INVESTIGATING AND REFINING ROLES: HEALTH EDUCATORS' PREPARATION AND COMPETENCY FOR DELIVERING NUTRITION EDUCATION

A Dissertation

by

REYNOLETTE ETTIENNE-GITTENS

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2011

Major Subject: Health Education

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Approved by:

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ABSTRACT

Investigating and Refining Roles: Health Educators' Preparation and Competency for Delivering Nutrition Education. (August 2011)

Reynolette Ettienne-Gittens, B.S., Howard University; M.S., Howard University

Chair of Advisory Committee: Dr. E. Lisako J. McKyer

This dissertation presents four studies designed to investigate and provide evidence based insight into the preparation of health educators in the science and practice of nutrition. A mixed methods approach was utilized for this research. First, a review of the current literature will be presented discussing (a) what other authors have written regarding nutrition education for allied health professionals, and (b) the availability of research advocating for nutrition education for health educators. Also included is the review of twenty-three (23) articles addressing how researchers conceptualize nutrition, and their rationale for nutrition's inclusion into the respective allied health discipline's curriculum.

Secondly, an analysis of the health education curriculum of a professional health program is presented. With the use of an availability scale, the university's most recent catalogue as well as the curriculum of the health degree was analyzed. The health program was also assessed for the presence of nutrition credentialed faculty and the presence of nutrition requirements and electives.

Thirdly, the development and administration of an instrument to test the nutrition, nutrition education and health education knowledge of a sample of health and nutrition students will be discussed. The self-administered instrument was developed by the author. The final sample (n=123) comprised a purposeful set of students all currently enrolled at Texas A&M University, College Station, TX. The student's final scores on the instrument were assessed based on major, classification and by whether they had pursued a nutrition course during their undergraduate tenure.

Lastly, a qualitative examination of health educators with the Certified Health Education Specialist (CHES) credential will be presented. Employing a naturalistic approach, semi-structured interviews were conducted. The final sample comprised four (4) persons. Health educators provided narratives related to their prior experiences in nutrition and their perceived competency in delivering nutrition education.

Prior to this study, scientific literature has been deafeningly silent on nutrition and the health educator, the ability of health educators to deliver nutrition education, as well as the advocacy of nutrition for the profession. Thus, this study represents the first step towards addressing the limitations associated with the role of nutrition educator and filling the theoretical gaps.

DEDICATION

This is for all the brown skin girls.

Never settle, never give in, never give up.

We have come thus far. We can make it further.

Never let anyone discredit you because of your brown skin.

Let your brown skin remind you of our ancestors struggle.

Let your brown skin remind you that despite what we as a people have achieved;

We have to work harder, faster, and smarter in order to succeed.

Mediocrity is never good enough.

Never use your brown skin as an excuse for failure.

I will always and forever be proud of my brown skin.

This is dedicated to all the brown skin girls.

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All thanks and praises to God my Father, without him none of this would be possible. You created me for a purpose and I desire to adhere to your infinite design. My parents Reynold and Gertrude Ettienne deserve all recognition and this degree is more theirs than it is mine. Thank you for daring me to dream and allowing me to soar. Your sacrifices will never be forgotten. To my brother Emmanuel, I hope that as the "big sister" I have set an example for you to follow.

These past three years can be likened to sailing on rough seas. Navigating these waters was made possible by my first mate-my dissertation chair and advisor Dr. Lisako J. McKyer, whose direction, mentorship and advice made it possible for this body of work to be completed. Thank you for our weekly chats/advising sessions. I'm pretty sure, like I've told you, "You'll never find another like me". To my other committee members: Dr. Pat Goodson, you have served as a proverbial oar in my quest to navigate these waters. Your advice has always been on point and you have taught me to believe not only in my writing, but also in myself. A boat needs more than one oar, and I was fortunate to have three-Drs. Corliss Outley and Jeffrey Guidry have served as sources of insight to pave the way for a better dissertation. Thank you for your thoughtful feedback on this research. Thanks also go to the Department of Health and Kinesiology for the provision of funding to complete this body of work.

I would be remiss if I did not thank the friends that I have made during my tenure here. We navigated these seas together and although I have reached the end of my

journey, I will never forget the “adventures” we have had together. Thank you for making College Station survivable! To the members of the Black Graduate Students’ Association, you have been a godsend to me in more ways that you can imagine. You guys kept me sane! To my friends and family on the east coast and in Trinidad, thank you for your encouragement and support.

Lastly, to my husband, co-captain and best friend Courtney L. Gittens, words cannot express the gratitude in my heart. I’ve loved you for a decade and continue to do so daily. Thank you for your support-financially and emotionally. Thank you for providing for our family when I couldn’t. Thank you for letting me be me. May our love always be filled with laughter and our laughter always be filled with love.

NOMENCLATURE

ADA	American Dietetic Association
CADE	Commission on Accreditation for Dietetics Education
CHES	Certified Health Education Specialist
NCHEC	The National Commission for Health Education Credentialing
RD	Registered Dietitian

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CHAPTER I

INTRODUCTION

Education is not preparation for life; education is life itself.
-John Dewey-

The American public's interest in food and nutrition has waxed exponentially over the last decade or so. This interest has peaked so much so that nutrition and health have become important components and main staples of daily news and other media outlets. Nutrition has become a *buzzword* that sells products.[1] Many of the chronic and other adverse health conditions facing Americans today are in part influenced by behaviors, lifestyles and certainly nutritional habits. How has the allied heath profession responded to these needs and changes? Are there nutrition qualified non dietetic professionals equip to meet the public's growing need for nutrition education?

Contento[1] indicates that nutrition education "involves much more than simply imparting food and nutrition information." Nutrition education as defined by Contento, involves any combination of educational approaches designed with the intent to aid in the embracing of food choices as well as other food and nutrition related actions contributing to one's overall health and well-being. But who delivers nutrition education to the public? Registered Dietitians (RDs) have traditionally served in this role as nutrition educator. However other allied health professionals including nurses, therapists and health educators are being called upon to serve as informal or adjunct nutrition educators. There has been a wealth of research conducted regarding nutrition

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This dissertation follows the style of the *American Journal of Health Education*.

education for nurses,[2,3] medical doctors,[4,5] dentists,[6,7]and therapists.[8,9]However the scholarly literature has been deafeningly silent on nutrition's role in the training of health educators.

If health educators plan on promoting themselves as possible nutrition educators, then the first and most vital step is to determine whether they have been academically prepared for this role. More specifically, the gaps surrounding the raining of health educators include answers to questions such as these: what does the literature say regarding nutrition education for health educators? Does the health curriculum prepare their students for the field of nutrition? What knowledge of nutrition and nutrition education do undergraduate health students possess and What is the perceived ability of CHES certified health educators to impart nutrition education?

The overarching rationale for this research is to provide evidence-based insight into the health education profession. Specifically, this dissertation will: (1) Examine the current literature regarding nutrition education for health professionals. Moreover the recommendations for nutrition's inclusion into the training for these persons. Further the manner in which researchers conceptualize and operationalize nutrition education; (2) Analyze the curriculum of a professional health education undergraduate degree program. Additionally the options available for health education students in the field of nutrition, as well as the preparation in nutrition of the current faculty will be explored; (3) Assess the knowledge of health and nutrition undergraduates in nutrition, nutrition education and health education. Additionally validation of scores from an instrument designed to measure the dimensions of undergraduate's knowledge. Resulting

psychometrics are discussed in detail; (4) Present findings from qualitative interviews with Certified Health Education Specialist (CHES) certified health educators. Further health educators academic preparation in nutrition as well as their perceived competency in nutrition dissemination will be discussed.

A mixed-methods approach was undertaken for this research. Tashakkori and Teddlie[10] indicate that for complex purposes, when there are multiple questions, it necessitates the use of mixed methods. They further indicate that "the major strength of mixed methods designs is that they allow for research to develop as comprehensively and completely as possible." Teddlie and Tashakkori[11] also add that mixed methods enables the researcher to concurrently ask *confirmatory* and *explanatory* questions, providing the ability to establish theory in the same study. "Mixed method research questions are concerned with unknown aspects of a phenomenon and are answered with information that is presented in both narrative and numerical forms."

This document has been separated into six sections/chapters. Chapters II through V were written as manuscripts to serve as independent bodies of work to be submitted for publication in peer-reviewed journals. I provide a description of each of the chapters below:

- Chapter I: Presents a concise overview of the topic to be examined. In addition the purpose and rationale for the study are provided.
- Chapter II: The review of the current literature regarding nutrition education for health professionals. In addition the recommendation those researchers have made regarding nutrition's inclusion into the training of

allied health professionals. This chapter corresponds to the first journal article.

- Chapter III: An analysis of the curriculum of a professional health education undergraduate program. Additionally the presence of nutrition credentialed faculty in the program as well as nutrition elective options will be presented. This chapter will correspond to the second journal article.
- Chapter IV: Reports on the development and testing of an instrument designed to measure college undergraduate's knowledge of nutrition, nutrition education and health education. This chapter corresponds to journal article three.
- Chapter V: Qualitative findings from semi-structured interviews with CHES certified health educators. Findings examine health educators experiences, beliefs and perceptions related to nutrition and nutrition education. These will represent the final (and fourth) journal article.
- Chapter VI: General conclusions regarding the research as a whole are presented. I addition implications for the field of health and nutrition are discussed. Future research directions are also offered. Appendices as well as supporting documents are provided after this chapter.

CHAPTER II

NUTRITION EDUCATION FOR ALLIED HEALTH PROFESSIONALS: A REVIEW OF THE LITERATURE

INTRODUCTION

Who delivers nutrition education? Who is academically prepared for the task? The lack of role delineation among allied health professionals renders the answer unclear. Although the Registered Dietitian (RD) - an integral part of the interdisciplinary health care team - is considered the nutrition expert,[12] other team members including nutritionists, nurses and health educators may also be charged with the task of imparting nutrition education. Yet are these other professionals receiving adequate academic preparation to deal with the ever evolving fields of food and nutritional sciences?

With the growing need for trained professionals to effectively address obesity and other pertinent health issues, it is essential that the various allied health professionals' roles in effectively serving as nutrition education specialists is clarified. The query should begin with an examination of the training and skill requirements for those who actually deliver nutrition education as part of their professional responsibilities, as according to Ferrer-Mansorri,[13] these individuals may "lack the necessary training in educational theories and methods or methodologies that can bring about desired lasting change." It is also imperative that a comparison of the strengths and limitations specific to the delivery of nutrition education by non-RD health professionals be done.

To fully understand the importance of appropriate qualifications for nutrition education delivery, it is important for the reader that *nutrition* as well as *nutrition education* be defined. Harper[14] indicates that in defining nutrition there is some obscurity, as nutrition exists as a *science* and a *practice.* Both Johnson[15] and Harper[14] agree that nutrition should not be considered a basic science, but in fact one of *action* as it can and should be converted into practical applications which can be used by the general public. The *science* of nutrition deals primarily with the study of food and its relation to and impact on health.[14] Consequently, Harper[14] indicates that the *practice* of nutrition deals with the application of the information obtained though the science of nutrition for human well-being. It is this definition of nutrition as practice that is referenced throughout this research.

Nutrition education may be defined as education about nutrition. As a construct, nutrition education may reinforce and reify the concepts of diet, physical activity, and overall health practices. Improving dietary behavior therefore is the primary goal of nutrition education.[16] Herbert and colleagues[17] indicate that nutrition education, like other forms of education, depends on knowledge, fact assessment, initial experimentation and consequently the hoped for behavioral change. Contento,[1] goes further and theorizes that:

> Nutrition education is defined as any combination of educational strategies designed to facilitate voluntary adoption of food choices and other food and nutrition related behaviors conducive to health and well-being.

Nutritional practices and poor nutritional status are associated with several diseases including diabetes and obesity — two epidemics in the U.S. These conditions, to be adequately affected, require targeting diet and nutrition as health promotion strategies, and raise the need for appropriately trained nutrition education professionals. Yet beyond RDs, no consistent agreement among other allied health professionals regarding self-limitations in delivering nutrition education appears to exist.

Health Professions and Nutrition Education

Nutrition education has a significant role in efforts to promote health and is considered an integral part of the skill set needed by allied health professionals. Several authors have advocated on behalf of nutrition education for allied health and medical professionals.[2,18,5] Zimmermann and Kretchmer[18] in their editorial titled *Isn't it time to teach nutrition to medical students,* indicated that one of the most effective tools for the prevention of degenerative diseases is nutritional counseling. Feldman[5] encouraged making nutrition sciences and nutrition education relevant and useful for medical students. Other authors have advocated for the teaching of nutrition to nurses,[19,3] Physical Therapists,[9,8] Physician Assistants[20] and other health professionals.[21,22] However, despite intense and systematic literature searches-, there is a paucity of information available specific to aspects of nutrition education preparation and training for health educators. Therein lies the question: What specifically, if any is available in the research literature regarding professional preparation requirements in nutrition education for health educators? Answering this question is the primary step in determining the status and avenues to address (or redress) appropriate preparation for

health educators to deliver nutrition education. It will help us answer the question: Are health educators appropriately prepared to deliver nutrition education?

Registered Dietitians

Registered Dietitians (RDs) are traditionally recognized among all allied health professions as the nutrition experts. RDs are professionals who have met specific academic requirements and are legally authorized to hold that title.[23] The U.S. Bureau of Labor Statistics[24] indicates that professional preparation for the RD requires at least a bachelor's degree in dietetics, foods and nutrition, food service management or a related area. In addition to the bachelor's degree, individuals must also complete a Commission on Accreditation for Dietetics Education (CADE) accredited supervised practicum, and pass the national exam in order to obtain RD status. Furthermore, continued professional education requirements must be regularly met in order to maintain registration status. RDs may also hold advanced or additional certifications in specialized areas including pediatric nutrition, renal nutrition and diabetes education. Licensure for RDs is not mandatory, with only 33 states requiring that their dietitians be licensed.[24] These procedures (CADE curriculum, registration and licensure) are all designed to address specific areas of competencies required of dietitians.

Health Educators

Health Educators are professionally trained and prepared to serve in a variety of roles to ensure the health of individuals, groups and communities.[25] Health education according to McKenzie and others,[26] involves educating people about health. The Bureau of Labor Statistics[27] defines health educators as those who inform about health-related

topics such as importance of exercise, sexually transmitted infections and behaviors necessary to avoid harm and illness, and proper nutrition.

Entry-level health educator positions require a bachelor's degree from a health education program, with students in these programs usually pursuing courses in psychology, human development, and foreign languages. Health educators may opt to become Certified Health Education Specialists (CHES), which requires passing an exam covering the basic areas of responsibility and competencies for a health educator. To maintain CHES certification, health educators must complete at least 75 hours of approved continuing education courses or seminars over a five-year period. The CHES designation, according to the National Commission for Health Education Credentialing, Inc[28] is an indication of professional competency and dedication to continued professional development.

Health Educators Providing Nutrition Education

Given the varied contexts in which CHES-certified health educators perform their professional responsibilities, it is not uncommon for the delivery of nutrition education to be part of their course of work. Indeed, the review of the literature presented here highlights the disparity between the training of dietetics/ nutrition professionals and health educators. This leads us to the critical question regarding adequate professional preparation in this realm: What if any guidelines exist regarding basic criterion and/or qualifications for health educators and other allied health professionals who will be delivering nutrition education? In the same note, what have other said in published research regarding health educators conducting nutrition

education. My research question guiding this study therefore is: what information and/or level of preparation is considered *nutrition education training* among allied health professions?

PURPOSE

The purpose of this study was to 1) determine the definition of and criteria for nutrition education among allied health professionals, 2) identify commonalities across health professions for nutrition education definitions & training requirements and 3) determine if there existed criteria for nutrition education and training for health educators. To conduct this study it required an in-depth comprehensive review of the literature regarding the advocacy of nutrition education for health professionals.

Cooper,[29] indicates that literature reviews endeavor to incorporate what others researchers have done and said, to criticize prior works, to build bridges between related topics, to point out pertinent issues in a particular field or all of the aforementioned. This research can be thought of as a bridge building effort seeking also to incorporate prior research and bring to light issues related to nutrition education. For this review, particular attention was paid to allied health occupations that may have daily direct patient contact and a high extent of patient education responsibility. The intention of this review is to provide a summary of the studies that identify the need for nutrition education in various allied health professions, rather than critique the relative merits of these studies and their impact on the field of nutrition education.

METHODS

Cooper,[29] provides a five stage review process: 1) formulating the problem, 2) searching the literature, 3) evaluating the data, 4) analyzing and interpreting and, 5) presenting the findings. This review process involved rigorous initiatives to generate a comprehensive investigation into the body of literature advocating for the teaching of nutrition in the university curriculum for allied health professionals. The major steps of this search included database searches to identify relevant articles, and an inclusionary/exclusionary criterion which incorporated a set of screening questions provided in Table 3 of the Appendix, to determine which articles would be selected.

The search was performed using two major heath science databases: MEDLINE and EBSCO with the following search terms; *students*, *health*, *occupation* and *Nutrition/ Dietetics*. It is important to note that under these two major databases exist "sub-databases" which were searched extensively for articles on this topic. A reference librarian with training and expertise in the health education literature at Texas A&M University assisted with the search process. Database searches were conducted from May through December of 2010.

Selection Criteria

Articles were selected if they met the following inclusionary criteria: 1) Peer-reviewed empirical studies, 2) Published in English and conducted in the U.S and 3) Measured nutrition knowledge/ nutrition education. The study was not limited to year of publishing. Exclusionary criteria included 1) Articles referring to High School or a non-college/university population (for studies that assessed students), 2) Studies conducted

outside the U.S. and 3) Studies that addressed nutrition but did not assess nutrition knowledge/ nutrition education.

Reviews, commentaries and letters to the editor although typically left out of this type of research were included in the review. Cooper[29] advises that peer reviewed articles should not be used as a sole source of information when synthesizing research, as there is the existence of bias against the null hypothesis and a confirmatory bias (this may include pressure on authors to conform to the subjective preferences of reviewers). He further states that a synthesis should access as many information sources as needed, ensuring that no obvious, avoidable bias exists within limits. Although commentaries, reviews and letters to the editors are not considered empirical or peer reviewed, this researcher believes that their inclusion added relevant information to the review.

