 described interns as "*a wealth of knowledge*" and noted that teaching often becomes a space for shared learning: *"I've had interns that truly have some incredible knowledge, and it's really cool to hear things that they've learned... and how that*

actually might be worth implementing in my practice." RDN 7 reinforced this idea, describing how she models curiosity and professional development skills alongside interns: *"Let's look it up"* if a new diagnosis or clinical situation arises. These preceptors frame the precepting relationship not as a hierarchy, but as a collaborative exchange that fosters growth for both the intern and the RDN.

CHAPTER FOUR

DISCUSSION

This study examined how registered dietitian preceptors in the Northwestern United States approach teaching bolus feeding skills to dietetic interns during their supervised practice. Specifically, it aimed to answer the question: *What type of education do dietetic preceptors in the northwestern states provide when teaching interns about bolus feeding techniques, particularly in the context of home enteral nutrition (HEN)?* The findings revealed a complex and nuanced set of practices and beliefs, which were organized into six major themes: (1) practicing nutrition support skills; (2) contextual logistics that shape intern exposure; (3) ambiguity of intern competency; (4) generational influence on precepting; (5) preceptor competence; and (6) Preceptor are human. These findings have multiple considerations for RDN preceptors and internship programs.

Practicing Nutrition Support Skills

Preceptors described offering structured, hands-on learning experiences to help dietetic interns build competency in nutrition support skills during the supervised practice year. They emphasized the importance of moving beyond observation to active engagement, where interns practice specific skills such as administering bolus feeds, performing water flushes and handling enteral nutrition supplies. These findings align with research by Sandhu et al., who identified that supervised, experiential practice improved both competence and confidence among clinicians managing enteral nutrition.[9] Similarly, Kwok et al. found that learners who received structured training with both demonstration and hands-on components performed significantly better in

skill assessments related to enteral feeding than those who relied on observation alone.[44] While not widely discussed in these focus groups, Sandhu et al. also pointed out the importance of combining these experiences with opportunities for feedback and reflection to promote optimal learning.[9] Future research should explore the effectiveness of specific preceptor teaching strategies, such as simulation or hands-on practice specifically on bolus feeding education, to understand how they might differently impact intern preparedness.

These findings reflect how SCT aligns with the preceptor-intern learning experience, particularly the emphasis on observational learning, modeling, and self-efficacy. As Bandura (1977) notes,[42] learners acquire new behaviors by watching credible role models and receiving feedback and reinforcement on skill development. In this case, preceptors reported helping interns build self-efficacy not simply through passive observation, but through active practice and supportive feedback from preceptors. This demonstrates how mastery experiences and verbal encouragement may shape preceptors' belief in their ability to perform bolus feeding education.

This emphasis on hands-on experience observed in this study also reinforces the critical role of the preceptor. From a practice perspective, this suggests that RDNs who serve as preceptors are not only providing training on clinical care but also functioning as on-site educators responsible for scaffolding intern learning. Dev et al., identified preceptors as key to bridging the academic-to-clinical gap by modeling professional behaviors, guiding skill development, and creating psychologically safe learning environments that promote intern confidence.[36]

Further examining how preceptors train and educate interns on nutrition support skills, such as bolus feeding, may help establish clearer standards of practice for preceptors within

dietetic internships. This continued understanding could support the development of targeted learning opportunities to better equip preceptors for teaching these skills for long term impact on professional practice and bolus feeding patient care.

Contextual Logistics

Preceptors described how external logistical realities, such as hospital size, patient population, location, and rotation length, shaped the amount of hands-on experience interns received and the methods preceptors used to fill in the gaps when patient exposure was limited. This theme aligns with a persistent challenge seen in clinical dietetics education. Research supports even when preceptors are motivated and prepared to teach bolus feeding techniques, their ability to do so is often limited by setting-specific factors.[45] Similarly, preceptors in our study from rural or smaller facilities noted that interns may only see one or two tube fed patients during their rotation, which often led to preceptors needing to rely on mock scenarios or case-based patient discussions. When situational context provides limited opportunity for direct patient contact, future research should explore how preceptors support interns in accessing and identifying sound resources to support them in future situations.

For clinical RDNs, particularly those practicing in rural or critical access settings, these findings highlight both a challenge and an opportunity. As seen in this study, preceptors are already responding to limited patient exposure by using creative strategies to teach nutrition support skills. These approaches demonstrate adaptability and a commitment to intern learning, even in resource constrained environments. They are also supported by previous research indicating simulation as an effective educational tool in the absence of direct patient care.[46-48] However, the findings also point to a need to explore preceptors' support across dietetic

internship programs. Internship and classroom experiences might explore if intentional, structured learning experiences, whether delivered through simulation, guided practice or case-based instructions, may help improve dietetic interns' understanding of nutrition support skills.

