Nurse Practitioner Experiences Providing Nutrition Counseling to Adult Patients in Primary Care Practice

A dissertation presented by

Mary Margaret “Maggie” Eaton

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Nursing

The Bouvé College of Health Sciences

School of Nursing

Northeastern University

Boston, Massachusetts

November 2021

Dedication

This dissertation is dedicated to my family, who endured many hours of time away from them knowing how important this doctoral education was to me. My husband Winston has grown to be a super dad to our three children throughout this program, and I could never have done it without his full support.

Acknowledgements

I cannot thank my dissertation committee enough, who have generously given their time, patience, and support to help make me a better student, researcher, and writer. Dr. Rhonda Board challenged me both in the classroom and throughout my dissertation work and provided thoughtful guidance. Dr. Rachel Pozzar provided invaluable feedback on both my work and the dissertation process with incredible compassion and kindness. Dr. Lisa Duffy, my committee chair and advisor, has been an inspiring researcher, professor, and mentor and has shown me it is possible to juggle many things at once. I would also like to acknowledge Dr. Pam Burke, my first advisor and mentor, whose attentiveness and encouragement helped me through the first few years of the program. Lastly, a special thanks to my PhD colleague, Jess Wallar, who has been with me every step of the way.

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Chapter I: Introduction

Introduction

It has been estimated that one out of five global deaths are associated with poor diets (Global Burden of Disease [GBD] 2017 Diet Collaborators, 2019). Diets low in fruits and whole grains and high in sodium are the leading dietary risk factors for deaths globally (GDB 2017 Diet Collaborators, 2019). In the United States (U.S.), poor diets contribute to the leading causes of death including cardiovascular disease, cancer, stroke, and diabetes (Centers for Disease Control [CDC], 2021). A healthy diet helps to reduce the risk for many diseases (U.S. Department of Health and Human Services [USDHSS] & U.S. Department of Agriculture [USDA], 2015); however, it has been well established that American diets do not meet dietary guidelines in almost every component of diet quality (Wilson et al., 2016).

One way to address the health burden associated with diet-related diseases is through nutrition counseling, which involves both the delivery of nutrition information and facilitation of behavioral change (United States Preventive Service Task Force [USPFTF], 2020). Evidence suggests nutrition counseling in the adult primary care setting improves clinical outcomes, such as weight loss and decreased incidence and severity of cardiovascular diseases (Foroughi et al., 2013; Jarl et al., 2014; Kris-Etherton et al., 2020; O'Connor et al., 2020; Sun et al., 2017). The USPFTF, American Diabetes Association (ADA), Joint National Committee (JNC 8), and USDHSS each provide guidance for utilization of nutrition counseling for both prevention and management of diseases. Despite existing guidelines, research suggests that some healthcare providers feel they do not have the training or knowledge and often lack the self-efficacy to engage patients in nutrition counseling (Devries et al., 2017; Smith et al., 2015).

Primary care providers (PCPs) are ideally positioned for health promotion efforts through nutrition counseling given their longitudinal relationships with adult patients. Nurse practitioners

(NPs), who emphasize health promotion and disease prevention and have been helping to narrow the gap of primary care providers (American Association of Nurse Practitioners [AANP], n.d.), can help fill the critical need for nutrition counseling. Previous research has shown that NP-delivered nutrition counseling interventions for prevention and treatment of diet-related diseases such as diabetes, hypertension, and obesity, are associated with statistically significant improvements in patient outcomes (Jarl et al., 2013; Lentz et al., 2002; Ritten et al., 2016; Whittemore et al., 2009). Despite this evidence, there is a dearth of information about how these NP interventions are delivered in the clinical setting. Little is known about NPs' experiences providing nutrition counseling in clinical practice, including their educational experiences, self-efficacy, attitudes, and practices related to nutrition.

In addition to long-standing challenges related to nutrition counseling, clinicians in the primary care setting are currently facing a change in the health care landscape. The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic and ensuing quarantine in the U.S. resulted in significant changes to the structure of primary care (Alexander et al., 2020). PCPs, including primary care NPs, had to quickly pivot to provide patient care through electronic communication termed telehealth (Centers for Medicare and Medicaid Services [CMS], 2020). It has been estimated that the delivery of primary care through telehealth increased from 1.1 % of visits to approximately 35% of visits during the pandemic (Alexander et al., 2020). As a result, researchers have reported changes in features of primary care visits, such as a reduction in blood pressure and cholesterol assessments, and a significant reduction in elective and preventive care services among insured individuals (Alexander et al., 2020; Whaley et al., 2020). Due to the novelty of the SARS-CoV-2 pandemic, it is not well understood how the sudden change in primary care delivery has affected NPs' experiences with nutrition counseling.

The purpose of the dissertation was to better understand NPs' experience in providing nutrition counseling to adult patients in primary care practice.

Study Aims

Aim 1.

To describe what is known about the role of NPs providing nutrition counseling to adult patients in primary care practice.

This aim was addressed by conducting an integrative review to generate what is known about the role of the NP in providing nutrition counseling to adult patients in primary care practice.

Aim 2.

To describe the primary care NP's experience in providing nutrition counseling to adult patients in primary care practice.

This aim was addressed by using a qualitative descriptive design. Semi-structured virtual interviews were conducted with 18 primary care NPs in a variety of practice settings across the country. Data collection was analyzed with thematic analysis to identify themes to better understand the NPs' experience in providing nutrition counseling in primary care practice.

Aim 3.

To understand how nutrition counseling among NPs in primary care practice was affected during the SARS-CoV-2 pandemic.

This aim was addressed utilizing a qualitative descriptive design. Semi-structured virtual interviews were conducted with 18 primary care NPs in a variety of practice settings across the country. Data collection was analyzed with conventional content analysis to identify themes to better understand the NPs' experience in providing nutrition counseling during the SARS-CoV-2 pandemic

The results of this research are presented in the following three manuscripts.