At this point other databases were searched including Scopus and Google Scholar; utilized for seeking articles, working papers and reports not indexed elsewhere. Scopus was also important to look at as it provided citing and cited references for the included articles.

Protocol

Articles were screened before inclusion into the review. Articles were retrieved if they satisfied the criteria of the screening questions. From this initial search there were sixty potential articles identified. These were retrieved and saved into *RefWorks*—an online research database writing and collaboration software. Abstracts were first reviewed to determine whether the studies were to be reviewed. The studies that were retained were then read to determine whether they fit the other inclusionary criteria.

Additional articles were obtained by searching for cited articles within the references of these articles a process often referred to as pearling.

The decision was then made to exclude articles that referenced medical or dental students, to instead focus solely on those allied health professionals who may function as "informal nutrition educators" and thus possess increased hours of patient contact. This resulted in several articles being excluded from the review. After this screening, I identified 30 articles that potentially fit my selection criteria. Subsequent reading of the full texts of these articles, allowed for exclusion of articles that focused on nutrition education but did not advocate its importance for allied health professionals, or addressed nutrition in health promotion programs but not for allied health professionals.

RESULTS

The final sample yielded 23 studies meeting the inclusionary criteria for this review. These studies addressed research conducted among nurses, Physical Therapists (PTs), Physician Assistants (PAs) and Allied Health Professionals. Eleven of the studies described results from research done with nurses, seven publications addressed allied health students or assessed combinations of allied health professions, while three publications addressed nutrition education for physician assistants and two publications addressed physical therapists. Figure 2 (located in Appendix 1), displays the selection of articles process and those that met the inclusionary criteria.

The characteristics of the articles reviewed can be found in Table 4 of the Appendix. Articles included in this review were published between 1960 and 2006. To better organize the findings, each discipline will be presented independently.

Nursing

Nurses also referred to in the reviewer studies as adjunct nutrition educators,[30] informal nutrition educators,[3] and coordinators of health services,[31] have had major responsibilities for the lives and dietary needs of patients and their families since the time of Florence Nightingale.[32,33] The nurse may therefore be the first line of defense that receives questions and requests for information on nutrition. Rynbergen[34] further describes the nurse as the *arbiter of health practices,* the *interpreter* of medical information and the *exponent* of new concepts in medical care. She postulates that nurses are above all else, teachers—expected to function effectively in the subject area of nutrition.

To investigate nurses' competency to conduct nutrition education, six studies tested nutrition knowledge; of nurses[35,36,37,3] and of nursing students[32,38] measuring their preparation on nutrition related concepts. Some assessed the nurses' attitude towards nutrition and or nutrition education.[3,38] Four studies included in the review, also assessed programs and schools of nursing, conducting in-depth reviews of the nursing curriculum for the possible integration of nutrition.[19,2,30,7,]

The literature regarding nurses included in this review span approximately 40 years, however Table 4 (located in Appendix 2) demonstrates how the authors converge toward a consensus regarding nutrition's place in nursing. Whether it was students or practicing professionals, the majority of the authors agree that (1) nutrition knowledge is essential for nurses, (2) the nursing curricula does not provide enough quality teaching in

nutrition, (3) increased clinical time needs to be devoted to nutrition, and (4) nurses needed to take responsibility for their own learning.

Suggestions made in the reviewed studies regarding improving nurses' competency to provide nutrition education included (1) nurses being responsible for keeping abreast of nutritional information,[32] (2) dietitian led in-service trainings providing updated and current nutrition information to nurses,[37] (3) curriculum revisions, to include integrating nutrition competencies into the present nursing curriculum,[7] (4) increased clinical time in nutrition related activities,[19] and (5) requiring basic nutrition courses for all nurses[27] and (6) strengthening the current components of courses.[36]

Allied Health and the General Health Care Profession

As with the research regarding nurses, the body of literature addressing allied health professionals also advocated for the nutrition education of the pre-professional students in these fields. Fitz[39] indicated that introducing nutrition early in health profession programs allowed interest and involvement, while Bahl, Hamilton and Ormesher[40] postulated that incorporating nutrition into the curriculum enhanced the effectiveness of the allied health professional. Other reasons in support of nutrition education for allied health professionals stress the importance of nutrition in the promotion of health and prevention of disease, and the documented association between good nutrition and health.[40] The ADA's position paper on nutrition education of health professionals,[41] furthermore, recommends the inclusion of nutrition into basic and

clinical sciences in the curricula of both undergraduate and graduate allied health professional training programs.

The literature on allied health professions has also come to somewhat of a consensus regarding nutrition education, as the articles included in the review have agreed that nutrition education should be included in the various curricula of the programs. Educating allied health professionals in nutrition, however, comes with its share of challenges. Barriers -- identified in the reviewed studies -- to incorporating nutrition into the training for allied health students and professionals included (1) a lack of a consensus of the acceptable level of nutrition knowledge required for the potential nutrition educator,[40] (2) the difficulty in establishing nutrition as an interdisciplinary subject, as it may compete with other established subjects and courses for curriculum time,[42] and (3) the different modes of entry into allied health professional programs (associate degrees, baccalaureate degrees and advanced degrees).[35]

Physician Assisting

Physician Assistants (PAs) may be considered the allied health professionals whose curriculum and training most closely resembles that of a medical doctor. Maillet and colleagues[34] indicate that these professionals are licensed to practice medicine under the supervision of a physician and may oftentimes be trained in schools of medicine with physicians as their instructors and mentors.[20] The American Dietetic Association,[43] advocates that the nutrition curriculum for these *primary care providers*-with high degrees of client education responsibility be more extensive than just basic nutrition principles, as they diagnose, prescribe and counsel on nutrition related disorders.

Sullivan[44] further indicates that PAs should be able to address basic nutritional issues reserving RD referral for more complicated nutritional issues and concerns.

PA training programs, despite agreement that teaching nutrition is critical to their students, have experienced similar difficulties as other allied health professions—the lack of specific curriculum requirements for nutrition.[45] In a study of PAs in Texas where their nutrition knowledge and attitudes were measured, Demory-Luce and McPherson[20] found that PAs believed they were inadequately trained to provide nutrition counseling and the majority of the PAs surveyed were dissatisfied with the nutrition education they had received. The diversity in the training and curriculum for PAs may be one of the reasons for PAs expressing this sentiment

Physical Therapy

Physical Therapists (PTs), according to Nelson and others,[9] are allied health professionals charged with the responsibility of identifying, evaluating and assuaging physical disability and pain from injury, disease and other debilitating conditions. Some of these conditions may be nutritionally related. Nelson further advocates that health professionals need to acknowledge nutrition as an important constituent in both precautionary and rehabilitative treatment.

Although there are only two studies on nutrition education of PTs included in this review, they yielded similar findings. Long,[8] in assessing the nutrition knowledge of sport PTs, found that they believed nutrition knowledge was either very important or important. Nelson and others[9] found similar results where more than half of their respondents believed the same. When assessing whether PTs in their research had

received nutrition education during their pre-professional training, both Nelson[9] and Long[8] found the majority had not. Nelson and others[9] subsequently theorized that PTs in their research had gained nutrition information from sources outside their formal education.

DISCUSSION

The purpose of the study was to clarify aspects of *nutrition education training* among allied health professions via a review of the literature. Rather than focus on the quality of the published studies, emphasis was placed on ascertaining the existence of *any* information available on the topic. The broadness of the approach was due in part to the very limited information available on the topic of nutrition education for allied health professionals with particular emphasis on health educators. The publications included for review were selected because the respective authors sought to identify gaps in their respective fields. It is worthwhile to note that none of those included in this review made mention of any theoretical framework as a guide. Goodson[46] indicates that research guided by a theoretical framework has greater impact and more applicability, and this includes surveillance-type studies such as those included in this review.

Nutrition should be a vital component in the curriculum for educating all allied health and medical professionals. This review of the current literature shows that there does appear to be a consistent voice regarding the need for nutrition in the training of allied health professionals. However there is a lack of consistent information regarding how much nutrition education in the curriculum is adequate for the given profession. With daily advances in medicine and the introduction of innovative nutritional products,

patients and heath consumers are making increased demands of their health professionals for nutrition information. Thomas and colleagues[22] indicate that these [allied health] professionals should be "sufficiently cognizant" of basic nutrition principles given the regularity of nutrition topics being addressed in clinical and fitness settings. The onus is therefore on pre-professional schools of nursing, Physician Assistants, Physical Therapists and other allied health professions to equip their students to meet this impending demand. A change in the way that these students and professionals are trained is necessary and crucial.

Registered Dietitians have an important role to play if these changes are to occur. As the main purveyors of nutrition information, it is the RDs responsibility to teach the science of nutrition to other allied health professionals. The ADA[41] further recommends that dietetic practitioners take the lead roles in coordinating nutrition education efforts. Touger-Decker and colleagues[7] refer to a process of the "upskilling" of other health professionals to ensure that they can provide basic nutrition services. However before this teaching can occur, it is imperative that dietitians relinquish some of their "nutrition turf" and as suggested by Fitz,[39] learn the roles of the other health professionals. Lindseth[33] in their evaluation of rural nurses in North Dakota, was informed that at times dietitians had refused to offer in-services for nurses, voicing that nurses had no place in nutrition education. Maillet and Young[43] in their position paper on nutrition education for health care professionals, indicate that in order to provide total patient care, allied health disciplines must adopt a collaborative team approach, enhancing the understanding of the unique expertise [and limitations] of each discipline.

One common thread resonating throughout each study included in this review is the need for allied health and medical professionals to recognize their limits and to know how and when referral to a dietitian was needed. Maillet and colleagues[45] indicate that "[health professionals] knowing both when to and why to refer is essential knowledge for quality patient care". Furthermore, Maillet and Young,[43] in advocating nutrition education for health care professionals, indicate:

> Referrals to dietitians are necessary when standard nutrition prescriptions are not achieving health outcomes, when clients have complex nutritional needs, or when their food habits need considerable change.

With changes in health care occurring continually, the dietitian may not be the one with earliest contact with patients; this role may fall to the nurse, therapist or health educator. However, surprisingly absent from the literature, is the profession of health education, nutrition education of health educators, and literature advocating for the teaching of nutrition to health educators. Literature searches revealed nothing on the topic of nutrition education for health educators. One may draw several conclusions from this deficiency: either nutrition education is not needed (albeit the reasons are unclear) or a gap exists in the literature regarding nutrition education preparation of health educators. Either of these conclusions should be cause for alarm given the scope of the health education profession, and the wide range of topics that health educators, by the very nomenclature of their profession, cover with patients daily.

This gap in the literature provides an excellent opportunity for health education programs as well as researchers of health education to lead the procession for change. It is time for health education to take the advice of Fitz,[39] who suggests that health professionals venture beyond the boundaries of their discipline to function effectively as team members in the evolving system of care.

TRANSLATION TO HEALTH EDUCATION PRACTICE

While the information provided in this paper can be construed as a criticism of the health education profession, it is important for health educators to constructively address the gap identified by this study. The information provided here should inspire the health education profession to change. As illustrated in this review, adjustments – if not overt change – should be considered in the training for, and required knowledge and skills desired of, entry-level health educators.

For such changes to happen, health educators must be unified in deciding whether they believe nutrition and nutrition education is important to their profession and whether changes should be required of future professionals. The onus therefore falls on health educators to stand up and demand the need for nutrition's inclusion into pre-professional training. It would also require changes in the relevant competencies and expectations of health educators as designated by the subsequent credentialing and accrediting bodies. As part of the collective effort put forth to establish health education as a critical component of allied health disciplines, and for health educators to remain as relevant and credible members of the allied health professions, this difficult discussion must take place.

CHAPTER III

NUTRITION EDUCATION FOR HEALTH EDUCATION STUDENTS: AN ANALYSIS OF THE HEALTH EDUCATION CURRICULUM

INTRODUCTION

Health education is a critical part of public health efforts and has a rich history in the United States. Like many other allied health professions, helping professionals have been around for decades if not centuries. Yet, official credentialing and licensure of these professions is a more contemporary phenomenon. For example, national standardization of requirements, competency testing and/or credentialing did not occur until the 1916 for physicians,[47] after 1944 for registered nurses,[48] 1969 for dieticians,[49] and 1989 for health educators.[50]

While health educators have a clear sense of their professional identity, non-health educators may not be as informed and may not be able to differentiate the services provided by credentialed health educators from those health education services performed by other allied health professionals. Defining health education may be key to understanding the nuances of the profession. Several authors have theorized and provided their definition of health education. Gold and Miner,[25] define health education as

> Any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and skills needed to make quality health decisions.

Consequently, the National Commission for Health Education Credentialing (NCHEC),[28] indicate that health education has been described in the literature

> as a means of improving personal and community health,
> as the development of a sense of responsibility in people
> for their own health, as classroom teaching about health
> and as the education of health personnel.

Health education therefore may be considered a general term covering a wide field of human experiences. Health education and health promotion are at times used interchangeably; however Catford and Nutbeam[51] indicate that health promotion includes health education. Health education is therefore the core component of health promotion and will not succeed without it. Furthermore, NCHEC[28] postulates that attempting to define health education in terms of its application serves to make it unclear, and in essence, does not classify or simplify the competencies which the health educator is mandated to possess.

The Health Educator

The layman may be inclined to define a health educator as one who practices or teaches about health and health education. The definitions of health educators appear to be as varied as the interpretations of the profession. Gold & Miner[25] provide the definition of a professionally prepared person, serving in various roles, purposely trained in the use of didactic strategies apposite to the specific condition and appropriate methods to facilitate the formulation of policies, procedures, interventions and systems conducive to the health of individuals, groups and communities. The U.S. Bureau of

Labor Statistics in their 2010-2011 Occupational Outlook Handbook,[27] define health educators as ones who "work to encourage healthy lifestyles and wellness through educating individuals and communities about behaviors that can prevent diseases, injuries and other health problems." Griffith[52] further indicates that health educators are professionally prepared in education, community planning skills, and the sciences dealing with human behavior.

Health educators may be employed in various settings, including schools, communities, health departments and medical settings. However NCHEC[28] indicates that despite these various settings, there are no distinct kinds of health education [and I postulate health educators], instead the difference lies in the application of a common body of knowledge to various settings.

To fully understand the nuances of the health education profession, it is imperative that an analysis of the training provided to pre-professional health educators be done. This therefore involves an examination of the health curriculum. The curriculum of each program in health education and nutrition sets the goals, standards and scope for preparing the pre-professional student.

Defining Curriculum/ The Health Education Curriculum

The definitions of curriculum are varied and there are many meanings ascribed to the word. Beauchamp[53] indicates that curriculum may be interpreted in three ways: (1) As a written record of the scope and arrangement for a particular school, where this record contains the intention of the curriculum, its goals and how it is to be evaluated, (2) As a system which functions as a subsystem of schooling, determining which

curriculum will be implemented and how it is to be evaluated; and (3) As a field of study. Curriculum may also be defined in other ways: as a structured series of intended learning outcomes[54] or as from the Latin infinitive form of the word *currere.*[55] *Currere* interpreted as to run the course, defines curriculum as a process rather than an object and provides students the ability to critically and effectively translate into practical concepts the study of curriculum.[55]

As varied as the definitions of curriculum, so too are the definitions and noted contributors for curriculum theory. Beauchamp explains that curriculum theory is a set of related statements, or propositions that gives meaning to the phenomena related to the concept of a curriculum, its development, its use, and its evaluation.

In health education there has been a progression to what has been termed a *competency based curriculum*. A competency based curriculum is performance oriented with instructors being guided by related competencies.[28] These abilities or competencies are "broadly defined skills that a qualified entry-level, generic health educator is expected to be able to demonstrate at least at minimum levels." [28] Instructors are therefore made aware of the abilities that the learner must be able to demonstrate.

With the various settings were health educators may be utilized, they may be called upon to provide services in other allied health areas, including nutrition education. However will they have been trained via their respective curricula in the science and practice of nutrition? Nutrition, an action science— as it can be applied to daily life, can be defined as either the science or the practice of nutrition. The practice of nutrition utilizes the information obtained from the science of nutrition for practical applicable

purposes.[14] Data about nutrition education in baccalaureate health education programs do not exist and need to be investigated if health educators are to be considered possible sources of nutrition information.

Ideally, persons/professionals who provide nutrition education should have had some access to education or training in nutrition; however is this assumption reflected by the health education curricula? The query therefore becomes; Are there courses within the curriculum for the professional preparation of health educators that expressly include opportunities for nutrition education and or training in nutrition?

PURPOSE

The primary purpose of this study was to identify and assess the availability of nutrition, nutrition related and/or components of nutrition education in the curriculum of a professional health education undergraduate degree program. For the purposes of this research, the curriculum will be viewed as a structured series of intended learning outcomes. Specifically, the options available for health education students in the field of nutrition, as well as the preparation in nutrition of the current faculty were explored. The core of this research involved a content analysis of the health and nutrition curriculum.

Berelson[56] indicates that "content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication."(p. 18) Hicks and colleagues,[57] in their chapter on content analysis further indicate that it is used to identify certain attributes of a message having the greatest likelihood of leading to an accurate conclusion of the messages original intent. Within content analysis, there is the presence of quantitative and qualitative content

indicators. Pool,[58] defines quantitative content analysis as concerned with the *frequency* of given content characteristics occurring, whereas the non frequency approach primarily concerned with *inference* defines qualitative content analysis. Holsti,[59] suggests the use of both qualitative and qualitative methodologies to supplement each other.

METHODS

The process for this analysis involved a rigorous content analysis of a university's most current undergraduate catalogue (2009-2010) which provide the curricula for all majors. The university catalog provides the most comprehensive information regarding the academic programs available to students. Analysis of the catalog involved the development and use of an availability scale, which was then used to assist in performing an analysis of the curricula.