The variability in intern exposure due to setting-specific constraints illustrates the impacts of the environment within the SCT framework on the learning process. When interns have limited opportunities for observational learning, preceptors must act as both educators and facilitators of vicarious experiences, using simulation and case studies to mimic real-world practice. At the same time, this adaptive teaching style reflects the situational leadership model, as preceptors shifted their level of direction and support depending on what the intern previously had access to. In rural settings, preceptors may use a more directive “telling” or “selling” style to ensure foundational skills are taught despite clinical limitations. Future research should explore what the optimal approach is for teaching within diverse contextual influences in conjunction with interns’ need to be prepared to handle a wide variety of nutritional needs in their future as new professionals.

Ambiguity of Intern Competency

A major finding of this study was the divergence among preceptors regarding whether bolus feeding education should be considered within the scope of entry-level competency for dietetic interns. While some preceptors expected interns to perform and educate patients on bolus feeding by the end of the rotation, others viewed this as a more advanced skill requiring supervision or further practice post-graduation. This ambiguity reflects a broader challenge in the field. As Begley et al., similarly noted, competency-based assessment decisions in dietetics are highly variable and shaped by differing interpretations, contextual constraints, and the absence of

a shared conceptual framework.[49] Additionally, Roseman et al., found substantial variability across dietetic education programs in how students learning outcomes were interpreted and implemented, suggesting that even with national standards, there is a lack of consistency in how entry-level competencies are defined and assessed.[50] This divergence in understanding across preceptors identifies a potentially critical gap in clarity about the precise expectation for interns' skillsets and, ultimately, what preceptors should be teaching related to nutrition support. This may suggest clarity is needed for both interns and preceptors around how competencies are defined, taught, and assessed during the internship year.

This ambiguity around competency expectations also presents a challenge through the lens of SCT. Without a shared understanding of what behaviors should be modeled, taught, and reinforced, both preceptors and interns may struggle to develop self-efficacy. This uncertainty may result in inconsistent feedback, fewer mastery experiences, and reduced interns' confidence in managing bolus feedings independently.

Some of this uncertainty may also reflect a mismatch between preceptor expectations and the intern’s developmental stage, as described by the Situational Leadership Model. Interns at lower readiness levels may require clear, directive instruction and close supervision to build foundational skills. However, without defined benchmarks for what level of competence interns should reach by the end of supervised practice, preceptors may not know when to shift their approach, from high direction to more autonomy. This can contribute to inconsistent teaching and missed opportunities to appropriately delegate and support intern independence with bonus feeding tasks.

There are some efforts underway to clarify these standards. The Academy of Nutrition and Dietetics (AND) and the American Society of Enteral and Parenteral Nutrition (ASPEN) provide extensive standards of practice outlining competencies for registered dietitian nutritionist across competent, proficient and expert levels of nutrition support.[27] The specific definitions from these professional organizations regarding entry-level competencies for bolus feeding education remain unclear. The existing guidelines thoroughly describe general nutrition support competencies, including assessment, macronutrient calculations, and development of individualized care plans. They do not explicitly define expectations related to bolus feeding skills at the intern or entry-level practitioner stage.[27] This gap may reflect a broader lack of targeted research clearly articulating what constitutes entry-level competency for teaching and managing bolus feeding. Further studies are needed to clarify these standards and ensure consistency in dietetic education and practice to best support professionals and the nutrition support the populations they serve.

Generational Influence on Precepting

While some participants described how their own limited internship experiences affected their confidence in teaching dietetic intern bolus feeding skills, others pointed to a broader generational shift in dietetic practice. Tasks such as placement of nasogastric feeding tubes, once considered outside the RDN's scope, are now viewed as expected competencies for interns entering clinical practice today.[51,52] These shifting expectations set by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) underscore the importance of ensuring that emerging dietitians are prepared to provide nutrition support education upon entering clinical practice.[28] A national survey of RDNs practicing nutrition support identified lack of training,

experiences and education as the top three barriers limiting dietitians from performing expert level nutrition support practices.[26] This article stated, “This discrepancy suggests a potential gap in professional development efforts, where expert-level RDNs may not be fully leveraging their skills to mentor emerging practitioners.” Additional research should explore what can be done in the absence of more expert level practitioners to build these skills for emerging dietitians.