Overview of the Three Manuscripts

Manuscript One

Manuscript One is an integrative review of the literature conducted to describe the role of NPs providing nutrition counseling to adult patients in primary care practice. Studies included in this review, while limited, helped to describe NP delivery of nutrition counseling in clinical practice and NPs' role in developing and implementing nutrition counseling interventions to improve health outcomes. The results of this integrative review indicated that NPs report delivery of preventive services, such as nutrition counseling, in most of their patient encounters and are more likely to report the provision of nutrition counseling than other provider types. In addition, this integrative review revealed that NP delivery of nutrition counseling interventions for prevention and treatment of diet-related diseases such as diabetes, hypertension, and obesity, were successful in achieving statistically significant patient outcomes (Jarl et al., 2013; Lentz et al., 2002; Ritten et al., 2016; Whittemore et al., 2009). Despite clinician concerns in one study that patients may not comply with recommended dietary changes (Quader et al., 2017), many studies found that participants improved their dietary habits or behaviors after receiving counseling (Jarl et al., 2013; Ritten et al., 2016; Whittemore et al., 2009).

The authors of this integrative review concluded that there is a need for further research that examines the role of NPs in providing nutrition counseling to adult patients in primary care practice. Only one study in this review utilized interviews to explore the NPs' perspective. A qualitative approach from NPs' perspectives is needed to provide a more in-depth and comprehensive understanding of their experiences and potentially help strengthen the role of nutrition counseling in primary care. Additional qualitative studies could help determine if

barriers and facilitators to nutrition counseling are consistent with what has been reported by other provider types. Thus, this comprehensive literature review provided a rationale for a qualitative descriptive study utilizing semi-structured virtual interviews to describe what is known about the role of NPs providing nutrition counseling to adult patients in primary care practice.

Manuscript Two

Manuscript Two is a qualitative descriptive study conducted to explore NPs' experiences providing nutrition counseling to adult patients in primary care practice. The findings from this study indicated that NPs feel nutrition counseling is a fundamental part of health and wellness and plays an integral role in primary care practice. The provision of nutrition counseling was seen as relevant for health maintenance and as treatment for comorbid conditions. However, many participants perceived that lack of motivation challenged their patients to adopt and sustain recommended dietary changes. Most participants in this study felt that formal nutrition education was lacking from their graduate school programs. For some participants, the lack of formal nutrition education did not seem to have a notable impact on their ability to provide nutrition counseling due to self-directed learning. Participants' subjective experiences with their own dietary practices also influenced their preparedness for nutrition counseling. This study highlighted the need to include behavior change skills, such as motivational interviewing, in preparedness for nutrition counseling in order to positively affect behavior change. Lastly, the results of this study highlighted system-level barriers to nutrition counseling, such as time and compensation.

Manuscript Three

Manuscript Three is the result of the secondary aim of the original qualitative descriptive study conducted by the author. Due to the novelty of the SARS-CoV-2 pandemic and the need to generate data related to its impact on primary care practices, this aim was included to provide a better understanding of how nutrition counseling among NPs in primary care practice was affected during SARS-CoV-2 pandemic. The results of this study indicated participants faced challenges related to nutrition counseling following the onset of the pandemic. Participants encountered changes in patients' lifestyles such as increased sedentary behavior and increased food and alcohol consumption that resulted in negative clinical outcomes, such as weight gain. Many participants were unable to address these changes due to the reduction in primary care visits and change in clinical priorities, although a few participants reported no change in usual practices during the pandemic.

The transition to telehealth was the single biggest change experienced by almost all participants, of which most had a positive experience. Participants reported the ease of use with telehealth, improved accessibility for patient care, and the convenience for both them and their patients. Participants also noted the limitations of telehealth, such as the loss of personal connection, technological issues, and lack of pertinent biometric data that would normally be obtained during in-person visits. Many participants felt there is a future for telehealth in primary care practice and that it is a useful platform for nutrition counseling. Participants were hopeful that reimbursement of telehealth, which was expanded during the pandemic, would remain so they could continue using telehealth in their clinical practice.

The following three chapters include the author's three manuscripts in their entirety. These manuscripts have contributed to the limited literature on what is known about NP provision of nutrition counseling in primary care and how the pandemic has affected NP clinical

practice, in particular the delivery of nutrition counseling. The final chapter of this dissertation will summarize the findings from these three manuscripts and discuss recommendations for future research.

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Chapter II:

Nutrition Counseling in Primary Care Practice: An Integrative Review of Nurse Practitioner Experiences

Authors:

Mary Margaret “Maggie” Eaton, RN, FNP-BC

Candidate for PhD in Nursing, Northeastern University

1050 Heritage Landing Drive

Chattanooga, TN 37405

m. (617) 939-8515

Eaton.m@northeastern.edu

Magmay45@hotmail.com

Lisa Duffy, PhD, MPH, RN, CPNP-BC

Assistant Professor, Bouvé College of Health Sciences,

School of Nursing

Northeastern University

Office 617.373.5448

l.duffy@northeastern.edu

106H Robinson Hall

Boston, MA 02115

Rachel Pozzar, PhD, RN, FNP-BC

Instructor

Phyllis F. Cantor Center for Research in Nursing and Patient Care Services, Dana-Farber Cancer Institute

Department of Medical Oncology, Harvard Medical School

Office 857.215.0743

rachel_pozzar@dfci.harvard.edu

450 Brookline Ave, LW 517

Boston, MA 02215

Rhonda Board, PhD, RN, CCRN-K

Associate Professor & Director, PhD Program, Bouvé College of Health Sciences,

School of Nursing

Northeastern University

Office 617.373.5248

r.board@northeastern.edu

Robinson Hall

Boston, MA 02115

Participating Investigators: Maggie Eaton prepared the initial draft of the manuscript, established the study design, conducted the initial search, and analyzed the data. Dr. Lisa Duffy, Dr. Rhonda Board, and Dr. Rachel Pozzar assisted with data analysis and interpretation, critically reviewed a draft of the manuscript, and participated in technical editing of the manuscript.