The specific methodology applied to this research was a contingency content analysis. The contingency analysis may depend on the absence or occurrence of the desired attribute within the document being examined. Pool,[58] provides steps for conducting a contingency analysis, as (1) Selecting units to be analyzed, in this case, the units of analyses were the respective curricula (2) Selecting coding content categories, coding categories for this research centered around the term "nutrition", (3) Creation of a raw data matrix/table; this step according to Pool involves noting the absence or presence of the content categories mentioned in the previous step, (4) Creation of a contingency matrix; this compares the expected occurrence with actual occurrence of categories (5) Significance of contingencies, where statistical tests are conducted to

determine evidence of association between content and (6) Representation of results-this may be done visually. For this analysis, steps 1 through 3 were utilized.

The availability scale was also used to assess the curriculum and was designed by the authors. Its primary purpose was to guide the investigation and assessment of the curricula, including identification and facilitation of available nutrition courses, the number of hours of nutrition content available, as well as the available training infrastructure (faculty) in nutrition.

Nutrition and Health curricula were assessed based on several variables listed on the scale, and were evaluated by whether they were Yes-Available, No-Unavailable, or Unclear— checked for items for which the curricula did not explicitly state *Yes* or *No.* Emphasis was placed on assessing courses listed in the university catalog instead of the current semester's schedule of classes. To determine whether courses listed under the catalog for the health degree had a strong nutrition emphasis, "nutrition" was used as a search term and the *word frequency* technique of conducting content analysis was utilized. Hicks and colleagues,[57] describe the word frequency technique as measuring the content of the text by the frequency of which words occur in that text. The computer was allowed to find the term nutrition throughout the document.

Under the health curriculum of the university, three degree options/tracks are offered, Allied Health, Community Health and School Health. Each of these respective curricula was assessed as well.

RESULTS

The health curriculum were assessed for whether opportunities existed for its students to pursue courses in nutrition, obtain a minor in nutrition, as well as receive instruction from nutrition/ dietetics credentialed faculty. Parts of the analysis also required assessing the nutrition and Health curricula.

Availability of Nutrition Education Training

Results indicate that nutrition is available as a major within the institution; however the catalog does not indicate that it is possible to pursue nutrition as a minor. Consequently, neither the health education nor the nutrition program explicitly states whether students can double major in both fields at the university. This box was therefore checked as unclear. Table 1 details full findings of nutrition's availability.

Assessing the health curricula listed in the catalogue revealed that nutrition courses were also not listed under the required courses for the health degree; however further analyses of the curricula available on the departments webpage, revealed that a basic nutrition course was listed as a possible elective for students pursuing Allied and School Health degrees.

Table 1. Availability of Nutrition/Dietetics Training			
Criteria Examined	Availability		
	Yes	No	Unclear
Nutrition/Dietetics program available as an undergraduate major option within institution	X		
Nutrition/ Dietetics program available as an undergraduate minor option within institution		X	
Double majors in health promotion/education and nutrition/dietetics available within institution			X
Nutrition/Dietetics minor explicitly listed as option for HE/HP majors		X	
At least 1 nutrition/dietetics course *required* as part of health education curriculum		X	
At least 1 nutrition/dietetics course listed as elective course of health education curriculum	X		
At least 1 nutrition/dietetics course available for health majors to enroll (*no pre-requisites needed*)	X		
Nutrition Availability			Quantity
Total number of any basic nutrition/dietetics courses available for HE/HP majors (no prerequisites required other than basic chem/bio)			4
Total number of nutrition/dietetics courses available for ANY major who completes required prerequisites			10*
**This number does not reflect Directed Studies, Special Topics, or Seminars in Nutrition*			

The allied health track indicates that it is designed to prepare students desiring to pursue further education in an allied health/medical field, while school health students are prepared to teach health in grades K-12. Further analyses of the curricula of the allied health track reveal that despite the presence of more than 30 elective courses and six health professions listed, only one nutrition elective (NUTR 202) has been suggested for two of the professions (Nursing and Physician Assistant). This course (NUTR 202) has also been listed as an elective course from which school health students can select.

Analysis of the nutrition curriculum revealed that there are in fact four available nutrition courses which do not require nutrition prerequisites allowing health and students from other majors to enroll. For students who completed the required prerequisites-be they nutrition, biology or chemistry-there were at least ten nutrition courses available to pursue. This number however did not include the directed study, special topics or nutrition seminars offered each semester.

Training Infrastructure: Availability of Nutrition-Trained Faculty

The availability of health faculty trained in nutrition was also assessed. After assessing the credentials and online curricula vitae of the health faculty, it was found that there was no nutrition credentialed core or adjunct faculties present in the health and kinesiology department (See Table 2). There were also no health courses with a strong emphasis on nutrition available-this was assessed via utilization of the word frequency technique described by Hicks and others.

Table 2. Availability of Nutrition/Dietetics Trained Individuals and Courses			
Criteria Examined	Availability		
	Yes	No	Unclear
At least 1 Nutrition/Dietetics-credentialed core faculty member in HE/HP degree program		X	
More than 1 Nutrition/Dietetics-credentialed core faculty member in HE/HP degree program		X	
At least 1 Nutrition/Dietetics-credentialed adjunct/affiliated faculty member in HE/HP degree program		X	
More than 1 Nutrition/Dietetics-credentialed adjunct/affiliated faculty member in HE/HP degree program		X	
At least 1 health education/promotion course with strong emphasis on nutrition/dietetics required for HE/HP majors		X	
More than 1 health education/promotion course with strong emphasis on nutrition/dietetics required for HE/HP majors		X	
At least 1 Nutrition/ Dietetics Course available as HE/HP major option in same dept/college (ease of enrolling)		X	
More than 1 Nutrition/ Dietetics Course available as HE/HP major option in same dept/college (ease of enrolling)		X	

Consequently, all nutrition courses available at the university were housed in the department of Nutrition and Food Science, while all health education and health promotion courses were listed under the department of Health and Kinesiology.

DISCUSSION

In assessing the professional health curriculum of a major university, it was found that although there exists many opportunities through elective courses for health students to pursue nutrition, it is not a required part of the curriculum. Nutrition's absence as a required part of the professional preparation of health students leaves one wondering at the possibility of students' really achieving a comprehensive picture/ degree in "health", without the inclusion of a topic so essential as nutrition. It appears that students in health are not receiving written directives via the curriculum from academic personnel to pursue nutrition courses.

The lack of possibility to pursue nutrition as a minor at the university may serve to limit the numbers of health students enrolling or pursuing nutrition currently. However the student does share in some of the responsibility to pursue elective courses as they see fit according to their interests. Currently the departments of health and nutrition are housed in separate departments—are they thus viewed as separate entities instead of two necessary components of a "health whole"? It may be improbable to assume which of these factors drive students to pursue certain electives, whether it is the ease of entry into that course, previous knowledge about the course from persons who may have taken it before, or a general interest in the topic to be taught. However, this requires further testing and research, which should be the direction of future research

efforts. Nevertheless, health students' not receiving training in nutrition may be tantamount to physicians not being trained to practice medicine! Health students are being done a disservice with nutrition not included as a curriculum requirement.

It may however be improbable to assume that components of nutrition are not being included or discussed in current health courses. However these components remain unmentioned. The question therefore arises, why is nutrition not mentioned in these course descriptions? Why is this information hidden? Martin,[60] postulates that the theory of curriculum "cannot afford to neglect the hunt for hidden curricula." Several authors, including Beauchamp,[53] and Pinar,[55] have defined the hidden curriculum as that which is absent from the curriculum, or anything that is not taught or addressed by teachers, the administration or text books. Berelson,[56] indicates that identifying omitted analytic categories that are of primary importance in content analysis. Holsti,[59] further indicates that omitting an attribute in a document may be a more significant factor than the frequency which other characteristics occur. However, it is pertinent to note that identification or the awareness of the hidden curriculum by researchers, teachers, or administrators does not change it being hidden. Martin,[60] indicates that until the learner is aware of the hidden curriculum, it remains hidden. Therefore, no change is possible until health students are made aware that nutrition is part of their hidden curriculum.

If health educators desire to be regarded as informal sources of nutrition education, then their respective curricula should be training them for this role. There are however limitations to this study, including the small sample size. Since only one school's curriculum was analyzed this serves to reduce the generalizability of the

information obtained. However the information presented is relevant for the professional development of emerging scholars in the field of health education. It is also pertinent to note that the course syllabi or course content of each health course included in the curricula was not assessed. These courses, although not mentioned in the catalog description may have contained in syllabi information related to nutrition. It is recommended that future research into this topic and topics related as such investigate syllabi and course content as well as conduct comparative analyses of various programs of health education.

CONCLUSION

Students in health may enter a degree program unsure of what topic in health promotion they may be interested in, or what professional school they desire to enter. However, despite where these students end up, be it medical, dental or nursing school, a solid nutrition foundation is crucial. It is up to schools of health education and respective personnel to steer their students towards pursuing courses in nutrition if it isn't already required for the health degree. It is therefore up to emerging health professionals to demand that nutrition be included as part of their curriculum.

This study has several implications for applied practice. Health professionals including health professionals are more than ever being relied on for health promotion efforts. Chronic disease and comorbid conditions are on the rise in the United States, as such the health educator may be the first line of defense for preventing further complications and promoting good health. It is up to us to ensure that future health education and promotion professionals are adequately prepared for this task. But what of

currently practicing health educators who may not have received training in nutrition? What options are available to them? Until curricula changes are made for emerging and practicing health educators, it is up to these professionals to seek out continuing education options in nutrition or nutrition education.

CHAPTER IV

NUTRITION KNOWLEDGE OF UNDERGRADUATE HEALTH EDUCATION AND NUTRITION STUDENTS

INTRODUCTION

Nutrition is considered an action science, as it can and should be converted into practical applications to be used by the general public.[14] Contento[1] indicates that nutrition education is education about foods as well as nutrition. Nutrition knowledge consequently may be loosely defined as ones knowledge about nutrition. This knowledge may be general or specific. Parmenter and Wardle[61] indicate that nutrition knowledge is closely related oft times to dietary behavior. These domains of nutrition are typically delivered by Registered Dietitians. However, the entry level health educator may be called upon to function as an informal nutrition educator at some point in their professional career, and with the continued changes to health care and proposed plans for health care, reform this role may be imminent. But are health education programs making nutrition education and nutrition knowledge available to their students as part of the important role of preparing graduates for the role as a deliverer of nutritional health information provider?

In previous research done analyzing the curriculum of a professional health education program, it was found that formal opportunities for nutrition education for health students were inconsistently available, if at all. However, if health education program graduates demonstrate that formal nutrition training is an important component

of their program, or that they are able to acquire the knowledge and skills through some other means (continuing education etc), then obtaining nutrition education delivery opportunities within the health education curriculum may not be important. One means of ascertaining the need for such training for health educators is to assess nutrition knowledge and nutrition education levels among health educators.

Health educators possess a responsibility to the public, to provide reliable, credible and timely health-related information. By the nature of their duties and training, health educators, as well as other allied health professionals including nurses, nurse practitioners and dental hygienists are the main purveyors of primary prevention.[41] Prevention as well as education is at the core of health education- two essential components of promotion. Nutrition, consequently as indicated by Kretchmer,[62] is a major component in health promotion and arguably a keystone *of prevention*. It is therefore imperative that pre-professional health educators and other allied health professionals be trained and prepared to function effectively as adjunct nutrition educators.[63]

Previous Research on Nutrition Knowledge

Nutrition's importance in the prevention[62] and management of illness and disease has been well documented in the literature.[64] Several authors[40,18] have indicated that although nutrition's importance to good health is undeniable; it has been neglected in the training of medical and allied health professionals. Some researchers therefore have assessed the nutrition knowledge of specific professionals and advocated for nutrition to be included in the relevant curriculum and training of these professionals. Many studies

have dealt with the status of nutrition in the curriculum and the nutrition knowledge of students in the medical,[5,65] nursing,[2,19] and allied health professions.[22,64] None, however, have examined the nutrition knowledge of pre-professional health educators.

Nelson and others[9] in their study on physical therapists (PTs), indicate that nutrition knowledge is essential for these professionals as prevention's importance expands with health care reform. Nutrition knowledge is important for these budding professionals as not only is nutrition an integral part of basic health care,[43] these persons may be the patients only source of credible nutrition information during a medical/ health visit.

Health educators, given the variety of roles and workplace settings, may be a more readily accessible source of health information – including nutrition information – than PTs. Yet there is no information available in the research literature regarding the status of nutrition knowledge among health educators. Indeed, little is known about the nutritional knowledge, attitudes, and perceptions of pre professional health educators. Is nutrition knowledge among undergraduate students matriculating from a health education program comparable to their nutrition major counterparts?

This descriptive study was designed to answer the following research questions: 1) How knowledgeable are pre-professional health and nutrition students about (a) nutrition, (b) nutrition education, and (c) health education, and 2) Are there differences in knowledge levels of these domains by participant characteristics (i.e., major and previous nutrition course exposure). The purpose of this study was therefore to clarify

the levels of pre-professional health and nutrition students': (1) nutrition knowledge, (2) nutrition education knowledge, and (3) health education knowledge.

METHODS

Subjects

To assess the nutrition, nutrition education and health education knowledge of health and nutrition students, nutrition and health students were included in the study. A purposive sampling method was used to recruit participants. Schutt[66] indicates that in purposive sampling, elements are usually selected for a purpose, or because of their unique position. In this case, the target population for this study consisted of students at a major land grant university majoring in Health (HLTH) or Nutrition (NUSC).

Students were recruited through several measures: (1) Promotional flyers were placed in communal gathering locations of the respective buildings where the departments were housed, (2) Convenience samples of health students were recruited in classrooms by the lead researcher after permission from instructors, (3) Email requests for potential participants to undergraduate HLTH and NUSC instructors, and (4) Email requests to in-field student group list servs soliciting their members participation. Student members from Eta Sigma Gamma, the Health education honorary organization and the Nutrition and Dietetic Association were also targeted for recruitment.

Potential participants were informed that their participation was voluntary, and would be provided a $5 value gift card from a major retail chain for participating in the study. The final study sample included 125 undergraduate pre-professional students (details of sample described in the results section). The Texas A&M University's

Institutional Review Board reviewed the protocol and approved the study under "exempt" study status. Participants consent was indicated by their completion of the instrument.

Instrument

Data for the study were collected by using an anonymous, self-administered instrument. There was not an existing instrument that addressed the concepts associated with the design and purpose of the present study, therefore a new instrument was designed (Appendix B). The instrument was developed by consulting and combining equal numbers of questions from three sources: 1) a study guide for dietetic students Baechtold (n.d.),[67] 2) the Certified Health Education Specialist Study Guide,[68] and 3) questions from a nutrition knowledge study conducted by Zawila and colleagues.[69] Permission to use the questions was granted to the researcher by each major author or representative of the respective organization.

Items included in the instrument were strategically chosen. Questions selected from the dietetic exam study guide were required to have made reference to nutrition education, while questions from the CHES study guide were selected based upon reference to education and some references to nutrition. Nutrition knowledge questions were chosen by an expert panel of health education professors. The experts were asked to choose ten questions out of the seventy-six available from the Zawila article. they chose questions which they believed addressed nutrition information that an entry level health educator should know. In its final form, the five-sheet questionnaire contained thirty content items (10 each of nutrition knowledge, nutrition education, and health

education items), along with selected demographic questions (Items = 6). Nutrition knowledge questions were presented in the form of "true", "false" statements, while the nutrition education and health education required participants to choose the correct response out of four response options (i.e., multiple choice response options).

Socio-demographic information was requested from participants, as well as questions regarding whether nutrition classes had been taken since beginning their degree program and if so, how many. This section also included a question regarding their proposed plans upon graduation. To ensure that their participation remain anonymous, participants were provided instructions at the beginning of the instrument to create their own six item Unique ID Code (UIC) comprised of letter and number combinations using a telephone keypad as a template.

Pilot Testing

The instrument was pre-tested with a small convenience sample of health education students-not involved in the study, to assess difficulty, clarity, comprehension of the questions and determine the length of time needed by participants to complete the instrument. Using cognitive interview methods, students provided feedback which led to minor revisions of the instrument. Approximately 15-minutes were needed to complete the questionnaire in its final form.

Reliability and Validity

The questionnaire designed by Zawila and others were derived by combining questions from two other studies conducted by Werblow and colleagues (1978) and Barr (1986). When used in entirety, the Barr questionnaire has a reliability of 0.82 when using

the Spearman-Brown spit-half correlation coefficient[70] and its construct validity was also determined. Zawila and others however further indicate that the study by Werblow and others has no mention of reliability or validity. The reliability or validity of either the CHES exam[68] or the RD exam questions (written communication Shirley Baechtold, August 2010) has not been established. Note however, that test items and scales assessing knowledge domains (such as the CHES exam) are typically not appropriate for calculation of internal consistency coefficients. The nutrition knowledge instrument administration period was from November 2010 until February 2011.

A total nutrition knowledge score was calculated as well as scores for each section of the instrument. The highest possible overall score was 30.

Data Analysis

Completed surveys were scored and analyzed using the PASW statistics software (version 18, formerly SPSS, Chicago, IL). The overall mean scores for each sub-section (nutrition knowledge, nutrition education, and health education) were calculated. Participant's total individual score as well as their scores from each subscale were also calculated. Descriptive statistics, frequency distributions and tests to determine the degree of the relationship between total scores and various independent variables were also obtained. Alpha level was *a priori* set at 0.05.

RESULTS

The main objective of this study was to assess and compare knowledge of undergraduate health and nutrition students related to nutrition knowledge, nutrition education and health education. The study was conducted to determine whether there

were differences between (a) the disciplines (majors) and (b) students having completed nutrition courses.

Sample Characteristics

From the original sample of 125 students, 2 were eliminated; 1 because it was determined that they did not meet the inclusionary criteria (i.e., health or nutrition major), and another who although completed the instrument, failed to provide any demographic information. The majority of the participants were white (71.5%), females (95.9%), pursuing degrees in health education (68.3%). These results are presented in Table 5 (located in Appendix 3) along with other demographic characteristics of the participants. Ages of the participants ranged from 19 to 35, with a mean age of 22 years. Additionally, 72.4% (n=89) indicated that they had taken a nutrition course since beginning their undergraduate degree program, fifty-four (60.7%) were health majors, while thirty-five (39.3%) were nutrition majors. Consequently, only four (11.8%) of the nutrition majors in the sample had not taken a course in nutrition as compared to thirty (88.2%) of their health education peers. Of the participants who had pursued a nutrition course, 48.7% indicated that they had taken at least one course in the subject.