These generational dynamics can be further understood through the lens of the SCT framework. Preceptors who had minimal exposure to bolus feeding during their own training may lack the modeling behaviors and self-efficacy beliefs needed to support intern learning. Without opportunities to observe and practice these skills earlier in their careers, some preceptors may feel less confident demonstrating or reinforcing them now. The Situational Leadership Model also offers insight into these shifts. Preceptors trained under more traditional models may gravitate toward a “telling” style of teaching, while others are adapting to use more “participatory” or “delegating” approaches based on the intern's readiness and the expectations of contemporary practice. Future research should explore the expansion of training opportunities, not only for interns, but for current RDNs through ongoing professional development.

Preceptor Competence

Further highlighting the challenges posed by generational shifts in the RDN scope of practice, preceptors in this study described how limited exposure to nutrition support skills during their own internship influenced their current confidence in teaching interns' procedures like bolus feeding. These findings suggest a potential feedback loop where gaps in personal internship training can influence how the dietitian is teaching current interns, ultimately limiting the development of nutrition support skills in the next generation of dietitians.

Although preceptors are central to intern skill development,[53] few studies examined how their own training experiences influence their current confidence and perceived competence as educators. While Roseman et al.[50] and Begley et al.,[49] document inconsistencies in how competency expectations and assessment practices are applied across programs, there is limited research on how these inconsistencies affect preceptor's ability to teach technical clinical skills like bolus feeding education.[49,50]

AbuSabha et al.,[54] further reinforce this theme by demonstrating that newer or less experienced dietitians, often had minimal exposure to advanced clinical training, were less likely to serve as a preceptor, and frequently felt unprepared or overwhelmed by the responsibilities of mentorship. These barriers may be especially consequential in rural or critical access settings, where staffing shortages and unpredictable caseloads require preceptors to manage intern training differently.[33,34] These findings identify how variability in personal internship experiences and institutional support may impact a dietitian's perceived readiness to precept.

These findings also align with SCT, in that preceptors' own learning experiences and institutional environment shape their current confidence and teaching style. Preceptors with limited training during their internship may have lacked the foundational mastery experiences that foster long-term self-efficacy as educators. Meanwhile, the Situational Leadership Model helps us understand how preceptors vary in their approach depending on their own comfort and the intern's readiness. These patterns suggest that there is a need to understand the best support for preceptors to not only teach technical content but also help them adjust their instructional style to meet learners' needs.

Future research is needed to explore how preceptor development programs might support dietitians in building instructional confidence, particularly when teaching hands-on clinical procedures like bolus feeding to serve rural contexts. As seen in this study, several participants described being the sole RDN in a rural facility, which shaped both their teaching approach and their sense of confidence for preparing interns to manage complex clinical tasks independently.

Preceptors Are Human

Effective precepting is shaped not only by clinical expertise but also by emotional intelligence, humility, and a commitment to mutual learning of the preceptor.[35,37,55] Preceptors described their teaching approaches as adaptive, responsive to intern confidence and developmental stage, and rooted in fostering a safe learning environment. Rather than placing interns in high-pressure situations, preceptors noted prioritizing gradual exposure and normalized mistakes as part of the learning process. Modeling humility, such as admitting errors or using humor to diffuse tense moments, was viewed as a powerful teaching strategy that helped interns feel supported and capable. This aligns with research in dietetics and other health professions that highlight the role of personal relationships in shaping intern learning and fostering autonomy in professional practice.

These findings support the idea that high-quality precepting is not just about technical instruction, but about building a psychologically safe, collaborative environment where interns can grow.[36] Future research could explore how preceptors' self-awareness and emotional intelligence influences intern outcomes, particularly in clinical skills like bolus-feeding education. Investigating how to formally integrate training on psychological safety and relational

teaching practices for dietetic preceptors may offer a promising path for strengthening both intern learning and preceptor fulfillment.

This pattern is also supported by SCT and Situational Leadership Model. SCT identifies the importance of social environmental context in learning, suggesting that psychological safety and emotional connection enhance observational learning and lead to increased self-efficacy. Similarly, the Situational Leadership Model recognizes that leadership is not static. Effective preceptors read the interns' emotional state and confidence level and adjust accordingly, whether stepping in to offer structured support or stepping back to allow intern to have more autonomy.