Abstract

Background: Poor diets contribute to the leading causes of death in the United States (U.S.). One way to address the health burden attributed to diet-related diseases is through nutrition counseling. Primary care nurse practitioners (NPs) provide care that is focused on health promotion and disease prevention, yet their role providing nutrition counseling is poorly understood.

Objective: This integrative review was conducted to describe the role of NPs providing nutrition counseling to adult patients in primary care practice.

Data Sources: MEDLINE, CINAHL, Embase, and PsycInfo online databases were searched. Search results were limited to articles from 2000 to 2021, published in English, and in peer-reviewed journals.

Conclusion: A total of 9 articles were evaluated. The findings revealed NPs report delivery of preventive services, such as nutrition counseling, in a majority of their patient encounters. NPs are more likely to report the provision of nutrition counseling than other provider types. NP delivery of nutrition counseling interventions for prevention and treatment of diet-related diseases were successful in improving statistically significant patient outcomes. Two studies in this review incorporated behavior change techniques in their dietary interventions. Three studies described barriers to nutrition counseling, such as lack of ability to motivate patients to change dietary behaviors. There is a need for further research that examines the role of NPs in providing effective nutrition counseling to adult patients in primary care practice.

Implications for Practice: NPs have an opportunity to expand their health promotion and disease prevention efforts to include more nutrition counseling in clinical practice.

Introduction

The number of global deaths attributable to dietary risk factors totaled 11 million in 2017 (Global Burden of Disease [GBD] 2017 Diet Collaborators, 2019). Poor diets contribute to the leading causes of death in the United States (U.S.), including cardiovascular disease, cancer, stroke, and diabetes (Centers for Disease Control [CDC], 2021). The economic costs of preventable cardiometabolic diseases in the U.S. are staggering at an estimated $50.4 billion annually (Jardim et al., 2019). Nutrition plays a critical role in health promotion and disease prevention across the lifespan. One way to address the economic and health burden associated with diet-related diseases is through nutrition counseling, which involves both the delivery of nutrition information and facilitation of behavioral change (United States Preventive Service Task Force [USPFTF], 2020).

Nutrition counseling can have a positive impact on health outcomes (Foroughi et al., 2013; Kris-Etherton et al., 2020; O'Connor et al., 2020; Sun et al., 2017). The USPFTF, American Diabetes Association (ADA), Joint National Committee (JNC 8), and U.S. Department of Health and Human Services (USDHSS) each provide guidance for utilization of nutrition counseling for both prevention and management of diseases. Despite existing guidelines, research suggests that some healthcare providers feel they do not have the training or knowledge and often lack the self-efficacy to engage patients in nutrition counseling (Devries et al., 2017; Smith et al., 2015). The most recent evidence suggests only 20% of office visits for cardiovascular disease, diabetes, or hyperlipidemia include nutrition counseling (USDHSS, n.d.).

Nurse practitioners (NPs) are well-positioned to take on the challenge of meeting the need for nutrition counseling, especially since NPs have a health promotion-oriented approach to

healthcare (American Association of Nurse Practitioners [AANP], 2015). Furthermore, NPs deliver high quality, patient-centered primary care with core responsibilities that include health education and counseling, making them ideally suited to fill this critical need (AANP, n.d.). While studies have shown that most NPs recognize the importance of health promotion (Van Leuven & Prion, 2007), little is known about the role of NPs in providing nutrition counseling in primary care practice.

Background

A healthy diet helps to reduce the risk for many diseases (USDHSS & U.S. Department of Agriculture [USDA], 2015). An assessment based on the 2010 Dietary Guidelines for Americans concluded that American diets were far from meeting these guidelines in almost every component of diet quality (Wilson et al., 2016). The CDC (2019) defines a healthy diet as one that emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products; lean meats and other forms of protein such as fish, beans, and nuts; low saturated fats, trans fats, cholesterol, salt, and added sugars; and one that stays within an individual's daily calorie needs. Approximately half of all adults in the U.S. have one or more preventable chronic diseases, such as heart disease or diabetes, to which diet is a major contributor (USDHSS & USDA, 2015). The American Heart Association (AHA) and American College of Cardiology (ACC) Task Force on Clinical Practice emphasize a healthy lifestyle, including a healthy diet, for reduction of atherosclerotic cardiovascular disease risk at all ages (Grundy et al., 2018).

Based on the USPSTF criteria, nutrition counseling is defined as counseling on a healthy diet with multiple contacts over extended periods that is carried out by professionals trained in behavioral change strategies such as goal setting and motivational interviewing (MI) (USPSTF, 2020). Nutrition counseling can have a positive impact on health outcomes related to the

aforementioned leading causes of death in the U.S. (Foroughi et al., 2013; Kris-Etherton et al., 2020; O'Connor et al., 2020; Sun et al., 2017). Studies have found a dose-dependent relationship between preventive interventions and health outcomes, with higher-intensity dietary interventions that consist of more frequent patient and provider interactions resulting in more significant improvements (O'Connor et al., 2020). In particular, literature supports the use of nutrition counseling to reduce the incidence, severity, and associated morbidity of cardiovascular diseases (Kris-Etherton et al., 2020; O'Connor et al., 2020). The USPSTF recommends nutrition counseling for adults with cardiovascular risk factors (O'Connor et al., 2020). Cardiovascular mortality is associated with several diet-related modifiable risk factors, including hypertension and hyperlipidemia (Patel et al., 2015). In 2009-2010, approximately half of U.S. adults had at least one risk factors for cardiovascular disease (Fryar et al., 2012).