To avoid contamination of the health education questions as a function of previous exposure to CHES exam questions (for which a study guide is available), participants were asked about previous usage of the study guide. None had used (i.e., been exposed to) the CHES exam study guide from which the health education questions were derived.

When asked about their post-graduation plans, 24.4% of the students indicated that they intended to pursue graduate training in health education or public health, while of the students who chose to write in responses to the question, nursing was the future career goal of choice (26.8%), followed by various other medical and allied health professions (20.3%); Physician Assistants, Physical Therapists, Occupational Therapists etc. Because of the homogeneous nature of the ethnic makeup of Texas A&M University, the students in this sample should be representative of other students at the university.

Nutritional and Health Education Knowledge

Knowledge score mean was 21.17 (SD = 2.57) out of a possible 30 points, with scores ranging from 13 to 26 (i.e., no perfect scores). There was no difference in total score between Health Majors (M=21.04, SD=2.63) and Nutrition Majors (M=21.46, SD=2.46); ($t(121) = -.853$, $p>0.05$). Table 6 (located in Appendix 3) details the full results of the comparisons by major.

Comparisons by major on subscale scores were also performed. More health majors scored higher on the Nutrition Knowledge and Health Education subscale than Nutrition Majors, with equal numbers of students in both majors achieving the highest scores on the Nutrition Education subscale. The differences however were not significant.

Knowledge Domains by Participant Characteristics

A comparison of the overall scores was assessed by whether students had completed a college nutrition course ($M = 21.15$, $SD = 2.48$) compared to those who had

not (M = 21.24, SD = 2.83) neither of which were statistically significant when t-tests were performed ($t(121) = .176$, $p>0.05$. An Analysis of Variance was performed to examine for differences between Total Score by school classification (freshman sophomore, etc.). There were no significant differences for these variables, $F(3, 119) = 0.37$, $p=0.770$, which have been presented in Table7 (located in Appendix 3).

DISCUSSION

The analysis of this nutrition and health education instrument, revealed no significant differences when comparing the students' scores by major, age, classification and whether they had pursued nutrition courses. The health and nutrition students earned mean scores below 86.6% on the instrument, even though the majority of students from each major in the sample had completed a college-level nutrition course. These findings are similar to results obtained by Thomas and colleagues [22] with allied health and fitness students, where despite the majority of the students having had a college nutrition course, they performed below expectation on the administered nutrition knowledge test.

For the current study, better scores were obtained on nutrition knowledge questions and lower scores resulted on the nutrition education questions. While the majority of the students (99.2%) were able to correctly indicate that food advertisements were not very reliable sources of nutrition information, a very large proportion (91.1%) were unable to identify *paraphrasing* as the best pedagogical strategy to improve communication with participants in a nutrition education group. Upon further analyses, it was found that for the nutrition education question mentioned above more nutrition than health students were able to provide the correct response. Nutrition Education questions

were derived from a source which enables one to prepare for the Registration exam for Dietitians. The low performance of participants on this assessment, even nutrition majors, may simply be a function of their status – i.e., they are not qualified to sit (are not prepared) for the RD exam.

It also noteworthy that health students in the sample represented different options in the major-Allied Health, School Health and Community Health. Most of the health participants were in fact allied health majors, a degree "used by students desiring to pursue additional schooling in an allied-health area."[71] Given the presence of this many allied health students in the sample, along with their stated desire for further schooling in either an allied health or medical discipline (57 participants wrote in such a response), it is somewhat of surprise that they did not obtain better scores on the instrument. Further analyses in fact did reveal that the majority of the allied health majors (58.8%) had not had a course in nutrition. Given past research showing that practicing allied health and medical professionals rarely or never received nutrition education while in professional training,[9,8,72] the outlook and possibility for these students functioning as adjunct nutrition educators, appears a bit bleak.

Results of this study may be of interest to programs training health and dietetic students who will be required at some point to function as nutrition educators whether in a primary or secondary role. These results suggest that both health and nutrition students need to improve their nutrition knowledge if they plan to enter into allied health fields and be considered credible sources of nutrition. More than a quarter of the participants (27.64%) in both majors had not pursued a course in nutrition. It may therefore be

impossible for these future professionals to practice without this foundation and a limited nutrition knowledge base. Will students not exposed to nutrition or not exposed to enough nutrition take the initiative to fill this knowledge gap by pursuing elective nutrition courses, or as practicing professionals will they make use of continuing education options in nutrition?

With changes in health care delivery system, increasing reliance on preventive measures, and patients' continual demand for their providers to provide them with current, timely, credible information, it is important that these concerns are addressed. However in order to address this, it is important to determine how much nutrition knowledge is needed by these persons. A similar study investigating the nutrition knowledge of allied health professionals,[40] has indicated that there is currently no standard for acceptable nutrition knowledge of non-dietetic health professionals. It appears that no one has yet to determine how much nutrition knowledge for allied and medical professionals is considered "enough".

There are several limitations of this research including the small sample size, sample bias and the lack of validity and reliability of the data produced by the instrument. The small sample size narrows the scope of the research and reduces the generalizability of the data; therefore strong inferences cannot be drawn from this research. However it is imperative to note that this was a field test undertaken in a topic where there currently is no published research. Although the results can only be applied to the sampled population, they provide insight into this emerging topic and contribute to the literature regarding nutrition education for health education professionals.

Because of the dearth of literature available on the nutrition knowledge of health students, purposive sampling was utilized. The study may have thereby been exposed to sampling bias. Selection bias may have also been introduced as health students with greater interests in nutritional aspects of health may have been the ones who volunteered for the study. Instrumentation is another potential limitation for the current study. In order to establish the validity and reliability of the data produced by the instrument, factor analyses and test-retest analyses need to be conducted. Establishing the reliability and validity would require additional research time and considerable effort, but it is essential. Suggested future research would also involve further instrument development and piloting on a variety of health professionals, namely nursing, Physical Therapists, Physician Assistants and Occupational Therapy students and professionals—for whom other researchers have already established mean nutrition knowledge test scores on other reliably validated instruments. Instruments validated for one profession must be tested with the new profession to again ensure that it elicits reliable and valid data.

TRANSLATION TO HEALTH EDUCATION PRACTICE

This study was conducted to determine the nutrition knowledge of health and nutrition undergraduates. Knowledge of nutrition education and health education was also assessed. It is important to emphasize that health educators are not expected to be dietitians. However, as primary level providers, they should have the necessary knowledge and training to screen and assess for possible dietary or nutritional needs of their patients. With no research currently available on practicing or pre-professional health educators, further study is beneficial. Studies can be performed to assess nutrition

knowledge of CHES certified health educators and the value they place on nutrition knowledge in their work. These professionals can also be asked their views on the importance of nutrition knowledge to their profession and their level of satisfaction with nutrition in the health education curricula.

Health educators are ideally positioned to be at the fore-front of health promotion and prevention efforts. In order to succeed in this role, nutrition must first be considered an important component of curricula for the training of current and future health professionals. Further steps can be taken to ensure that health and nutrition students are poised and ready to leave academia to effectively function as interdisciplinary team members in the continued provision of quality health care which the public deserves.

CHAPTER V

WHAT IS THE PERCEIVED ABILITY OF CHES CERTIFIED HEALTH EDUCATORS TO IMPART NUTRITION EDUCATION?

INTRODUCTION

Contento and colleagues[73] define nutrition education to include "any set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviors conducive to health and well-being." Nutrition education is able to assist people in understanding the relationship between diet and health. It can also provide information on foods to eat for health, but can go further; assisting in the consideration of food choices in relation to fundamental issues in the *near environment* (relationships, built environment and other issues of living conditions) and understanding the influence on diet related practices of the *far environment* (food policies, advertising, and agricultural practices).[1]

Contento[74] in further research on nutrition education, identifies two ways to conceptualize knowledge about nutrition and food—*motivational knowledge* and *instrumental knowledge.* Motivational knowledge involves the stimulus to act in anticipation of the outcome, where as instrumental knowledge is needed to take action or the *how-to* knowledge. This *how to* knowledge has also been referred to as *applied* knowledge. Hughes[75] in identifying the role of nurses in nutrition education indicates that this *applied* knowledge is essential when counseling on diet and nutrition. It is this

definition of the how-to/ applied knowledge which I desired to assess in health educators.

Nutrition education is now being provided by professionals other than nutritionists, dietitians or nutrition educators. Health paraprofessionals and professionals including nurses, physicians and teachers provide much of the education during a health or medical visit. In situations where nutrition professionals are not readily available, Hughes[75] indicates that oft times it is the general practitioners and or nurses who are perceived as the most reliable and often only source of nutrition information

Consequently, the inclusion of nutrition in the curricula and training of other medical and health professionals has been extensively reviewed in the literature.[21,42,76,77,3] Little is known however, on the ability of Health Educators to deliver nutrition education. In fact the published literature appears somewhat silent on the topic. At the time of this research, there also exist no published reports on the interaction between health educators' knowledge, perceptions, and their competency in the field of nutrition. As a result, a question arises regarding the ability of health educators to convey credible, timely and relevant nutrition information to the public.

Findings from a previous study (detailed in Chapter III) regarding the availability of nutrition education opportunities in a well-regarded undergraduate health education program illustrated the lack of formal process via the health education curriculum for students to receive nutrition education training. In another study, health and nutrition students were administered a nutrition knowledge instrument to assess their nutrition and nutrition education knowledge (detailed in Chapter IV). The findings suggest a strong

need for structuralized and formal training opportunities for health education students in nutrition education. However, given the context in which nutrition education takes place, assessment of the experiences and perspectives of *experienced* health educators may improve our understanding of the potential need.

The CHES certification was developed for the health education profession in an effort to exhibit fundamental skills across all practice settings.[78] The certification is voluntary however it designates those individuals who have met the standards of *competence* as set forth by the National Commission on Health Education Credentialing. By receiving this credential, health educators demonstrate an ongoing commitment to continuing education and professional development.

As such, the need exists to determine if professional health educators believe that they had been adequately prepared via the curriculum and their post-graduate experiences to deliver nutrition education. *Do experienced health educators believe that they have the appropriate competencies required to provide nutrition information to the public*? Inadequate academic training and skill in nutrition may present as an obvious hindrance to health educators providing effective nutrition advice. Therefore it is essential that the opinions are gathered from qualified and experienced and health educators themselves.

A qualitative study was conducted as I desired to gain a "wealth of detailed information about a much smaller number of people and cases."[79]

PURPOSE

The purpose of this study was to explore the background and training in nutrition as well as the perceived ability and competence to deliver nutrition education of health educators with the Certified Health Education Specialist (CHES) credential. The study is shaped primarily by two research questions 1) *What prior training via the health education curricula did CHES certified health educators receive?* and 2) *What are the perceptions of health educators of their own ability to conduct nutrition education?* These questions will help address the gap in the literature on nutrition education of health professionals with particular focus on health educators. I assert that improving the nutritional knowledge and skills of health educators ensures an enhanced level of health care to the public, and also allows these professionals to make informed decisions and realize their limitations in the area of nutrition.

A qualitative study was conducted as this research paradigm locates the observer in the world [of the observed].[80]Denzin and Lincoln,[80] further theorize that qualitative research involves utilizing a naturalistic approach to address subject matter. The naturalistic approach according to Patton,[79] is so named as the research is conducted in a *real world* setting, without attempts to manipulation by the researcher. In qualitative research there is usually an intimate relationship between the researcher and what is studied.

METHODS

Research Design

This exploratory study utilized a naturalistic qualitative approach to investigate the perceptions of health educators. Qualitative according to Denzin and Lincoln "implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured (if measured at all) in terms of quantity, amount, intensity, or frequency." Merriam[81] further indicates that qualitative researchers desire to understand how experiences are interpreted, how the world is constructed, and the meaning ascribed to experiences. For this reason, qualitative researchers study things in their natural setting, attempt to understand and describe the meanings people ascribe to their experiences.[80]

This study utilized the process of semi-structured interviews to gather information on the personal experiences of these health educators.

Sampling Method and Recruitment Procedures

Purposive (via snowball) sampling was utilized to recruit the participation of health educators with the CHES credential. The snowball sampling technique, according to Schutt[66] usually involves groups that may be hard to reach, but are interconnected. Merriam[81] further indicates that snowball, chain or network sampling; involves finding a few key participants who meet the criteria for participation in the study and asking each one to refer to other participants. As participants indicated their interest in the research, they were asked to convey my contact information to other health educator colleagues who may have also been interested in participating in the research. Participants were

eligible for the study if they had at least a year of professional experience as a health educator and possessed the CHES credentials as recognized by the National Commission for Health Education Credentialing.

Health Educators in the southern Texas area were recruited through direct contact via email from the researcher. Health educators also received notice about the research via the distribution of an email to a list-serv of local health educators.

Instruments

Three types of instruments were used in this research, the human instrument, semi-structured interview questions (located in Appendix 6, however a sample of questions are provided in Figure 1) and a demographic questionnaire. In qualitative research, the researcher is the primary instrument for data collection and data analysis. Lincoln and Guba[82] indicate that the human instrument has several advantages and is capable of refinement just as any other instrument. However, they further indicate that the human instrument becomes meaningless if it is untrustworthy. To understand this research it is therefore necessary to present and understand the instrument. I am a practitioner. I am a health professional. By the nature of my profession, I am considered a nutrition expert. I am also pursuing a terminal degree in health education. As each interview progressed, I as instrument refined my techniques, and gained knowledge regarding the information I sought.

A series of semi-structured interview questions were developed based on the needs of the research and its overall purpose. Patton,[79] indicates that interviews produce direct quotations about peoples beliefs, experiences, thoughts and knowledge. He further

indicates that interview guides ensure that similar questions are addressed to each interviewee. A sample of interview questions are provided in Figure 1 below.

As there have not been studies such as this conducted on this population, factors to address from the literature were not identified.

Figure 1. Sample Semi-structured Interview Questions

1. Tell me about your background: How did you decide on the profession of Health education?
2. Did you take nutrition classes during your degree program?
3. Do you believe that your undergraduate experience adequately prepared you to deliver nutrition education?
4. Tell me about your typical day as a health educator.
5. What aspects about your job are important to you?
6. Tell me about your experiences thus far doing nutrition and diabetes education
7. Are you comfortable giving information on nutrition and or diabetes?
8. On a scale of 1 to 10, with 10 being excellent, how would you rate your competency in delivering nutrition education?

Data Collection

Creswell[83] theorized that interviews "play a central role in the data collection in a grounded theory study. Semi-structured interviews were scheduled based on the

participants' availability and were conducted at their place of choosing. Although participants were informed prior to the interviews that that could choose any setting for the interview-they all chose their place of work. Each participant was sent an email the day before reminding them of our scheduled interview date and time. Before each interview began, participants were provided with the informed consent protocol, and were given time to read it over, to ensure that their rights were protected. Their agreement to participate in the research also provided their consent. Participants were provided with a demographic questionnaire which along with asking for their background information allowed them to choose a pseudonym by which they would be identified throughout the research. Interviews were conducted beginning in December 2010 and concluded in February of 2011.

All interviews were audio-taped using a digital recording device. Handwritten notes were also taken throughout the interviews. These notes served to enhance the audio of the interviews. At the end of each interview participants were allowed to have the final say. Interview times varied, lasting between 16 and 73 minutes. Interviews were transcribed verbatim. After each interview occurred, transcription ensued.

All study records, including the interviews, transcription, and demographic questionnaire were secured in a locked drawer. Interviewees received a $15 gift card upon completion of the interview. Study procedures were approved by the Human Subjects Institutional Review Board at Texas A&M University, College Station. The interview protocol can be found in Appendix 6.

Data Processing and Analysis

Lincoln and Guba[82] postulate that in order to facilitate the emergent design, data analysis must begin with the very first data collection. As such, data analysis began after the first interview was transcribed. I transcribed the interview verbatim and gathered further thoughts regarding the interview. I gained ideas for any changes to subsequent interview questions as well as question order, and for instances where I needed to probe further into participants' responses.

After all the interviews had been transcribed, I utilized Agar's[84] suggestion and read all transcripts in their entirety several times. I did this in an attempt to "immerse myself in the details, trying to get a sense of the interview as a whole." Each interview was then unitized -a process that Lincoln and Guba[82] indicate is similar to coding. Coding according to Holsti,[59] transforms and combines raw data into units, which allows for the description of relevant content characteristics. Units comprised sentences and paragraphs, however if part of the developed unit were to be removed then the remainder would have been difficult to comprehend. Following suggestions provided by Lincoln and Guba,[82] units were *heuristic* in order to aid my understanding of the information, and were the smallest pieces of information able to make sense on their own. Unitizing was done via computer; however the units were then printed on index cards. Each card was given a card number and was coded with the source of the data: *Qual_Int_particiant pseudonym*-with each pseudonym changing per interview, as well the page number of the original transcript from which the unit was derived.

The data were then categorized following the steps outlined by Lincoln and Guba.[82] Each index card was read, and its contents noted. I established categories according to the emergent category designation method theorized by Erlandson and colleagues[85] as contents reoccurred. I recorded these categories/topics on post it notes, which were stuck on the original card that fit that category. Axial coding was then conducted to relate categories to subcategories that emerged. Patton[79] describes axial coding as such, because coding occurs around the categories axis, and serves to link categories based on their level of [similar] properties and dimensions. I completed this process until all the cards were able to fit into a category. Cards deemed irrelevant to the categories were placed in miscellaneous. I then reviewed the entire set of cards again and made decisions as to whether categories that previously stood alone were related to other categories and could then be collapsed. Eventually a saturation of categories was reached. None of the categories required further subsequent data collection.

Establishing Trustworthiness

Quantitative researchers establish trustworthiness through reliability and validity, however in qualitative research; these are established through credibility, dependability, confirmability and transferability.[82] To ensure credibility the data was triangulated by the use of multiple sources. Transferability has been addressed by the detailing of my methods and the background information related to the research. This study attempts to establish dependability by fully detailing the research methods. To ensure confirmability of the findings, an audit trail was kept. All the raw data (recorded interviews), unitized

information (index cards) and notes have been kept securely for referencing. A reflexive journal was also kept throughout the study.