I+PSE Framework Implications

The findings of this study highlight an adaptive challenge within dietetics education. The Individual plus Policy, System and Environmental (I+PSE) Framework for Action offers ideas for a system-based approach to addressing these interconnected barriers from the SCT framework through coordinated multidimensional strategies.[56] For example, *activating intermediaries and service providers* could help illuminate opportunities for RDN preceptor continuing education with interdisciplinary team members. This may provide opportunities for consistent instruction and support for interns learning nutrition support skills with expert level RDNs are not available. Further exploring opportunities and best practices for *aligning organizational policies and practices* around bolus feeding and precepting could encourage internship programs and clinical sites to adopt formal expectations and support for preceptors, such as structured orientation, simulation access, or teaching tools for bolus feeding education. To address geographic disparities and limited intern exposure, developing peer learning networks or preceptor-led discussion groups across rural training sites to share experiences, build teaching

confidence and co-creation of strategies for bolus feeding instructions in under-resourced areas might provide impactful opportunities to build on *community engagement and education*. Applying the I+PSE framework illustrates how intern competency is not solely the product of individual preceptor efforts, but that broader systems, educational, organizational, and policy related could also strategically align to support consistent, equitable intern learning across diverse practice settings.

Limitations

While this study provides valuable insight into how dietetic preceptors in the Northwestern United States teach bolus feeding techniques, a few limitations should be considered. This studies sample included a small group of dietitians practicing in diverse settings, ranging from rural and critical access hospitals to high acuity medical centers across Montana, Idaho, and Colorado. The regional focus enables a more nuanced understanding of context-specific teaching practice, but it also limits the transferability of findings to other geographic regions or practice settings. Similarly, the results may not reflect the experiences of dietitians working in all areas of the profession. The term "*bolus feeding"* was intentionally left open to interpretation to reflect real world variations in clinical practice. However, this may have introduced inconsistency in how preceptors conceptualized or described their teaching strategies. Despite these limitations, the study benefited from insight from a diverse research team, including community dietitians, dietetic internship directors, DPD director, and current dietetic interns for Montana State University. This diversity enriched the analysis and contributed to a well-rounded interpretation of the data. Finally, it is important to note that the primary researcher may have influenced participation. Several preceptors had pre-existing professional relationships

with the primary researcher, either as former colleagues or through broader involvement in the dietetics field. While this familiarity may have introduced some bias, it may also have encouraged participants to share more personal and reflective experiences, as they may have felt a greater sense of trust, comfort and understanding from the researcher.

CHAPTER FIVE

CONCLUSION

This study offers valuable insight into how registered dietitian preceptors in the Northwestern US approach teaching bolus feeding skills to dietetic interns. Through six themes, the findings illustrate that preceptors' teaching is shaped not only by clinical expectations and site-specific logistics, but also by personal factors such as the preceptor's own training history, confidence, and professional development. Preceptors employed a range of strategies to support interns learning, including structured hands-on practice, case discussion, simulations and collaborative reflection. Similarly, preceptors demonstrated adaptability, humility, and a strong commitment to intern development, even when working with limited formal guidance for training interns. However, ambiguity around what constitutes entry-level competency in bolus feeding remains, especially in rural or under-resourced settings, where the availability of modeling and exposure may be limited.

These findings reinforce the relevance of Social Cognitive Theory and the Hersey-Blanchard Situational Leadership Model in understanding how interns learn and how preceptors teach within the supervised practice year. As SCT suggests, interns build self-efficacy by observing, practicing, and receiving feedback from trusted preceptors. Yet in rural settings, limited modeling opportunities often require preceptors to rely on simulation experiences. Creative workarounds, as illustrated in *Theme 1: Practicing Nutrition Support Skills*, highlighting the critical role preceptors play in shaping intern confidence. Likewise, the variation in teaching strategies reported in this study aligns with the Situational Leadership Model. For example, in *Theme 4: Generational Influence*, preceptors described tailoring their level of

direction or collaboration based on interns' motivation, prior experience, and perceived readiness. This adaptability also appeared in *Theme 6: Preceptors Are Human*, where participants emphasized the need to meet interns where they are and foster humility. Together, these frameworks illuminate the interpersonal and instructional flexibility required for effective precepting.

Ultimately, these findings call attention to the need for clearer national standards around bolus feeding education and expectations and, more robust support systems for preceptors, particularly those in solo or rural practice. They also support continued need for research on how instructional approaches influence intern confidence and readiness around nutrition support skills. Strengthening preceptor development in nutrition support education may help ensure that future dietitians enter practice equipped to meet the growing needs of patients who rely on enteral nutrition.

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