Primary Care Providers (PCPs), including primary care NPs, are a logical fit for guidance on healthy food choices and healthy eating habits given the high percentage of U.S. adults (approximately 85%) with an established place to receive primary care (Villarroel et al., 2018). Primary care NPs constitute the most rapidly growing provider type in the primary care workforce (AANP, n.d.). More than 75% of active NPs work in primary care (AANP, n.d.). Patients have reported wanting guidance from their PCPs regarding healthy lifestyles and weight management (Rose et al., 2013; Torti et al., 2017). PCPs are expected to detect and treat diseases, manage chronic diseases, and provide preventive care, which includes nutrition counseling (USDHSS, n.d.). Primary prevention, preventive measures taken before the onset of disease, is the most effective and affordable approach to chronic disease prevention (Slawson et al., 2013). While prevention efforts should start early in life, increased age is accompanied by an increased risk of chronic diseases thus increased use of clinical preventive services, including

counseling about personal health behaviors, are recommended (CDC, 2020). Unfortunately, preventive care in office-based physician visits have been shown to decrease with increasing patient age (Ashman et al., 2019).

Research indicates that primary care NPs provide 30-40% more health education and counseling services than physicians (Kurtzman & Barnow, 2017). While health education includes a wide range of topics and is not specific to nutrition counseling, these findings support the notion that NPs are well-poised to provide nutrition counseling as part of their clinical practice. Furthermore, studies have shown that NPs provide high quality care across the lifespan with higher patient satisfaction rates than other providers (AANP, 2015). Despite the importance of preparing health professionals to provide effective nutrition counseling, NPs have reported nutritional content was missing from their academic programs, including content related to nutritional screening and assessment tools (Bonnel, 2003). Similarly, graduate nursing students have reported a desire for increased training in behavior change techniques or skills (Nesbitt et al., 2013).

Little is known about NP delivery of nutrition counseling, including how it is incorporated into their adult primary care practice, and what the impact may be on dietary behavioral change. The findings from this review will contribute to the state of the science on nutrition counseling in NP clinical practice. Improved understanding of the context in which NPs provide nutrition counseling has the potential to inform future research interventions that aim to prepare NPs to provide nutrition counseling and positively impact dietary behavioral changes in their adult patients.

The Review

Aim

The purpose of this integrative review was to describe what is known about the role of NPs providing nutrition counseling to adult patients in primary care practice.

Design

This integrative review of the literature was guided by the methodology suggested by Toronto and Remington (2020) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher at al., 2009).

Search Methods

The Medical Literature Analysis and Retrieval System Online (MEDLINE) (EBSCOhost), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, and PsycInfo online databases were searched in February 2021 using the search terms found in Table 1. Search results were limited to English-language articles published in peer-reviewed academic journals from 2000 to 2021. Additional articles were identified by citation searches.

Table 1

Database search terms and initial search results

Database	Search Terms	Coverage	Results
Embase	((“nutrition” OR “diet*”) NEAR/3 (“knowledge” OR “education” OR “counsel*” OR “consult*”)) AND (“nurse practitioner*” OR “advanced practice nurs*” OR “apn” OR “np” OR “aprn”) AND (“primary care” OR “primary healthcare” OR 'primary health care'/exp OR ‘primary medical care’/exp)	2000-2021	20
MEDLINE (EBSCOhost)	((“nutrition” OR “diet*”) N3 (“knowledge” OR “education” OR “counsel*” OR “consult*”)) AND (MH "Advanced Practice Nursing" OR “nurse practitioner*” OR “advanced practice nurs*” OR “apn” OR “np” OR “aprn” OR “nurs*”) AND (“primary care” OR “primary healthcare” OR MH "Primary Health Care+" OR MH "Primary Care Nursing")	2000-2021	142
CINAHL	((“nutrition” OR “diet*”) N3 (“knowledge” OR “education” OR “counsel*” OR “consult*”)) AND (MH "Advanced Practice Nursing" OR “nurse practitioner*” OR “advanced practice nurs*” OR “apn” OR “np” OR “aprn” OR “nurs*”) AND (“primary care” OR “primary healthcare” OR MH "Primary Health Care+" OR MH "Primary Care Nursing")	2000-2020	77
PsycInfo	((“nutrition” OR “diet*”) N3 (“knowledge” OR “education” OR “counsel*” OR “consult*”)) AND (MH "Advanced Practice Nursing" OR “nurse practitioner*” OR “advanced	2000-2020	27

	practice nurs*" OR "apn" OR "np" OR "aprn" OR "nurs*") AND ("primary care" OR "primary healthcare" OR MH "Primary Health Care+" OR MH "Primary Care Nursing")	
Total		266

Search Outcomes

Eligible articles met the following inclusion criteria: (a) original research study (b) conducted in U.S. primary care setting, (c) samples partially or completely comprised of NPs who care for adult patients, and (d) describes the role of NPs providing nutrition counseling.

Quality Appraisal

The Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018), was utilized to critically appraise all nine articles included in this review. The MMAT is an efficient tool that has been validated for its content and tested for reliability (Souto et al., 2014). It includes the methodological appraisal of five study categories: qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies (Hong et al., 2018). Applicable methodological quality criterion for each study category was rated as 'yes', 'no', 'partial' or 'cannot tell'. Three researchers independently reviewed articles, disagreements were discussed, and consensus was reached.

Data Abstraction and Synthesis

Articles relevant to the purpose of this review were extracted for synthesis and recorded in a spreadsheet along with characteristics of each study using the Matrix Method (Garrard, 2017). An overview of included studies can be found in Appendix 1. Four reviewers assessed full-text articles for eligibility and resolved discrepancies for final inclusion in the review through discussion. Study findings for each eligible article meeting inclusion criteria were reviewed and synthesized. Key elements of each study were identified, categorized, and

compared between studies using a constant comparative method as described by Toronto and Remington (2020).

The search strategy yielded a total of 266 articles, and an additional four articles were identified in citation searches. Titles and abstracts were reviewed and 113 were retained for full-text review. Of 113 full-text articles, 9 met criteria for inclusion.