Ethical considerations were also adhered to during this research. The interview protocol was reviewed by the Human Subjects Institutional Review Board (IRB) of Texas A&M University and determined to be exempt from full review. Participants were also informed of their rights before the interviews began and were provided copies of the informed consent document to read (provided in Appendix 7), which also provided the contact information of the researcher and the IRB. This document also informed them that their interviews would be audio recorded and securely stored by the researcher.

FINDINGS

The research questions were addressed through the participant responses to the interview protocol and other probing questions utilized throughout the interview. From the analysis, seven central themes emerged. The themes are centered on the health educator's journey toward nutrition education. Themes emerged centered around their *Educational Journey, Career Journey and Journey into Nutrition.* I will elaborate on each of the themes and subthemes, by presenting some of the participant's narratives.

However, an introduction to the study participants helps the reader better understand their context.

Participant Background Information

Interviews were conducted with 4 health educators certified with the CHES credential. The health educators interviewed included three females and one male, all of whom had a combined 21 years of experience in the field of health education and were

employed in various work settings. Demographic characteristics of the health educators are presented in Table 8 of Appendix 5.

Sarah: Sarah falls within the age range of 26-31 years old, and self identifies as Caucasian. She has spent three years as a health educator, and is currently employed at a university health center. She has been employed here for the past two years. Sarah recently obtained her Masters degree in Health Education from Safeway University * (SWU-name changed to respect institutions privacy), TX. I have known Sarah for a number of years as we had graduate classes together at SWU and both worked with SAFEreact* a student organization at SWU.

Nicole: Nicole provides her age range as 32-37 years of age, and also identifies as Caucasian. She has been a health educator for thirteen years and is currently employed at a university health center. She has been in this position for the last eight years. Along with working, Nicole is also pursuing a doctoral degree at Safeway University. Nicole obtained both her undergraduate and master's degrees from SWU as well. She is also Sarah's immediate supervisor.

Rafael: Rafael identifies as Hispanic and places his age between the 20-25 year ranges. He recently completed his undergraduate studies at Lifeline University* (LU), VA, and has been employed as a health educator for the past year. He is currently employed at a community health center. Rafael is married; his wife is a nurse and he is bilingual. He also indicates that he was raised in New Jersey.

Julia: Julia identifies as Caucasian as well and indicates that her age falls within the 26-31 year ranges. Julia has been a health educator for the last four years, but has

worked in her current position at a community health center for the last three. Julia is a new mother to twin girls and returned to work two days prior to our interview. Julia also obtained her master's degree from SWU, where we also took shared graduate courses.

The themes which emanated are now presented.

Educational Journey

Participants provided narratives detailing their educational journey through the health education field. Sub themes which emerged were categorized as f*alling into health education* and e*ducational experiences.* These are detailed further below.

Falling into Health Education

Of the four health educators interviewed, only one-Julia, initially pursued a degree in health during their undergraduate tenure. At the start of their undergraduate careers, Nicole was a student in the geography major; Rafael was pursuing a nursing degree, while Sarah was a biomedical science major who had hopes of attending vet school. Although Julia was pursuing a degree in health, her desire was to eventually become an occupational therapist. Participants had various reasons for "stumbling" into the health degree. Sarah indicated:

> I actually was a biomedical science major originally wanting to go to vet school and ah didn't have a good experience in chemistry and I had a classmate who ah I was lamenting to about how much I hated chemistry and told her that I ah just didn't think this was gonna be right for me and she said I'm in health education you should check it out. I said oh what's you know what's health education about. She said we talk about nutrition

> and diet and we help people stay healthy and I said that sounds like a lot a fun. So that's kind of I stumbled into the profession that way umm with my, with my education first and then once I took some of the first courses in health I just really felt like that was where I could be useful where I could see myself having a career. So I didn't really know much about it until I stumbled into it.

Rafael, who attended Lifeline University, had hopes of becoming a male nurse and indicates that health education was not his first choice of career. Rafael had completed at least three years of course work towards completing his nursing degree when he failed out of a required course. He dropped nursing as a major, with the possibility of reentering the nursing program the next year. However, upon advice from a university counselor, that his nursing courses could count toward a health education degree, and that he could still graduate in four years, he switched majors. When asked why he chose health education versus other allied health major options available at Lifeline University, Rafael indicated:

> Yeah, well it seemed to me like this was am, this was easier ah as far as looking at other things, because umm it seemed like I would have had to to do some other ah kind of certification that would have taken a longer process or you know am all the things that was presented to me it seems like this was you know an easy way to get my degree umm, but I was also kind of intrigued as what you know, what this major was about so I was it was kinda of one of those you know one of those wanted to jump into it

> without really knowing what it was because I was curious umm so that's how I kinda got started with that.

Julia, the only interviewee to initially pursue health as a major, started in the community health option at SWU with the intent to obtain a masters degree in Occupational Therapy (OT). Julia knew of Occupational Therapists who had gone this route and wanted to follow suit. Her intentions changed after her experiences in the world of OT:

> ..but then after am shadowing an OT for a while, I decided that wasn't what exactly I wanted to do anymore, but I was already a health major, so I decided to just continue on and become a health educator. So that's basically how it came about.

Educational Experiences

Three of the participants had pursued post baccalaureate degrees in health education at SWU; however they were asked questions regarding their undergraduate experiences while pursing the degree in health education. Under this theme, participants identified sub-themes related to their educational experiences. The subthemes identified were *practicum experiences, preparation for nutrition delivery and concerns related to the health degree.*

Practicum Experiences

All the participants reflected fondly on their experiences during the health program, and cited different reasons as to why the program had been memorable for them. Julia enjoyed getting involved in the health education honorary society as a

member and as an officer, while Rafael, Sarah and Nicole all provided reflections on health classes they'd enjoyed.

As a requirement of the health degree, students are required to complete an internship which provides them practical experience in the field of health education. Where this practical experience is undertaken varies per student. When asked whether they had completed practicum hours in order to complete their degree, all health educators answered in the affirmative. There were positive experiences mentioned and there were those health educators who had not so positive experiences during their internship. Julia absolutely loved her internship as she believed it fully prepared her for the field of health education. She indicated:

> ..well it was a good internship, while I was there, there was the health education director and then she's supposed to have two health educators underneath her and there was only one and she quit half way through my internship, so that made me the intern, the health educator for them. So I learned a lot quickly (laughs). so it was a good experience, umm basically I taught they have a family planning class that they have twice a week, so I taught that and we did a lot of family planning like in I think Hark*, yeah in the Hark high school we did that. They had presentations for family planning.

Typically internships provide opportunities for students to obtain real world and practical experience in a particular field. It has been my experience that internships in

the allied health fields are unpaid however Rafael in describing his internship experiences indicated to me why he went about seeking and obtaining a paid internship:

> Umm what I did, was I did it during the summer, and I worked ah full time for a umm a company called Loving Will Health Solutions*, I was based out of Charlotte, NC. what I was doing, ah I was getting ready to get married, so I kinda needed a job, so I had an internship that paid me while I did my practicum hours. So umm they were able to pay me and so I went way over my hours but it was good, cause I was able to get three months of , of ah experience with this internship, and also have a job to help kinda support myself for the upcoming wedding the next year yeah. Umm so what I did was it was all about health screenings so what they what this company did was umm with different organizations, with different companies they would set up ah it was kind of a plan where umm for like for example we would, we would say a big furniture company out in that area, we would go to all their locations and we would do health screenings for their employees.

Sarah also had a positive experience during her internship, where she became involved with health education efforts in agriculture and food production. Produce was grown and provided to lower income persons along with education regarding the benefits of fruits and vegetables and other gardening options that they could possibly do at home. Nicole however in describing her undergrad internship experiences, reflected

negatively and indicated that to her it was a "waste of time", where she really didn't learn anything.

> The undergrad I did nothing. Made copies. I mean it was horrible; it was a waste of time actually. Umm I was the first intern she'd ever had, she was just out of college herself maybe a two years out of college and she didn't know what to do with me. I created a couple fliers I didn't really plan anything or didn't do. I did one presentation but it was to ah Spanish speaking to three people who spoke Spanish and I don't speak Spanish so it was really hard. Umm I, I didn't do a whole lot . I didn't learn a whole lot.

Preparation for Nutrition Delivery

When asked about their educational experiences, participants were asked to reflect on whether they believed their degree had prepared them for nutrition education. All four of the health educators indicated that they believed their respective curricula had not prepared them for this task. The general consensus was that the health degree was broad and general, leaving them unprepared for current nutrition topics. The health educators all indicated that the nutrition information they all possessed they obtained on their own, through personal research or the use of resources at their place of employment. Sarah indicated that she obtains information because of her prior interest in nutrition:

> I think a lot of the education here was more-I guess what I'm saying is I didn't come out with a lot of nutrition information outside of information

> I had gathered on my own just from my own interest , but I wouldn't say that I necessarily would be able to do a nutritional counseling session like what I do now. I wouldn't be able to do that coming just out of my undergraduate career and even after my graduate career.

Julia appeared somewhat uncertain as to whether her degree really prepared her for nutrition, stated that she felt prepared to provide general nutrition information after doing her own refresher course in nutrition. However she indicated that:

> It changes so much. It's like with anything in the health field, it's always changing. So yes for the time, but then it changed so I have to redo it, but maybe with the change I didn't get as good of a foundation with the change from my school, I had to do it outside the school.

Concerns Related to the Health Degree

Although this question was not asked forthright of the participants, in describing their individual experiences during the program, three of them expressed concerns with the health degree. Nicole who as mentioned previously is currently pursuing a doctorate in health at SWU, reflecting on her undergraduate experiences indicates:

> I think, I don't know, I think the health degree here is very general and so a lot of students graduate and they don't have a focus on anything so they have to go one for more school. I don't think that that's fair to the graduate with a bachelor's degree. The health degree, that should be enough, you shouldn't have to go get something else, but I think a lot of them feel like they have to go get something else.

Sarah and Rafael also echoed this sentiment as well. Sarah agreed that the heath degree at SWU was broad, however as she reflected on the course offerings, wondered why nutrition was not emphasized more:

> I think overall the education at Safeway for an educator is very good I think you come out of it with a good ability to be an educator but topic specific maybe not so much. And that's a hard proposition for any education cause if you [did] it would be hard to have a nutrition section and a sexual health section and a tobacco cessation section.

Rafael in reflecting on his experiences at Lifeline University also did not feel prepared for nutrition delivery.

> ..and they teach you how to get your resources, where to find am good resources you know, legit resources that you know giving you correct information, and how to use learning on the job quickly. so they really equip you, but as far as teaching you, education wise, like as far as what it would be for a registered dietitian and things like that, I wouldn't be, I wouldn't be as competent as that person who's studying to be that, but they do prepare you kinds for the hands on real world experience to learn on the job.

After reflecting on their experiences this prompted comments related to suggested changes to the health education program of the respective universities. Suggestions ranged from increased nutrition requirements for health students, to a specific track for health students interested in future careers in nutrition as well as

nutrition courses tailored specifically for health students. Sarah, who obtained her degree from SWU, illustrated this by suggesting:

> Dependent upon your interest areas, but we have a safety class, we have a school health class, we have a women's health class, we have you know am a diversity class, so we should have a nutrition class too. That's that would be my feeling and I think that would be something everyone can benefit from.

Rafael, the only health educator to have completed two nutrition courses during the pursuit of his undergraduate degree further suggested the following:

> kinda like ah when people get a little minor in undergrad or wherever, or when they take grad school, they go to their specific tract you know. So I think they should just add another lil tier of tracks within the CHES part of the program to allow people to really you know whatever their passion is, is to go into that. So that would allow people who are looking at ah specifically being nutritionists, registered dietitians in the future things like of that nature, they can really learn a lot more ah and go deeper into nutrition in their undergrad courses, instead of learning about umm other courses like epidemiology which is great, but you know if I'm not gonna go into that you know ah I don't need to go into such a high level. Because epidemiology class is ah upper level course and it goes pretty deep into it you know.

Career Journey

Health educators detailed their experiences regarding their individual career journey, which included themes of *career experiences, daily routines and* their r*easons for pursuing the CHES designation.* Participants reflected on their current career trajectories in health education and provided information regarding the aforementioned themes. Subthemes also emerged and they will be discussed as well.

Career Experiences

Participants were asked when during their health career they decided to specialize or focus on a particular field of health education. They were also posed questions on their particular field or specialty. Two of the health educators were employed in community health settings, while the other two were based in a university health center. Nicole in discussing her career indicated that she realized her passion for college health while she was completing her master's degree at SWU.

> Umm my second semester of graduate school, I started working here at the health center at SWU as a graduate assistant and at that point I didn't know, I was thinking CDC, I was thinking you know public health stuff and I just fell in love with college health and that's where my career has led me, just college health.

Sarah, who is employed at the same university health center as Nicole, indicates that she finds herself drawn to the field of sexual health, especially women's health issues. She believes that this area is of great need in the college-aged population:

> I find myself more drawn to the sexual health kind of things, especially women's health with I find myself really more enjoying talking about contraception and women's health issues umm since my focus is the college population umm, a lot of the issues that surround our college women using birth control for the first time, safe sex, pregnancy prevention those kinds of things.

Julia, who is employed at a community health center, stressed the fact that she deals with general health topics. At her previous job, she focused on a specific health topic and this frustrated her and left her bored:

> I became a patient educator for Healthy Lives* where I just focused on one thing, I worked in the Coumadin clinic. So how do you maintain yourself when you're on Coumadin, and your diet, nutrition and all of that when you're on Coumadin and it was very focused, which I got really good at it and I got to interact with patients a lot but I got bored, cause I was just doing Coumadin for eight hours every day.

This led to her seeking a career where she would be able to focus on general health topics instead of specifics:

> So that's really when I decided I didn't like being totally focused on something, I really liked the broad, and so that's why I like this job here where I am now. I can do basically anything.

Rafael likewise sought out health positions that would enable him to receive general knowledge and experience in various health topics. He shared with me his

experiences while he was looking for a job, where he was even offered a position in Chicago to be a “lung health educator”. He refused this and other positions, instead opting to take his current position as it would enable him to focus on general health topics:

> …but when I saw this job, I noticed that ah it’s very broad. I would be able to dip my feet into lots of different health topics into lots of different environments and different am places. So umm, once I came here the main things that I do here are nutrition and family planning. Those are the two main things umm, and then we dip into other topics as well and umm as far as diabetes and cardiovascular disease cause that’s what we do. So we help patients who want to lower their cholesterol, lower their blood pressure, manage their diabetes, lose weight and we also do family planning classes every week.

Job Satisfaction/Importance

Participants were asked to identify aspects of their job that were important to them. Two of the health educators (Nicole and Rafael) identified the possibilities of enacting behavioral change as what was most important to them. Nicole indicated:

> ..Umm I think that we actually try to change behavior and we educate the students about things they don’t know about and it’s amazing what these kids don’t know. And I say kids yes, uh, yeah it’s amazing what they don’t know and so just educating them and pointing them in the right direction of the healthy choices to make. I think that’s important.

Rafael in describing his work in health education indicated that he felt it was important to make an impact on the community during his efforts:

> …and that people are learning things that can truly prevent other health risks to happen you know, so umm for me the most important thing is that I continue to empower people to be able to, to take control of their own health and really make good decisions, healthy decisions, to to prolong their life, their quality of life things like that.

Julia in keeping with her decision to be as general in the field as possible, indicated that it was important to her that everyday be different. She also found it important to be involved in community engagement efforts and coalitions. Sarah on the other hand, felt it was important to her to keep up with new trends and research in the field:

> …umm it's kind of refreshing to know what's going on in the forefront of health education. I think that's important umm and staying up to date with all the latest nutrition information, umm especially things that I know that are gonna affect the students. So umm I'll definitely check out the latest magazines to see what kind of diets they're proposing cause I know I'll have a student come in and say well what do you think about the rice and potato diet or whatever new thing it is and I think it's important to stay up to date with those as well.

Daily Routine

To gather information regarding health educators experiences with nutrition, along with their career focus they were asked about their daily routines. The subtheme addressed under this category included *health education experiences.* Routines differed depending on the setting each health educator worked. Nicole and Sarah's days were centered on the university's calendar, particularly with the arrangement of semesters. Nicole whose interview was conducted close to the completion of the fall semester indicated that usually during the semester she would be out of the office doing presentations in the classroom or at a health related event on the campus. Sarah expressed the same sentiment indicating that her days were typically spent doing several presentations to students.

Julia when asked about her typical day as a health educator, again pointed out that every day was different, which she thoroughly enjoyed. Although employed in a community clinic, Julia's day is spent somewhat similar to Nicole's and Sarah's conducting presentations and or programs for various groups. In describing her routines, Julia indicates:

> I go to a lot of meetings so in a typical day I usually have at least one or two meetings that I'll go to. I think that's about it. There's also like continuing education. I'm always trying to watch a webinar, catch a webinar here or there that kinda stuff. So I really like that I get out in the community, everyday is a little bit different umm, and I enjoy that.

Rafael also indicated that his days were not typical since things changed so much where he worked daily. He went on to describe a typical week, which may consist of him conducting research on topics that he is unfamiliar with, along with planning health education programs. Rafael also discussed his meeting with new clients and the subsequent follow-up that was required. As a part of the community clinic, family planning classes were offered to community residents in two languages-English and Spanish. As the only bilingual person on staff, he indicated that he was therefore responsible for conducting the Spanish sessions. He further indicated:

> Umm and then there's usually some kind of presentation coming up so I'm working on the presentation. I'm working on translating a brochure am that has to go to get approved you know am lots of little things here am. I look outside my door and we have a jar of condoms that we pass out to the community for free and , when its empty I gotta refill it, you know there's lots of little routine tasks that we do but days are different all the time.

In describing their daily routines, participants all touched upon their experiences in health education. These experiences ranged from tasks they were asked to do daily including the previously mentioned presentations to students and or community, along with providing pertinent health information to individuals and groups. This information spanned a variety of topics and age groups. One constant thread that emerged in this theme was health educators serving as a resource for community coalitions and committees. Julia, Sarah and Nicole all addressed their responsibilities as members of

various community based groups and the role that they were able to play as the health educator.