Results

Study Selection

A total of nine articles were evaluated to determine what is known about the role of NPs providing nutrition counseling to adult patients in primary care practice. A PRISMA flow diagram of the search results is shown in Fig. 1.

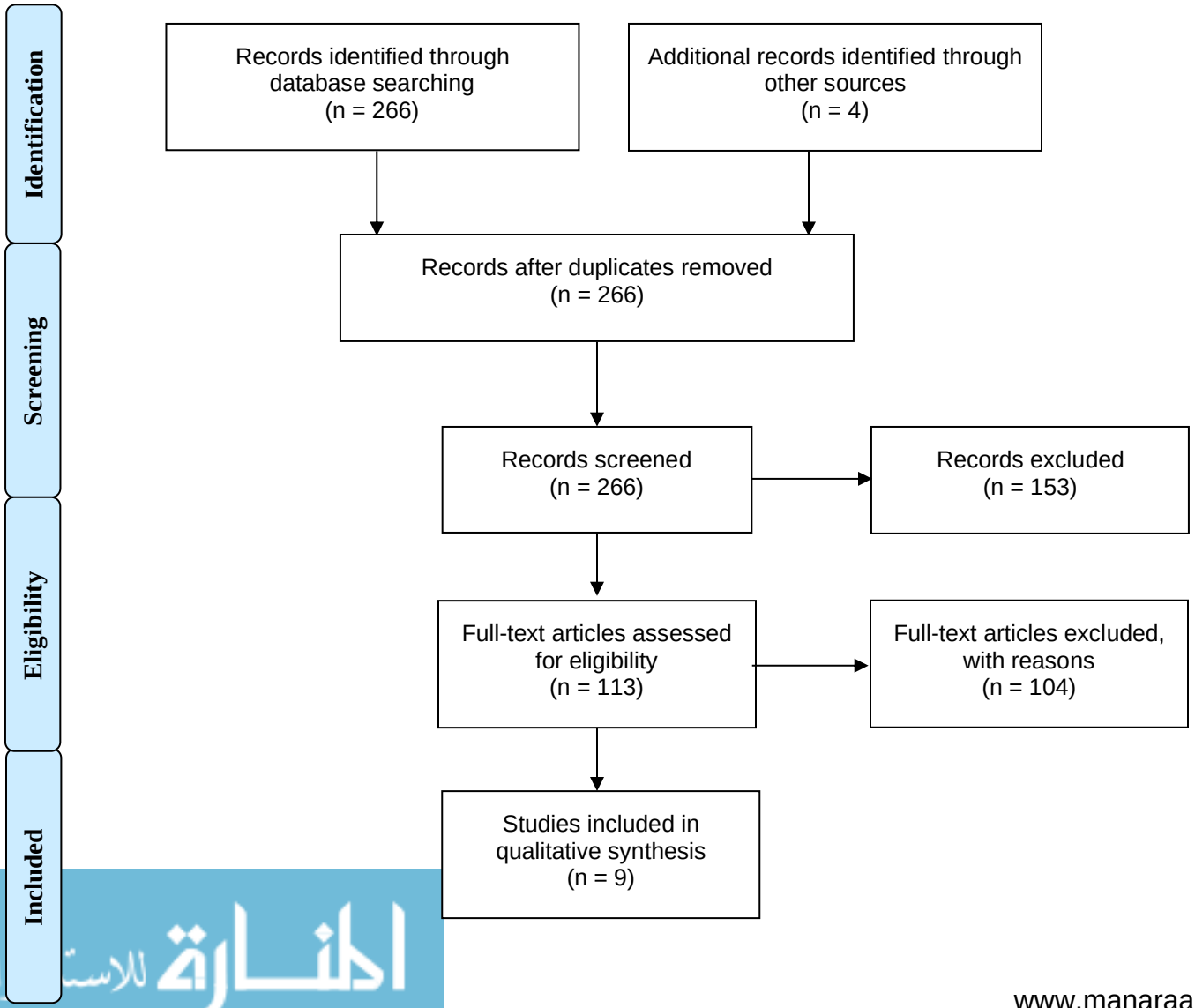

Figure 1. PRISMA flow diagram of search results. Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

Study Characteristics

One study used a mixed methods approach. The remaining eight studies utilized quantitative approaches, five of which used a cross-sectional descriptive study design. Other study designs included quasi-experimental, randomized trial, and secondary data analysis. None of the studies included in this review sought to examine the use of nutrition counseling exclusive of other health promoting activities, such as physical activity.

Quality Appraisal

An overview of the quality appraisal of included studies using MMAT can be found in Appendix 2. Six studies were appraised as quantitative descriptive study designs; two studies as nonrandomized study designs; and one study as a mixed methods study design. All included studies met the initial screening criteria of having clearly stated research questions and data collection that addressed those questions. In the quantitative nonrandomized studies and quantitative descriptive studies, none of the study participants were representative of the target populations. In addition, Quader et al. (2017), Warber et al. (2000), and Weyer et al. (2017) had low response rates thus creating a risk of nonresponse bias. Whittemore et al. (2009) met all criteria for a mixed method study design.

Themes

The key concepts from the articles' findings are synthesized into five areas.

Nutrition Counseling in Clinical Practice

Four studies characterized the delivery of nutrition counseling by NPs in primary care practice. In a cross-sectional survey of 54 primary care NPs, participants reported delivering

preventive services, such as nutrition counseling, in a majority of their patient encounters (Deshefy-Longhi et al., 2008). Findings from two of the studies indicated that approximately 12-25% of all NP visits in primary care practice are for non-illness care and are centered around health promotion or prevention (Deshefy-Longhi et al., 2008; Weyer et al., 2017). Results across studies showed a wide range of reported use of diet or nutrition counseling among NPs. In one study, NPs reported that over half of all their patient encounters include nutrition counseling (Deshefy-Longhi et al., 2008), while another study found that 15% of NPs reported they provide nutrition counseling in more than 75% of patient encounters (Warber et al., 2000). In a secondary analysis of National Hospital Ambulatory Medical Care Survey outpatient department data, 38% of NP visits for chronic conditions that necessitate nutrition and diet education (obesity, diabetes, hyperlipidemia, hypertension, ischemic heart disease) included health education related to diet and nutrition (Ritsema et al., 2014). Weyer et al. (2017) directly observed NPs' ambulatory care visits and found that 25% of all patient visits included health education, of which one third of the time is directed at diet and nutrition.

Nutrition Counseling Among NPs Compared to Other Providers

Four studies described differences in rates of nutrition counseling reported by NPs as compared to other provider types. These studies found NPs were more likely to report the provision of nutrition counseling than physicians and physician assistants (Quader et al., 2017; Lenz et al., 2002; Ritsema et al., 2014). Ritsema et al. (2014) found that 38% of NP visits for chronic conditions included nutrition counseling as compared to 28% of physician visits. In a study of clinicians' attitudes and counseling related to dietary sodium reduction, Quader et al. (2017) demonstrated that 54% of NPs reported advising patients with type 2 diabetes to consume less salt compared to 43% of family and general practitioners.

Another study aimed to compare the processes and outcomes of diabetes care delivered by NPs and physicians by collecting data through chart audits and patient surveys (Lentz et al., 2002). They found NPs were more likely than their physician counterparts to document general diabetes education: educational activities related to nutrition, weight, exercise, and medications, and orders for urinalysis and hemoglobin A1C tests. In addition, approximately 75% of NPs documented nutrition education, compared to one-third of physicians. However, 26% of NPs' and 27% of physicians' patients reported they received little to no information related to diet and exercise. There were no significant differences in patient participants' ratings of the dietary information provided by NPs and physicians and patients in the two groups had similar clinical outcomes, such as mean hemoglobin AIC.

Development and Implementation of Nutrition Counseling Interventions

Three studies tested the effects of NP-led nutrition counseling interventions, and all resulted in positive clinical outcomes. Whittemore et al. (2009) conducted a pilot study of an NP-led type 2 diabetes prevention intervention that incorporated both educational and behavioral strategies related to nutrition. Receipt of the intervention was associated with improved nutrition behaviors and clinically significant outcomes, such as 5% weight loss, improved high-density lipoproteins (HDLs), glucose, insulin resistance, and lipid levels. NPs were able to successfully deliver the intervention according to protocol and found the intervention to be feasible in the primary care setting.

In a primary care quasi-experimental intervention designed and delivered by an NP, Jarl et al. (2013) assessed the impact of counseling participants with hypertension and who were overweight or obese on the Dietary Approaches to Stop Hypertension (DASH) diet and other lifestyle changes, such as physical activity. Receipt of the intervention was associated with

statistically significant improvements in weight loss and a reduction in Body Mass Index (BMI) at the end of the program. In addition, most participants had a statistically significant improvement in self-reported dietary habits and capacity to manage their hypertension.

Using a single-arm, pre-post design, investigators evaluated the feasibility and outcomes of an NP-led high intensity behavioral counseling intervention for adults with obesity (Ritten et al., 2016). Intervention components incorporated MI and goal setting, which included nutrition counseling on sodium intake. Following the 12-week intervention, participants reported increased consumption of fruits and vegetables and the participants had statistically significant improvements in nutrition, physical activity, and other health promoting behaviors. Diastolic blood pressure decreased significantly over the study period; however, there were no statistically significant changes in systolic blood pressure or BMI.

Inclusion of Behavioral Change Techniques in Nutrition Counseling

Two studies in this review described interventions that incorporated behavior change techniques. Whittemore et al. (2009) utilized a behavioral science evidenced-based approach to their type 2 diabetes prevention program that included behavior change goals, problem-solving barriers to change, and MI to enhance achievement of lifestyle goals. NPs were trained to use these behavior change techniques through a variety of modalities, including a video and two workshops. Participants who received the intervention demonstrated improved nutrition behaviors such as choosing a diet low in fat. Ritten et al. (2016) applied a theory-based program in their obesity intervention, highlighting the importance of behavior change in weight management. The intervention included pre-scripted MI material and goal setting in each primary care visit and led to statistically significant improvements in nutrition and an increased motivation to live a healthy lifestyle.

Barriers to Nutrition Counseling

Three studies described barriers to NPs' provision of nutrition counseling. In a study of clinicians' attitudes and counseling related to dietary sodium reduction, the most frequent barrier reported by NPs to reducing sodium intake in their hypertensive or prehypertensive patients was the perception that "patients are unlikely to comply" with recommended dietary changes (Quader et al., 2017). In a second study that modified a diabetes prevention program specifically for NP delivery in primary care, NPs found the behavioral component of the intervention challenging and reported lack of confidence when implementing MI (Whittemore et al., 2009). Specifically, NPs reported difficulty in helping patients become motivated to change and acknowledge their inconsistencies with their behaviors and personal goals. The NPs attempted to overcome this barrier by continuing to improve their MI skills throughout the remainder of the study; however, the authors concluded that additional MI training is needed in future studies. Lastly, in their descriptive survey, Warber et al. (2000) found that 40% of NPs reported they rarely or never had nutrition education in their NP curriculum. The authors concluded that NPs lacked knowledge of nutrition principles and their delivery of nutrition counseling in clinical practice was less than optimal.