Reasons for Pursing CHES

The presence of the CHES designation after a health educators name is fairly recent. The National Commission of Health Education Credentialing in fact indicates that the prospect of professional health educators becoming Certified Health Education Specialists did not occur until 1989. The CHES designation is obtained voluntarily, however it indicates that the individual has met certain academic criteria, demonstrated and mastered fundamental skills across various practice settings.[78] Since the certification is voluntary; there exist persons practicing in the health education field without the certification. As such, health educators were asked their reasons for pursuing the CHES certification.

The credibility that the designation adds to the allied health professional was discussed in depth by Nicole, Sarah and Julia. Nicole who has been in the field for more than ten years explains:

> I think, I think to it adds a little credibility to the field and when you've got an office full of medical doctors and nurse practitioners and RN's and PT's and everything, having those four letters behind our names kind of gives us a little bit more oomph where you know we're actually certified to do this, not something we, we don't just sit here and make posters every day.

Both Julia and Rafael provided further details that having the certification ensure that they keep learning while keeping abreast of cutting-edge information in the field via obtaining the required 75 hours of continuing education. Rafael details:

> …it gives you a good motivation to continue to learn because you have to; you have to meet the requirements of the continuing education credits. So it allows you to, to umm have an extra motivation to go to these conferences, go to these trainings, to do these self studies, take other courses, things like that ah publish your own articles you know. Umm all these things that will continue to develop my professionalism and my ah, my career.

The CHES designations importance for finding a job as a health educator was also detailed during the interviews. However Rafael, did indicate that upon receiving his current position, he had enquired as to whether having the CHES assisted in him obtaining the position, but it had not, according to his supervisor.

Journey into Nutrition

In keeping with the purposes of the research, narratives were garnered on participants experiences with nutrition and nutrition education. Themes which emerged were placed in the following categories; n*utrition resources, nutrition experiences* and p*erceived competency in nutrition.*

Nutrition Resources

Resources are important when considering the delivery of nutrition education. Where would a health professional obtain information that may not be previously

known? Can these professionals request information from other members of the health care team? This however assumes (1) the presence of interdisciplinary connections with the available resources and (2) that these professionals are part of the interdisciplinary team. When discussing the resources available to them, health educators provided web pages of groups and organizations that they frequented for information. The *mypramid.gov* site, hosted by the United States Department of Agriculture (USDA) was the resource which the majority of health educators identified as utilizing for their own research and as a resource for clients. Sarah also described her use of the search engine Google™, to locate bits and pieces of information that may be otherwise difficult to find elsewhere:

> Am in all honesty sometimes if I'm looking for a specific amount of information Google search might be the first place I go. If I'm looking for something specific am like to answer a specific I don't know cholesterol. What's the one food that has the most cholesterol? I might have to go do a search for that.

Rafael employed at the community clinic, cited examples of local resources and options for resources available to them, because they served the community:

> …because we are a federally qualified health center, we do get a lot of free materials, umm from the government, from the state departments and things like that, so umm we're constantly ordering brochures, and pamphlets and handouts and books umm. We have ah, and it's kinda

> interesting because we do serve a lot of different cultures, here in this clinic specifically.

Interdisciplinary Connections

Within this construct of nutrition resources, the theme of *interdisciplinary connections* emerged. Allied health and medical professionals do not work in a vacuum; instead, forging connections with professionals from different disciplines serves the health professional well; personally and professionally. Leathard[86] provides a definition for the terms *interdisciplinary* or *multidisciplinary,* as teams of individuals with differing training, sharing a similar purpose, making differing but complementary contributions. These individuals most times can comprise, nurses, doctors, therapists etc. When asked whether they functioned as part of an interdisciplinary team one health educator-Nicole, answered in the affirmative. Two of the health educators required that the question be repeated, and clarified, while another-Julia, out rightly stated that she was not part of an interdisciplinary team. Nicole provided examples of her team approach to eating disorders:

> There's a medical doctor and a psychologist and a psychiatrist. And I represent the nutrition part because we don't have a dietitian to represent the nutrition part.

Rafael upon hearing the question initially, appeared perplexed, and requested me to repeat and clarify the question. After I rephrased and repeated my question regarding interdisciplinary teams, he provided information regarding working along with the diabetes educator, indicating that yes, they had in fact "teamed up" working together for

a common purpose to contribute to the well being of clients in the community to achieve their behavioral change goals.

This theme further produced information regarding the availability of nutrition personnel as resources available to health educators. Julia, indicated that although the Breezeway*County Health Department did not have a nutrition professional on staff or one available to refer clients to, she frequently provided her clients with further information on where they would be able to find a registered dietitian and the types of questions or concerns they would be able to address.

Rafael in addressing the resource personnel available to him as a new professional frequently credited the diabetes educator as a source of pertinent, timely information and advice. This person along with being trained to educate in the field of diabetes was also a registered Nurse according to Rafael.

Nutrition Experiences

Experience is the best teacher-at least according to the old adage! With this in mind, health educators were asked a series of questions regarding their experiences; past and present with nutrition and providing nutrition education. All the health educators indicated that they had taken a basic nutrition course during their undergraduate health program. Two of the health educators-Julia and Sarah-indicated that the nutrition course was in fact an elective. Nicole and Rafael shared that they had in fact taken two nutrition courses. Nicole had actually taken one of them during her master's degree program, while Rafael completed two courses during his undergraduate tenure. During the dialogue regarding nutrition in the health education program, there was a collective

agreement among the health educators that their lone nutrition offering was basic and "not enough". Julia even commented that the class never really got into the "science of nutrition".

Consequently, one's knowledge of nutrition affects the ability to deliver nutrition education. When asked about their experiences doing nutrition education there was mention of nutrition related presentations and one-on-one nutrition education sessions. Sarah and Rafael detailed their experiences regarding individual nutrition education sessions. Sarah who works with students indicated:

> Most of my nutrition education has been with students ah one on one they're either referred to me from a doctor in the clinic, who might say this student has high cholesterol she needs to have a low fat diet or something like that am or students that come in and just say I'm overweight and I wanna lose weight most of them fit in those two categories.

Rafael employed in the community, indicates that most of his nutrition education centers on the desire for weight loss or blood glucose control. It should be noted that when discussing the delivery of nutrition education, health educators were remiss to point out that they were not dietitians, therefore unable to provide detailed nutrition information to clients. Sarah details

> ...umm being that I'm not an RD and I don't have really in-depth nutrition information or the certification to back up a really in-depth nutrition plan, most of my information that I give out is pretty general.

Within this theme, Rafael and Julia addressed the topic of nutrition outreach, where the community clinics where they were employed went out into the surrounding towns and gave nutrition related presentations to various groups including school aged children and the elderly. Again, however it was noted that the nutrition information provided was basic and general.

Perceived Competency in Nutrition Education

Along the lines of preparation for nutrition delivery, health educators were asked to rate their perceived competence in nutrition education. Julia, Sarah and Rafael all rated their competency at about six, while Nicole, who had the most years of experience in the field, rated her competency at an eight to nine. Each had a different reason for why they rated themselves at that level. Julia, Rafael and Sarah all indicated that there was room for improvement and cited the need for further education to improve their competency.

Health educator's comfort with nutrition delivery also emerged while they were discussing their competency in delivering the subject. All interviewees indicated that they were comfortable with providing information on nutrition; however, this comfort came with caveats. Nicole ascertained that although she was comfortable now, when she first started out as a health educator, this was not the case. Sarah and Julia both expressed comfort with nutrition delivery. Julia maintains that she is comfortable delivering nutrition education because she stays away from the in-depth stuff:

> I'm not like in in-depth stuff, I'm not very comfortable with, so like sometimes I might need to refer someone to a nutritionist if they have

> specific questions…But the basic general guidelines and food guide pyramid, that kinda stuff, I'm pretty, I'm confident in doing it. The serving sizes, that I can do. But once you start talking about which fatty acid should I do, should I do the grapefruit diet, should I do this diet, I don't really get into all that as much.

However, with knowledge, there is always a possible deficit. Addressing this deficit is key in ensuring that further knowledge is gained. Health educators were asked whether they had ever faced a nutrition related question that they couldn't answer-they all responded in the affirmative. They further indicated that they always owned up to their knowledge deficit, but explaining to the client/student that they did not know or were unable to address the question, but were always willing to do further research and "get back to them at a later time." Julia further indicates that in certain situations where she knew she would not see the person again she would refer the client to a nutritionist or to a website to receive further information. Sarah, who deals with students on a daily basis, indicates that there are instances where providing information resources to the student may not be an option:

> …so am a student that comes in and has an eating disorder that usually goes straight to a dietitian am cause they have very specific dietary needs or a student who has a very specific diet that they need to be on like they need I have a very sensitive gluten intolerance or specifics like that are kind of outside my realm.

Rafael in addressing his knowledge deficits indicated that he utilizes his resources to learn continuously. As the most junior of the health educators interviewed with about a year of professional experience, he shared with me his goals for life-long learning in the field:

> So I know I have a lot of learning to do and umm I have it set up to where I'm going to continue to attend conferences and attend trainings as much as we can to learn more and more about these topics as they continue to develop in continue to have chronic problems in America and things like that, but am as far as it being a seven, [his competency rating in nutrition] I feel like I'm very comfortable am than the common,, more comfortable than the common man to you know to talk about these topics but I know that there is ah some room for improvement.

Addressing these knowledge deficits also included referral to nutrition professionals for information that the health educator felt he/she was unable to provide. All health educators affirmed that they had at some point in their career referred a client to a registered dietitian. They further indicated that this most times occurred if the client/student requested specific nutrition/diet information and or counseling. Rafael further indicated:

> Umm the main reason why I refer clients to registered dietitian is because some patients come in and they meet with me and they have different expectations you know and I'm, what what we do is we give them guidelines and we tell them these are the concepts, these are the things

> you can do, here are some suggestions for some small changes you can make, form good habits, but some of 'em look at me and say, I want you to tell me specifically what I need to eat every day, what time what meal, what snack, and that's beyond my level

DISCUSSION

The purpose of this study was to garner the perceptions of Certified Health Education Specialist (CHES) regarding their background and training in nutrition as well as their perceived ability and competence to deliver nutrition education. This was done with the goal of understanding whether health educators believed their past educational experiences had prepared them for nutrition. The emergent themes detailing their journey – *Education, Career and Nutrition*, demonstrate the participant's thoughts on this pertinent topic. Although preliminary, the findings of the study offer some insight into a subject that has received little to no attention from scholars. Below I will discuss the themes and offer some theoretical as well as practical implications. I will also address the limitations of this research.

The initial research question sought to determine the training (via the health education curricula) that CHES health educators received. Initially the objective was to determine whether participants had actually received training in nutrition via their respective health education curriculum. The narratives of the participants provide a perspective into their beliefs and illustrate their preparation to conduct nutrition education. Although all the participants had completed a basic nutrition course, there was a consensus among them all that this was not enough. These findings are consistent

with research conducted by Bahl and colleagues[40] who determined at the time of their research that there was no standard for what is considered acceptable nutrition knowledge for non-dietetic allied health professionals. In order to feel comfortable providing nutrition education, this group of health educators had to conduct further nutrition research on their own. Thus, there was consensus that they were not well prepared academically to conduct nutrition education efforts.

Theoretical Implications

There are several theoretical implications to be drawn from the participant's narratives which can be used to elucidate their experiences. Rooted in the first research question, participants addressed the internship portion of the health education program. This component allows the student to obtain practical experiences in the field of health education. This practical internship experience is commonly viewed as experiential learning. Experiential Learning Theory[87] posits that people can learn from their experiences and examines the linkages between education, work, and personal development. Knowledge in experiential learning is created through observation, reflection, and transformation of experience.[88] Experiential learning posits that ideas can be formed and reformed through experience.[87] The narratives of Julia, Rafael and Sarah lend support to experiential learning's tenets that it serves to enhance one's educational experiences, lending credence to Kolb's view that "people do learn from experience"

This use of experiential learning serves to prepare graduates with a possible link between education and work. Furthermore, the National Commission on Health

Education Credentialing (NCHEC) endorses experiential learning for the promotion of the health competencies and training of health educators.

The second research question pertained to the perceptions health educators possessed of their own ability to conduct nutrition education. From this question came the consensus that they could provide nutrition education, but only after intense research into the topic had been conducted. The health educators with the least number of years of experience all rated themselves at about average competency (six on a ten point scale), while the health educator with over thirteen years of experience rated herself the highest (eight to nine on the same scale), given her years of experience in the field and the extensive research that she had conducted on nutrition related topics over the course of her professional career.

The personal agency that these health educators express over their ability to deliver nutrition education is parallel to Bandura's self-efficacy theory. Bandura[89] indicates that self-efficacy is concerned primarily with the judgment of one's ability to organize and execute courses of action. These courses of action may require dealing with confusing, volatile and sometimes stressful situations. Self-efficacy beliefs according to Bandura,[90] produce effects through four major processes; cognitive, motivational, affective and selection.

The cognitive processes tenet of self-efficacy theory postulates that people's beliefs in their efficacy control the scenarios they anticipate, construct, and rehearse. Under this tenet, Bandura indicates, "personal accomplishments require not only skills but self-beliefs of efficacy to use them well. The health educators interviewed all

believed that they could provide some basic amount of education in nutrition. Central to this theme was that they all provided general information and avoided the "in-depth nutrition stuff".

People are motivated by forethought and by forming beliefs of what they can do. If I regard myself as highly efficient, failures are ascribed to insufficient effort.[90] I believe this tenet of self-efficacy theory addressing motivational processes can be used to describe the ways that participants rated their competency. Although no one identified as being a failure per se, Rafael, Julia and Sarah did indicate that more could be done to improve their perceived level of competency. Rafael also in his narrative was motivated to learn more about nutrition and health. He shared that he had no desire to stay at his current level, but desired to learn and grow in the field of health education.

The affective processes of self-efficacy theory, identifies that stress and depression are possible when experiencing difficult situations.[90] If one believes that they can "exercise control over threats" then they do not invoke thoughts and thought patterns that distress them. There was no talk of stress and depression throughout these narratives. although faced with situations that may have caused stress— inability to answer nutrition related question, all of the health educators in their narratives shared ways in which they addresses what could have been a potential source of stress. Bandura,[90] further indicates that under this tenet, the stronger the instilled coping self-efficacy, then the bolder people are in facing potentially threatening activities.

The choice of one's career and the path their lives take is a factor in the selection processes tenet of self-efficacy theory.[91,90] The stronger ones beliefs in their efficacy, the

more career options are considered, along with increased interest and preparation. These health educators interviewed all shared how they "fell into" health education as a career, however once they were indoctrinated in the field, they all strove to learn about health. Narratives revealed their drive to succeed in the field, by seeking opportunities to learn more, via continuing education credits and their own research into unfamiliar topics. Inasmuch as these participants all believed that they could be good health educators, they all shared that they were not nutrition professionals therefore stayed away from topics/issues that nutrition professionals would normally address.

Major Contributions

At the onset of this study, I aimed to obtain narratives from health educators as to their perceived competency in delivering nutrition education, as well as their preparation in the subject area. This study is the first step in articulating and giving voice to professional health educators on a timely and pertinent topic. There are no studies at present with which to compare this research to; therefore, this research contributes to the body of literature in the field of nutrition, nutrition education, and health education. There are currently no scholarly studies on health educators conducting nutrition education; therefore this study is in an attempt to address this gap. It is my ultimate hope that this work can lead to a framework for the professional development of health educators and other non-dietetic nutrition education professionals.

Also worth noting is the participants beliefs that the nutrition education they received was "not enough". In previous research conducted analyzing the curriculum of a professional health education program, it was found that the curriculum indeed had

one nutrition course listed as a possible elective for students to pursue—nutrition courses were not required as part of the degree. This qualitative study thereby confirms the results of the previous quantitative one. Qualitative participants involved in this study, suggested increased course offerings in nutrition as well as nutrition classes designed with health educators in mind. However, none of them mentioned the possibility or probability of receiving further training in the field of nutrition via continuing education hours etc.

Implications for Research and Practice

There are several implications that are worth discussing regarding this research. For one there is need for further research on nutrition education dissemination by Para-professionals and other purveyors of allied health. Little is known on the beliefs of these professionals on their ability to deliver nutrition education. Because participants rating of their competency was so varied, there is a need for further research in this particular area, with further probing questions producing richer narratives related to participants efficacy and competency.

There is also little known on what changes if any may be in the pipeline by schools of health education for future health educators. With this in mind there is a need for some curricula changes in the training of health educators. From the participant narratives there was a consensus that one nutrition course is not enough. Yet as mentioned previously, there is no standard for how much nutrition knowledge these professionals should possess. Furthermore, there is a need to investigate the availability of nutrition education beyond the classroom for health educators. Are there continuing

education opportunities available for health educators and other professionals to receive the necessary training in nutrition? Within the allied health field some professionals are able to obtain certifications in various topic areas including diabetes, weight management or eating disorders-there is the need to investigate whether such a certificate exists in nutrition for health educators and other professionals.

The practical experiences of health students should also be investigated. Are health students exposed to nutrition education experiences while on their mandatory internship? These programs may provide ample opportunity for health students to receive training in nutrition from dietetic professionals and or nutrition educators. This also aids in fostering interdisciplinary connections with other allied health disciplines.

The lack of a unified voice in health education may serve to limit how many of these changes will be enacted. In 1985, Taub[92] questioned whether one voice could be achieved for the health education profession. More than two decades later, there has been little change in this area of the health education/ health promotion profession. If health professionals are to be viewed as possible nutrition educators, it is imperative that modifications in the training of future health students ensue.

Limitations

The small sample may have limited additional varied perspectives on this issue. I had hopes of conducting more interviews; however, recruiting issues contributed to the small sample. I therefore did not attain the desired saturation level I had set for myself. Because I limited myself to practicing health educators, I therefore eliminated CHES certified personnel who may have been academics and or students at the time of the

study. Future research efforts should determine whether the narratives of these persons would contribute to a better understanding of the research topic. Future research should also include narratives from health educators with different racial and ethnic backgrounds. The homogenous nature of the health educators in this sample may have influenced the narratives provided.

Initially when I designed this study, I believed that my status as a student pursuing a degree in health education would garner me "favor" as an "insider" with the participants. However, I believe that my identification as a dietitian-the nutrition professional, served to distance the participants and may have affected the narratives that they shared. It became somewhat apparent to me, as during each interview narrative participants were quick to state, "I'm not a dietitian", as if to say, I know only so much about nutrition. Future studies on this topic area should possibly investigate whether keeping the researchers background hidden influences the responses of participants. Studies should also investigate the possible affect of power and positionality and of the insider-outsider status of the researcher at hand.

Two of the participants interviewed Sarah and Julia, were previously known to me as we had pursued courses together in graduate school. I am unsure if my familiarity with the subjects beforehand affected the objectivity and freedom of their responses. Although participants were made aware that no identifying data would be linked to them, the fact that I knew what they said and that I was previously known to them, may have played a part in the sharing of their narratives. I reflected about this later in my reflexive journal, where I detailed the settings and flow of the interviews however

wondered if my familiarity with the participants had influenced any and or all of the narratives provided.

CONCLUSION

In order to examine gaps in the current literature, I employed a "naturalistic inquiry" approach to examine a sample of health educator's beliefs and perceptions regarding their prior experiences in nutrition and their perceived ability to conduct nutrition education. Despite the small homogeneity of the sample, health educators were able to provide detailed narratives regarding their experiences. They have also given voice to a topic that may have otherwise been silent.

The onus is now in the hands of the field of health education to enact positive and necessary changes. It is hoped that this research will provide a stepping-stone for future research efforts aimed at benefitting the disciplines of health and nutrition.

CHAPTER VI

CONCLUSION

Arriving at one goal is the starting point to another.

-John Dewey-

The overall purpose of this research study was to provide insight and possible delineation of the role of health educators in the provision of nutrition education. Specifically, this report sought to address the following gaps in the current literature regarding health educators: What do researchers advocate regarding nutrition education for allied health professionals? How are pre professional health educators trained via the health curriculum in nutrition? What knowledge do pre professional health and nutrition students have regarding nutrition, nutrition education and health education? How do professional health educators perceive their ability to impart nutrition education?

To examine these gaps in the literature, I employed a mixed methods approach to the problem. A review of the literature was first conducted to determine what other authors had advocated on behalf of other allied health professionals. Despite the small sample of articles included in the review (see Chapter II), the message was clear—nutrition was an essential and oft times neglected component of the training or these persons. Noteworthy however, is the absence of studies advocating nutrition's importance in the training of health educators.

This review then directed the analysis of the health curriculum of an undergraduate pre professional program. A content analysis was performed with the use of an availability scale which was designed specifically for this research. Although

nutrition was available as a major within the university's system, it was not possible to minor in the subject. Review of the health curriculum revealed that although there were four course options (not requiring pre-requisites for entry) only one nutrition course was suggested by the health curriculum as a possible elective for health students to pursue. This therefore left me with questions regarding the possibility of health students really being prepared to impart nutrition education.

As a result of the previous study, a nutrition instrument was developed to test the knowledge of undergraduates in nutrition, nutrition education and health education. The instrument comprised questions from three sources: 1) a study guide for dietetic students Baechtold (n.d.), 2) the Certified Health Education Specialist Study Guide, and 3) questions from a nutrition knowledge study conducted by Zawila and colleagues. Utilizing purposive samples of health and nutrition students' participants' knowledge was tested. There were no significant differences between the scores of health and nutrition students. Lower scores were obtained by both groups on the nutrition education questions. Results of this portion of the study may be of interest to programs training health and dietetic students who will be required at some point to function as nutrition educators whether in a primary or secondary role.

Health educators were then interviewed to determine their perceptions regarding their academic preparation in nutrition, as well as their perceived competency in delivering nutrition education. Health educators with the least number of years of professional experience rated their competency at about average. Narratives also revealed that health educators believed the nutrition education received in their pre

professional programs was not enough. The tenets of Kolb's Experiential Learning Theory as well as Bandura's Self Efficacy Theory were chosen to contribute to the interpretation of the findings of this portion of the research.

This research is a vital asset to the literature as it represents the first scholarly attempt to delineate the role of the health educator in the provision of nutrition education. This is the first to offer the insight into the lack of research involving health educators as well as instruments designed to specifically measure nutrition, nutrition education and health education. In doing so, this research further advances the health education discipline as it progresses as a field.

Future research efforts will subject the instrument to psychometric testing. Establishing the instruments reliability and validity would require additional research time and considerable effort, but it is essential. Further instrument development and piloting on various samples of health professionals is also recommended. With regards to the qualitative portion of the research, I would suggest that future scholars interview larger numbers of participants or interview until saturation is reached. Future research should also attempt to include health educators from different racial and ethnic backgrounds.

It is important however to recognize the limitations that come along with this research. The relatively small sample size (of both the qualitative and quantitative studies) as well as the homogenous nature of the sample; serves to limit the ability to generalize the findings (see Chapters IV and V for a detailed description of these limitations).

It may therefore be impractical to determine whereby health educators are adequately prepared to serve in the role of nutrition educators. With further testing and future research efforts, it is hoped that a consensus can be reached regarding whether the preparation to be a nutrition educator can in fact be delineated.

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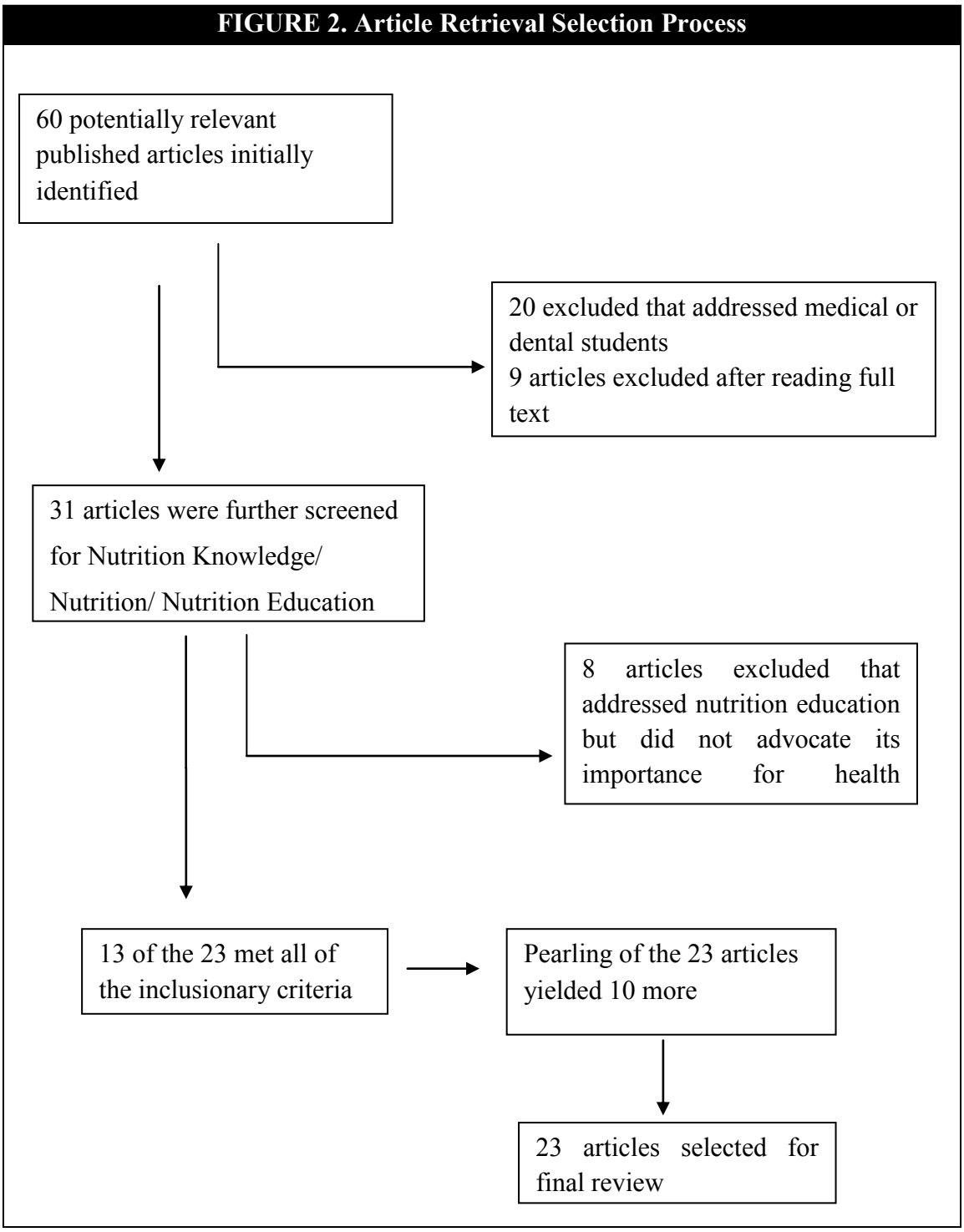
APPENDIX 1

FIGURE 2. ARTICLE 1/CHAPTER II



APPENDIX 2

TABLES ARTICLE 1 /CHAPTER II

Table 3. Screening Questions	
Characteristics	Fitting of inclusionary criteria
Does it address nutrition, nutrition knowledge or nutrition education	Y or N
Does the article address an allied health profession or allied health professionals?	Y or N
Is it peer reviewed	Y or N
Is the article/ report in English?	Y or N
Was the study conducted in the United States	Y or N

Table 4. Major Findings of Research Studies

			Target Population(s)							
Type of Study	Rationale	Training Requirement/ Suggestions	Students? Professionals? Both?	Nursing	PT	PA	Other	Unclear	N	Authors/Publication Year
Review	Nutrition is an essential component of health, nurses must therefore be prepared to use science in patient relationships	Food preparation laboratory experience Diet therapy and Clinical experience	Students	X					N/A	Greene (1960)
Cross sectional survey targeting nurses	The public health nurse more than any other health professional is responsible for nutrition education The nurse does not have to be a nutrition expert, however he/she must have a sound basis for nutrition decisions	Emphasize the relationship of nutrition and food habits to other aspects of the individual's physical and mental well being Increase nurses awareness and competency to deal with nutrition misinformation	Professionals	X					144	Harrison, Sanchez & Young (1969)
Cross sectional survey targeting nurses	Nurses do significant amounts of nutrition education in unconscious and unplanned fashions, this may therefore support, negate or neutralize the effects of other health professionals	There is a need to improve the quality of nutritional teaching in the nursing curriculum	Professionals	X					500	Vickstrom & Fox (1976)
Cross sectional survey targeting nursing students	Previous research assessed nursing professionals. This research sought to measure the attitudes and knowledge of nursing students pre and post their experience in a semester long nutrition course	None provided	Students	X					77	Ross (1984)
Cross sectional Survey of nursing programs in the U.S	Nurses are usually perceived by the public as credible authorities on nutrition. The nurse has assumed greater responsibility in nutrition care The requirement for nutrition in the nursing curriculum was deleted in 1972, thus this affected the training of nurses in nutrition	A comprehensive nutrition curriculum for nursing students requires a defined systematic arrangement and sequence of content	Schools of nursing	X					176◊	Cutler (1986)
Cross sectional survey of nursing schools in the U.S-sent to deans	Nurses have increased responsibility for nutritional assessment, administration of nutrients, and evaluation of the effects of nutritional support. Nursing texts and publications indicate that meeting nutritional needs is an important role for the bedside nurse, however there have been observations of less than optimal clinical practices, leading one to question whether nurses are adequately trained in academic institutions to care for patients' nutritional needs.	Increased clinical time needs to be spent in nutrition (history and physicals, enteral and parenteral nutrition and diet counseling) Increased options of nutrition electives Address the interrelated and interdependent roles of the health care team in providing nutritional support Nutrition content needs to be an integral part of all graduate nursing programs	NLN Accredited Schools of nursing	X					264◊	Stotts, Englert, Crocker, Bennum & Hoppe (1987)
Cross-sectional study of nurses in ND	Nurses must have an in-depth nutrition knowledge base as the population is becoming more nutrition conscious. Many rural counties may not readily have an MD or RD available, therefore the nurse will be the person most times answering nutrition related questions	More continuing education to keep the education of nurses current	Professionals	X					176	Lindseth (1990)
Cross sectional survey administered to nursing home nurses	The nurse in long-term-care facilities has the greatest amount of personal contact with residents and will most likely be the person on the health care team to notice non medical cues of malnutrition and other nutritional issues affecting the elderly Nutritional concerns are most likely going to be directed to the nurse as oft times nurse and patient develop a trusting relationship	More application of nutrition in a clinical experience, might lead to more nutrition information being retained Yearly in-service trainings by dietitians, providing updated information and reviewing important concepts	Professionals	X					95	Stanek, Powell & Betts (1991)
N/A-letter to the editor	The NCLEX-RN exam contains nutrition content. Entry level nurses were asked to rank topics in order of importance for the entry level practitioner.	None provided	Professionals (entry level)	X					388	Weigley (1994)

Table 4. Continued

Type of Study	Rationale	Training Requirement/ Suggestions	Students? Professionals? Both?	Nursing	PT	PA	Other	Unclear	N	Authors/Publication Year
Cross sectional survey administered to graduating nurses	Nurses are increasingly being asked for nutritional and other disease prevention information Health care is moving towards a health promotion and disease prevention focus, nurses therefore must be kept abreast of nutritional knowledge, in order to promote nutritional interventions.	Continuing education providers basing their offerings within a theoretical framework to enhance the learning of nutritional content A more comprehensive nutrition curriculum in schools of nursing may help raise nutritional knowledge levels of traditional, generic student nurses	Students	X					129	Lindseth (1997)
Cross sectional survey mailed to nurses	The nurse is responsible for ensuring that the physical and nutritional needs of long term care facility residents are met. The nurse therefore requires education commensurate with these responsibilities Nutrition care and nutritional assessment are basic to the understanding of health promotion and disease prevention, however nutrition courses are not always part of the nursing curriculum	Nutrition education needs to be provided, enhanced or improved while nurses are in training All schools of nursing should require a basic nutrition course or strengthen nutrition components in an integrated curriculum	Professionals	X						Crogran & Shultz (2000)
Evaluation of UCSFs health science curriculum	Patients are interested in nutrition. They expect their doctors and other health professionals to be able to answer questions about nutrition and provide appropriate dietary advice, as well as explain the claims of current research. Patients also expect that these health professionals know how and when referral to a dietitian or nutritionist is needed and are able to support the counseling efforts of these professionals	Emphasize applied clinical aspects Integrate nutrition into the [health sciences] curricula in as many different places and in as many different ways as it is possible and appropriate	Both				X-health professions		N/A	Nestle (1982)
N/A-position statement	Many health professions have the responsibility of providing the public with reliable nutrition information Health professionals should recognize nutrition as a component of health promotion and disease prevention and treatment and should collaborate with dietetics practitioners/nutritionists in the care of clients Individuals with good health are more likely to tolerate medical treatments, recover rapidly, suffer fewer co morbidities, and experience delayed onset of some diseases	Nutrition should be incorporated into basic and clinical sciences in undergraduate and graduate school curricula, training programs and continuing education seminars The nutrition content of a specific education program should emphasize the essential information relevant to that particular health care discipline	Professionals				X-health professionals			Position Paper of the American Dietetic Association -No authors listed (1991)
Cross sectional survey of PAs, PTs, & OTs	Most health professionals agree that nutritional care is basic to all health care and must be closely correlated with all therapeutic modalities The relationship between good nutrition and health has been widely recognized Nutritional factors have been linked with 6 of the 10 leading causes of illness and death Incorporating nutrition into the educational curriculum could enhance the effectiveness of allied health professionals as they function as important member of the health care team	The educational program and training for allied health professionals should include nutrition education, whether through formal or informal mechanisms	Students				X-Allied Health		155	Bahl, Hamilton & Ormesher (1993)
N/A –Commentary	Nutrition plays a fundamental role in health maintenance as it affects physical and mental well-being, influences the severity of illness and the speed and completeness of recovery Nutritional care and nutritional science are basic to the understanding of health promotion and disease prevention	Dietetic/ nutrition educators are positioned to lead curriculum reform and participate with other disciplines as change occurs in the evolving health systems needs It is important for Dietetic/nutrition educators to learn the roles of the other health professionals Early introduction of nutrition into health professional programs Redefine boundaries: health professionals need to venture beyond the boundaries of their discipline on order to function as effective team members	Professionals				X-Health care professionals and paraprofessionals		N/A	Fitz (1997)