Discussion

Studies included in this review, while limited, helped to describe NP delivery of nutrition counseling in clinical practice and NPs' role in developing and implementing nutrition counseling interventions to improve health outcomes. The results of this integrative review indicate that NPs report delivery of preventive services, such as nutrition counseling, in a majority of their patient encounters and are more likely to report the provision of nutrition counseling than other provider types. In addition, this integrative review revealed that NP

delivery of nutrition counseling interventions for prevention and treatment of diet-related diseases such as diabetes, hypertension, and obesity, were successful in improving statistically significant patient outcomes (Jarl et al., 2013; Lentz et al., 2002; Ritten et al., 2016; Whittemore et al., 2009). Despite clinician concerns in one study that patients may not comply with recommended dietary changes (Quader et al., 2017), many studies found that participants improved dietary habits or behaviors after receiving counseling (Jarl et al., 2013; Ritten et al., 2016; Whittemore et al., 2009). These findings are congruent with other studies that have shown statistically significant dietary improvements with nutrition counseling interventions (O'Connor et al., 2020).

NPs include a nutrition counseling component to chronic disease prevention and management, which suggests that NPs understand the importance of diet in relation to the leading causes of death in U.S. However, NPs also emphasized other health promoting activities, such as physical activity and weight control, in the prevention and management of diseases (Jarl et al., 2013; Lentz et al., 2002; Ritten et al., 2016; Whittemore et al., 2009). No studies focused exclusively on the provision of nutrition counseling by NPs. Similarly, a systematic review of behavioral counseling interventions for the USPSTF, found that almost all of the 94 interventions addressed diet but many also addressed physical activity (O'Connor et al., 2020). As a result, it is not clear if the outcomes of these studies are directly related to nutrition counseling alone.

NPs were more likely to document the provision of nutrition counseling than other provider types; however, the reported use of diet or nutrition counseling among NPs varied widely throughout the studies and contrasted greatly with the findings of a direct observation study (Weyer et al., 2017). While it is difficult to directly assess health care providers in clinical practice, self-report is more likely to introduce bias and may not reflect what is actually done.

Lentz et al. (2002) found that NPs were more likely to document educational activities related to nutrition than physicians. However, patient perceptions of receiving little to no information on disease management were similar for both groups. Discordance between NP perceptions of what they are doing in practice and what is actually happening has been reported in the literature. A study that examined the use of clinical preventive services among NPs by analyzing transcripts of NP/patient encounters and surveying NPs, indicated that NPs may overestimate the frequency with which they counsel patients on topics such as nutrition (Berry, 2009).

Despite robust data to support the effectiveness of MI in many areas including diet, exercise, weight loss, and smoking cessation, (Lundahl et al., 2013; Martins & McNeil, 2009), little is known about NPs' training in and use of MI or other behavioral change techniques in clinical practice. Only two studies in this review incorporated MI in their intervention. Whittemore et al. (2009) reported on NPs' use of MI, which NP interventionists found to be challenging. Similarly, NPs in other studies have reported challenges with implementation of MI (Vallabhan et al., 2017). These findings suggest that stronger training in behavioral change skills such as MI may be imperative in future interventions involving NPs providing nutrition counseling. No standardization for MI skills training currently exists and studies have shown that the training, supervision, and monitoring of MI trainees is variable, which raises questions about the efficacy and fidelity of those studies (Fontaine et al., 2019; Soderlund et al., 2011). The use of existing tools to assess fidelity in MI training should be incorporated in future MI studies.

The studies in this review are primarily quantitative. Only one study utilized a mixed methods approach in which the researchers interviewed NPs to understand their experiences with implementation of a diabetes prevention program in the primary care setting (Whittemore et al., 2009). These interviews shed light on barriers and facilitators to implementing a program, such

as difficulty eliciting behavior change and reported lack of confidence when utilizing MI. It would be beneficial to better describe how NPs provide nutrition counseling and have a greater understanding of barriers and facilitators specific to NP delivery of nutrition counseling in primary care practice. Studies have shown that primary care physicians face many perceived barriers to effective nutrition counseling, such as inadequate time, lack of compensation, lack of referral resources, and limited patient motivation (Tucker et al., 2017; Wynn et al., 2010), but it is unclear if these same barriers apply to NPs given their unique approach to healthcare as compared to other provider types. A qualitative approach to better understand these issues from the NPs' perspective would give a more in-depth and comprehensive understanding of NPs' experiences and potentially help strengthen the role of nutrition counseling in primary care.

Limitations

This study had limitations that must be considered when incorporating findings into future research or clinical practice. Overall, this review yielded few eligible articles, limiting our understanding of the role of NPs in providing nutrition counseling to adult patients in primary care. Additionally, methodological limitations of the reviewed studies were identified and included lack of sample representativeness and risk of nonresponse bias; as such, evidence for the effectiveness of the tested interventions is limited. More rigorous studies of NP-led nutrition counseling interventions are warranted.

None of the articles included assessment of nutrition counseling as the primary aim of the study; as a result, it is difficult to determine if the reported clinical outcomes are related to nutrition counseling alone. There is a need for further research that explores the role of NPs providing nutrition counseling exclusive of other health promoting activities. Furthermore, what little is known about NPs providing nutrition counseling in primary care comes from mostly

quantitative studies. The documented counseling by NPs was incongruous with observational studies suggesting that what is reported may not reflect what is done in clinical practice. More research is needed to determine if observed delivery of nutrition counseling is consistent with what is being reported. One possible reason for the limited use of nutrition counseling in direct observation studies may be due to lack of nutrition education for primary care NPs. It is crucial for NPs to have more than a basic level of competence in nutrition for prevention and management of diseases. Lastly, while this study utilized some aspects of a systematic review, this integrative review did not attempt to include grey or unpublished literature. These limitations diminish the generalizability of the findings of this integrative review.