Table 4. Continued

Type of Study	Rationale	Training Requirement/ Suggestions	Students? Professionals? Both?	Nursing	PT	PA	Other	Unclear	N	Authors/Publication Year
N/A-Position paper	Comprehensive nutrition services are an integral aspect of basic health care Changes in the health care field mean that a health professional other than a dietitian may be the person who has the earliest contact with a patient A basic knowledge of nutrition should give health care professionals the ability to identify potential nutrition problems and realize when referral to a dietitian is needed for comprehensive nutrition services	Collaborative team approach to patient care Dietitians should teach components of nutrition screening, counseling, education and referral during entry level educational programs A dietitian should be involved in the curricula design and clinical component of education and continuing education Nutrition education in the curricula of various programs of health professions should be commensurate with the nutrition competencies essential for such professionals to carry out their roles in the health management of clients. Health care professionals must become aware of the full scope of dietetics practice	Professionals				X-Health care professionals		N/A	Position Paper of the American Dietetic Association -No authors listed (1998)
Cross sectional survey of dental, PA, NP and Nurse Midwifery programs	Nutrition must be integrated within the curriculums of health professions education programs to provide the knowledge and skills necessary to meet health objectives for the U.S.	*Upskilling* of other disciplines so that they can provide basic nutrition services and refer to a RD for in-depth intervention and medical nutrition therapy Time sensitive and flexible strategies for nutrition education are needed so that graduates can achieve a higher level of competence in nutrition Integration of nutrition competencies into the clinical preparation of students can serve as a strategy to measure actual performance A survey of program graduates should be conducted to determine what types of nutrition education would enhance health professionals' level of practice in nutrition	Health Profession Programs				X-		276◊	Touger-Decker, Barracato & O'Sullivan-Maillet
Cross sectional Survey of Nursing, PT& fitness students	Nutrition topics are frequently addressed in clinical and fitness settings, therefore these professionals should be sufficiently cognizant of fundamental nutrition principles to promote positive dietary and physical activity patterns as well as identify early signs of malnutrition and make appropriate referrals	Increased reinforcement of assessment skills and guidelines concerning how and when to refer [obese] clients Educate health science students regarding changes to the [food guide] system Integrate these changes throughout the curricula to reinforce the content Allied health and fitness educators should enhance and reinforce the awareness of basic nutrition principles among their students Have students participate in nutrition education activities like organizing health fairs, making wellness presentations and participating in nutritional awareness games	Students	X	X		X-Fitness Students		164	Thomas, McArthur & Corbett (2006)
Commentary	Mid-level primary care providers must have enough knowledge of nutrition to screen for risk, educate and counsel on basic nutrition, and refer to the dietitian as needed. PAs may counsel and educate patients and their families on preventive health measures including nutrition	Health professionals need to understand the importance of nutrition in overall health, maintaining immune function and reducing the risk of chronic disease Basic knowledge of the metabolism of macro and micro nutrients in health and disease and the reasons for the key guidelines Developing the ability to obtain up-to-date scientific information on nutrition Information on enteral feeding; how to write an order, types of formula, route and method of feeding, rate etc. Knowing when to refer to a dietitian The nutrition curriculum must be seen as part of the entire curriculum	professionals			X			N/A	O'Sullivan-Maillet , Fixelle & Thornton (1997)
Cross-sectional study of PAs in TX	As front line health care providers, primary care practitioners, including PAs, have enormous potential for providing basic nutrition information to their patients with referral to a dietitian as needed	Teach nutrition counseling in life cycle nutrition; not just nutrition concepts based on disease states such as cancer or CHD The nutrition information provided to PA students should be presented in a manner that is practice oriented PAs should be taught in terms of health promotion and disease prevention in the life cycle in order to meet the nutrition needs of their patients PAs should have the necessary knowledge and training to be able to screen for and assess the nutrition needs of patients	Professionals			X			764	Demory-Luce & McPherson (1999)

Table 4. Continued

Type of Study	Rationale	Training Requirement/ Suggestions	Students? Professionals? Both?	Nursing	PT	PA	Other	Unclear	N	Authors/Publication Year
Cross sectional survey of PA programs in the U.S	With growing numbers of PAs practicing in primary care, the role as nutrition educators is substantial Although the RD remains an integral part of the health care team as a nutrition expert, the primary care provider can address many basic nutritional issues, reserving RD referrals and consultation for more complex nutritional problems. The patient benefits by receiving accurate and consistent information from each member of the health-care team PAs are a rapidly growing and accessible segment of the health care community and are ideal providers to join RDs in providing quality nutritional care and accurate nutritional messages to the patient	Nutrition education should be an important component of PA curricula A strong academic foundation must be laid prior to incorporation of nutrition into bedside rounds The PA should -have an understanding of hospital malnutrition -know how to screen for nutritional risk and - know when they should refer to the RD	Both-PA programs			X			52◊	Sullivan (2000)
Descriptive study of Sports PT	As health care providers, PTs have a responsibility to present accurate information to correct misinformation, and to refer the individual to other information sources when indicated PTs in recognizing their patients' nutritional needs, can assist in the prevention of disease and illness and promote health Sports PTs can direct athletes toward proper nutrition to prevent injury and to promote optimal performance	Increase therapists awareness of the influence of nutrition in their practice, to correlate their level of knowledge and education with their professional competence, and to decide how best to incorporate nutrition information into the education of physical therapists	Professionals		X				498	Long (1989)
Descriptive study of the nutrition knowledge of acute PTs	Many principles of nutrition play an important role in the rehabilitative role of PTs Adequate nutrition can greatly influence the course of many disabling conditions All health professionals need to acknowledge nutrition as an important constituent of both preventive and rehabilitative treatment Patients' nutritional status affects toleration of medical treatments, recovery time and onset of particular diseases	..dietitians, PTs and other health care professionals must recognize the limits of their knowledge and the need to refer each other as their clients health dictates	Professionals		X				151	Nelson, Smith & Hunter(1997)
Descriptive study of the PT curriculum		None	PT programs		X				33◊	Nelson, Smith & Hunter(1997)

Note. ◊ Represents number of schools/programs that participated in the study, NOT the number of students.

APPENDIX 3

TABLES MANUSCRIPT 3/CHAPTER IV

Table 5. Description of Participants by Independent Variables			
Sociodemographic Variables		HLTH Students (n=84)	NUSC Students (n=39)
Age	<20 years	0%	7.7%
	20-29 years	100%	87.1%
	30-39 years	0%	5.2%
Race/Ethnicity	Black/African American	3.6%	2.6%
	White/Caucasian	72.6%	69.2%
	Hispanic/Latino	20.2%	15.4%
	Asian Descent	1.2%	10.3%
	Other (*American Indian and Mixed Race*)	2.4%	2.6%
Classification	Freshman	1.2%	10.3%
	Sophomore	20.2%	12.8%
	Junior	33.3%	17.9%
	Senior	45.2%	59.0%
Sex	Male	3.6%	5.1%
	Female	96.4%	94.9%
Completed Nutrition Course	Yes	64.3%	89.7%
	No	35.7%	10.3%

Table 6. Nutrition Knowledge, Nutrition Education and Health Education Scores by Major				
Questionnaire Subscale	Health Education Majors n = 84		Nutrition Majors n= 39	
	Mean (SD)	Range	Mean (SD)	Range
Nutrition Knowledge	8.63 (*0.93*)	7.0 - 10.0	8.59 (*0.94*)	6.0 – 10.0
Nutrition Education	5.33 (*1.24*)	2.0 - 8.0	5.62 (*1.35*)	2.0 – 8.0
Health Education	7.06 (*1.66)*	1.0 – 10.0	7.26 (*1.52*)	4.0 – 10.0
Total Scores	21.04 (*2.63*)	13.0 – 25.0	21.46 (*2.46*)	17.0 – 26.0

Note: None were significant at p=.05 level.

Table 7. Summary of ANOVA for Classification and Total Score					
	Sum of Squares	df	Mean Square	F	Sig
Between Groups (Classification)	7.594	3	2.531	.377	.770
Within Groups (Participants)	799.821	119	6.721		
Total	807.415	122			

APPENDIX 4

QUANTITATIVE INSTRUMENT

Instructions for creating your Unique ID Code

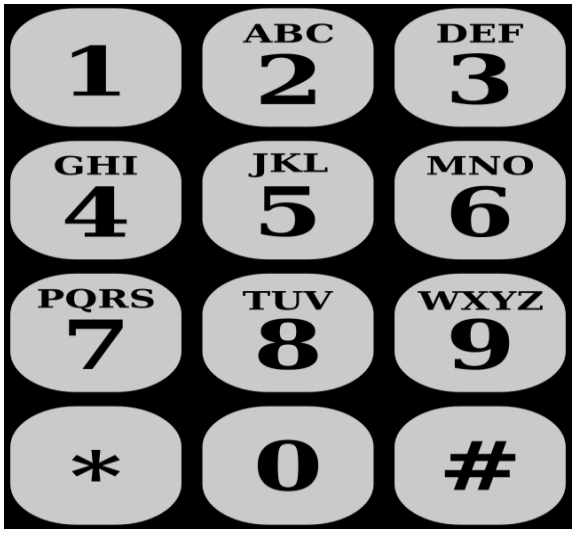
Using the telephone keypad to determine your Unique ID Code:

In the **first** blank space, put the **number** that corresponds to the **first letter** of your **first name.**

In the **second** blank space, put the **number** that corresponds to the **second letter** of your **first name.**

The next two blank spaces are the last two digits of your **year of birth**, e.g. 85, 89 etc.

The last two blank spaces are the **first two *LETTERS*** of your **last name.**



_____ _____ _____ _____ _____ _____

Your Unique ID Code (UIC)

Example: Shelly Jones was born in 1985; her Unique ID Code is 7485JO

Do NOT write your name anywhere on this questionnaire.
You will be identified only by the Unique ID Code which you have created above.

The instrument is divided into THREE sections (Nutrition Knowledge, Nutrition Education and Health Education). Please complete all questions.

Nutrition Knowledge Questions

Please select whether you believe the following statements are **True** or **False**

1. Protein is not stored in the body; therefore, it needs to be consumed every day.
   True False
2. Milk is a good supplier of calcium for all age groups.
   True False
3. Cheese is a good source of iron in the diet
   True False
4. Those with meatless diets are at a higher risk for iron deficiency.
   True False
5. Excess vitamin supplementation may harm the physically active person.
   True False
6. The body can synthesize vitamin D upon exposure to the sun.
   True False
7. Fiber in the diet may help to decrease constipation, decrease blood cholesterol levels, and prevent cancers.
   True False
8. Skipping meals is justifiable if you need to lose weight quickly.
   True False
9. Natural and organic foods are more nutritious than foods grown under conventional methods.
   True False
10. Food advertisements are a very reliable source of nutritional information
    True False

YOU HAVE FINISHED THIS SECTION ABOUT NUTRITION.

THE NEXT SECTION CONTAINS NUTRITION EDUCATION QUESTIONS

11. The basic purpose of nutrition education is to:
    a. Prepare people to make wise food selection decisions to promote health
    b. Prepare informed food consumers
    c. Correct misinformation
    d. Discuss current issues in nutrition education

12. The major objective of a community nutrition education program should be to:
    a. Explain principles of good nutrition
    b. Explain the results of good nutrition habits
    c. Modify participants' thoughts about nutrition
    d. Modify participants' behavior to result in better nutrition habits

13. The best way to improve communication with participants in a nutrition education group would be to focus on:
    a. Paraphrasing
    b. Internalizing
    c. Empathizing
    d. Referencing

14. An accepted way to assess (the) outcome of nutrition education
    a. Pretest
    b. Posttest
    c. Lab values
    d. Formative evaluation

15. At what grade level is general nutrition education materials written?
    a. 4
    b. 8
    c. 10
    d. 12

16. Sending brochures on nutrition education to target population. What kind of planning is this?
    a. Action
    b. Business
    c. Strategic
    d. Long range

17. The LEAST effective means of health education/awareness is:
    a. Lecture
    b. Module of self-instruction
    c. Role playing
    d. Demonstration

18. How would you assess what a group of students has learnt after diet instruction?
    a. Have them explain what they have learned
    b. Have them list their skills
    c. Have them demonstrate what they have learned
    d. Give them a posttest

19. When teaching diabetes education to adults with diabetes, which would be the best approach?
    a. Assist them in creating meal plans based on their meal pattern
    b. Involve family members
    c. Use large print and many pictures in your education materials
    d. Give them materials to read for the next meeting and then test them to see how much they understand before you move (to) proceed forward

20. Which of the following instructional techniques permits the greatest retention by the learner/
    a. Reading
    b. Application
    c. Recitation
    d. Visualization

YOU HAVE FINISHED THIS SECTION

ABOUT NUTRITION EDUCATION.

THE NEXT SECTION CONTAINS HEALTH EDUCATION QUESTIONS

21. "There will be a 10 percent decrease in diabetes-related emergency room visits in South County within the next five years " is an example of a:
    a. Program objective
    b. Behavioral objective
    c. Learning objective
    d. Mission statement

22. In the process of selecting the most appropriate educational method to use in a health education program, which of the following guidelines should be used?
    a. Ensure that only one method is selected for implementation
    b. Recognize that the program location rarely affects method selected
    c. Consider the nature of the audience and the purpose of the program
    d. Realize that all methods are equally useful in any setting

23. A health educator is designing a health communication campaign to increase physical activity among school-aged youth. The best group to work with to develop and pretest the campaign's message and educational materials is:
    a. The intended audience-school aged youth
    b. Other health educators in your department
    c. Area medical and social service personnel
    d. Local mass media experts

24. A worksite healthy lifestyle promotion program is being offered in increments that focus on fitness, stress management, nutrition, and blood pressure control. Each increment is offered one at a time over an eight week period. This process is considered:
    a. Assessing
    b. Implementing
    c. Piloting
    d. Phasing-in

25. Which of the following is the first step in selecting health education materials for a health education intervention?
    a. Judge the quality and quantity of the information found
    b. Determine the culture of clients
    c. Locate free resources from governmental and /or nonprofit organizations
    d. Identify clients' needs

26. Factors that influence a person's health such as compliance, consumption patterns, coping, preventive actions, and self-care, are known as:
    a. Genetic
    b. Environmental
    c. Behavioral
    d. Individual

27. A health educator is collecting data from community members on their attitudes and beliefs about sedentary lifestyles. An activity program is going to be implemented in the next six months. What type of date is being collected?
    a. Pretest
    b. Process
    c. Outcome
    d. Test items

28. In order to justify additional funding for the program, the health educator, as project administrator, needs to measure whether the health education intervention caused the desired changes in the target audience. The role of this evaluation effort is:
    a. Formative
    b. Summative
    c. Monitoring
    d. Clinical

29. When using electronic resources such as bibliographic databases or Web sites, the health educator should analyze the information for accuracy and quality. Which Web site extension for the sample domain name is most likely to contain valid information?
    a. Nutrition.com
    b. Nutrition.gov
    c. Nutrition.epi
    d. Nutrition.usa

30. A client requests a specific health service. The best resource to use to respond to his/her information request is a :
    a. Health-related Web site
    b. Health promotion database
    c. Health professional or health organization
    d. Health software package

YOU HAVE FINISHED THE QUESTIONNAIRE.

APPENDIX 5

TABLES MANUSCRIPT 4/CHAPTER V

Table 8. Participant Demographic Information						
Pseudonym	Race/Ethnicity	Gender	Age Range	# of years as a HE	Employment Setting	# of years at current position
Sarah	Caucasian	Female	26-31	3 years	University Health Services	2 years
Nicole	Caucasian	Female	32-37	13 years	University Health Services	8 years
Rafael	Hispanic	Male	20-25	1 year	Community Health Center	1 year
Julia	Caucasian	Female	26-31	4 years	Community Health Center	3 years

APPENDIX 6

QUALITATIVE INTERVIEW GUIDE

Title of Research:
"Investigating and Refining Roles: Health Educators Preparation and Competency for Delivering Nutrition Education".

Overarching Research Question(s):
How appropriately are Health Educators prepared to provide nutrition education?

The following questions will be used as a guide for interviewing:

Interview Guide:

1. Tell me about your background: How did you decide on the profession of Health education?
2. Where did you receive your degree in Health Education?
3. Tell me about your educational experience? Any memorable experiences?
4. When during your educational journey did you decide to concentrate on a certain topic/field in health education?
5. Did you take nutrition classes during your degree program?
6. How many nutrition classes did you take?
7. To the best of your recollection, how many of these were required in order to complete your degree?
8. How many of these nutrition classes were electives?
9. Do you believe that your undergraduate experience adequately prepared you to deliver nutrition education?
10. Were you required to complete internship or practicum hours to complete your degree?
    If yes.
    Approximately how many hours did you complete or were you required to complete?
    Where did you complete your internship or practicum hours?
    Tell me about your practicum/ internship experience
11. Tell me about your typical day as a health educator.
12. What aspects about your job are important to you?
13. Do you work as part of an interdisciplinary team? If yes: what other professionals comprise this team?
14. Are you CHES certified? Tell me about what influenced your decision to become CHES certified?
15. Tell me about your experiences thus far doing nutrition and diabetes education

16. Are you comfortable giving information on nutrition and or diabetes?
17. On a scale of 1 to 10, with 10 being excellent, how would you rate your competency in delivering nutrition education?
18. What resources do you use for obtaining the most up-to-date nutrition information?
19. What resources do you refer clients to for them to obtain nutrition information for themselves and or family members?
20. Have you ever been faced with a nutrition related question that you could not answer? What did you do?
21. Do you think that health educators are adequately prepared during their undergraduate journey to conduct nutrition education, specific to the topics of diabetes and obesity?
22. What suggestions or changes would you make to your schools current health education curriculum regarding nutrition
23. Have you ever referred a client to a registered dietitian? Why or why not?
24. Would you like to tell me anything related to the topic that I have not asked?
25. Is there anything you would like to ask me?

APPENDIX 7

QUALITATIVE INFORMED CONSENT DOCUMENTATION

INFORMATION SHEET

Health Educators' Preparation and Competency for Imparting Nutrition Education

Introduction

The purpose of this form is to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research.

You have been asked to participate in a research study to investigate health educator's preparation to impart nutrition education. The purpose of this study is to evaluate the perceived ability of Certified Health Education Specialist certified health educators to do nutrition education. You were selected to be a possible participant because you are a CHES certified health educator with at least two years of professional experience.

What will I be asked to do?

If you agree to participate in this study, you will be asked to complete a brief nutrition questionnaire and will be asked questions regarding your previous academic preparation in health education and nutrition. Your interview will be audiotaped. This study will take approximately 1-1.5 hours.

What are the risks involved in this study?

The risks associated with this study are minimal, and are not greater than risks ordinarily encountered in daily life. Some individuals may suffer emotional discomfort with some questions, if they are unsure about the answer.

What are the possible benefits of this study?

The possible benefits of participation include an opportunity to express views regarding nutrition education and your academic preparation in nutrition. The study will be beneficial to society by adding knowledge to the field of public health and nutrition.

Do I have to participate?

No. Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with Texas A&M University being affected.

Will I be compensated?

Yes. For your participation in the research study, you will also receive a $15 Wal-Mart gift card.

Who will know about my participation in this research study?

This study is confidential and all data will be electronically stored, password protected and only shared with the research advisor. The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published or presented at scientific meetings. Audio recordings will be retained for 18 months before they are erased.

Whom do I contact with questions about the research?

If you have questions regarding this study, you may contact Reynolette Ettienne-Gittens at reynolette@hlkn.tamu.edu or at 979 845 3290.

Whom do I contact about my rights as a research participant?

This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For research-related problems or questions regarding your rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

Participation

Please be sure you have read the above information, asked questions, and received answers to your satisfaction. If it is found that you have provided fraudulent information in order to participate in the study; your participation will be terminated.

VITA

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