Conclusion

There is a need for further research that examines the role of NPs in providing nutrition counseling to adult patients in primary care practice. As suggested by nursing bodies such as the AANP, the literature demonstrates that NPs are focused on health promotion and disease prevention, but the extent to which NPs are able to implement nutrition counseling in their clinical practice warrants more investigation. Preliminary evidence suggests NP-led interventions that include nutrition counseling for treatment of diet-related diseases such as diabetes, hypertension, and obesity are effective in improving patient outcomes; however, future interventions that include nutrition counseling as the primary aim of the study will help researchers determine if nutrition counseling alone results in similar outcomes. Only one study in this review utilized interviews to explore the NP's perspective; additional qualitative studies could help determine if barriers and facilitators to nutrition counseling are consistent with what has been reported by other provider types. Lastly, nutrition education and training in behavioral change techniques such as MI play a role in NP delivery of nutrition counseling. An updated

understanding of how NPs are prepared by graduate nursing programs in these techniques could help guide potential future modifications to NP graduate curricula.

NPs have an opportunity to expand their health promotion and disease prevention efforts to include more nutrition counseling in clinical practice. It is evident from this review that nutrition counseling can have a positive impact on clinical outcomes in NP primary care practices. Future nursing research may help us to better understand the delivery of nutrition counseling, the behavioral skills used to facilitate behavioral change, the outcomes resulting from nutrition counseling alone, the impact of nutrition counseling education and training, and NPs' attitudes and self-efficacy related to nutrition counseling. Engaging NPs to participate in the development of future interventions involving nutrition counseling has the potential to positively impact patients' dietary practices.

Conflict of Interest

No conflict of interest has been declared by the authors.

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Chapter III:

Nurse Practitioner Experiences Providing Nutrition Counseling to Adult Patients in Primary Care Practice

Title: Nurse Practitioner Experiences Providing Nutrition Counseling to Adult Patients in Primary Care Practice

Authors:

Mary Margaret "Maggie" Eaton, PhD, RN, FNP-BC

1050 Heritage Landing Drive

Chattanooga, TN 37405

m. (617) 939-8515

Eaton.m@northeastern.edu

Magmay45@hotmail.com

Lisa Duffy, PhD, MPH, RN, CPNP-BC

Assistant Professor, Bouvé College of Health Sciences,

School of Nursing

Northeastern University

Office 617.373.5448

l.duffy@northeastern.edu

106H Robinson Hall

Boston, MA 02115

Rachel Pozzar, PhD, RN, FNP-BC

Instructor

Phyllis F. Cantor Center for Research in Nursing and Patient Care Services, Dana-Farber Cancer Institute Department of Medical Oncology, Harvard Medical School

Office 857.215.0743

rachel_pozzar@dfci.harvard.edu

450 Brookline Ave, LW517

Boston, MA 02215

Rhonda Board, PhD, RN, CCRN-K

Associate Professor & Director, PhD Program, Bouvé College of Health Sciences,

School of Nursing

Northeastern University

Office 617.373.5248

r.board@northeastern.edu

Robinson Hall

Boston, MA 02115

Participating Investigators: Maggie Eaton prepared the initial draft of the manuscript, established the study design, and analyzed the data. Dr. Lisa Duffy, Dr. Rhonda Board, and Dr. Rachel Pozzar assisted with data analysis and interpretation, critically reviewed a draft of the manuscript, and participated in technical editing of the manuscript

Abstract

Background: Poor nutrition is one of the leading risk factors for preventable chronic diseases in the United States. Nutrition counseling has been shown to improve clinical outcomes in the adult primary care setting. Nurse practitioners (NPs) can help fill the critical need for nutrition counseling, yet little is known about their role providing nutrition counseling.

Purpose: To describe the primary care NPs' experience in providing nutrition counseling to adult patients in primary care practice.

Methods: Qualitative descriptive study design. Data were collected through virtual semi-structured interviews with 18 board-certified primary care NPs. Interviews were audio-recorded, de-identified, transcribed verbatim, and analyzed. Data collection and analysis took place concurrently and continued until data saturation was achieved.

Results: Five themes emerged from NPs' descriptions of their experiences in providing nutrition counseling to adult patients in primary care practice: (1) role of nutrition counseling in NP primary care practice; (2) developing NP self-efficacy in nutrition counseling; (3) nutrition counseling is more than the provision of information; (4) emotional aspect of nutrition; and (5) barriers to behavior change.

Conclusions: Findings suggest that although NPs understand the importance of nutrition counseling in primary care practice and provide it in some capacity, its continuance is limited by multiple barriers. Future research should evaluate ways to enhance NPs' preparedness to provide nutrition counseling, assess specific resources and tools to aid in nutrition counseling, and determine best practices for communication when delivering nutrition counseling.

Implications: Future interventions have the potential to positively impact patients' dietary practices and improve clinical outcomes.

Keywords: Nutrition counseling; nurse practitioners; primary care; qualitative

Background

Poor nutrition is one of the leading risk factors for preventable chronic diseases, such as heart disease and diabetes, in the United States (U.S.) (Centers for Disease Control and Prevention [CDC], 2021). Research indicates that a healthy diet helps to reduce the risk for many of these preventable diseases (U.S. Department of Health and Human Services [USDHSS] & U.S. Department of Agriculture [USDA], 2015) and improved diet quality is associated with decreased risk of death (Sotos-Prieto et al., 2017). Nutrition counseling in the adult primary care setting, which involves both the delivery of nutrition information and facilitation of behavioral change (United States Preventive Service Task Force [USPFTF], 2020), has been shown to improve clinical outcomes, such as weight loss and decreased incidence and severity of cardiovascular diseases (Foroughi et al., 2013; Jarl et al., 2014; Kris-Etherton et al., 2020; O'Connor et al., 2020; Sun et al., 2017).

Primary care providers (PCPs) are ideally positioned for health promotion efforts through nutrition counseling given their longitudinal relationships with adult patients. Nurse practitioners (NPs), who are bridging the gap in primary care that physicians had previously filled and whose core responsibilities are to provide primary and preventative healthcare (American Nurses Association [ANA], n.d.), can help fill the critical need for nutrition counseling. Previous research has shown that NP-delivered nutrition counseling interventions for prevention and treatment of diet-related diseases such as diabetes, hypertension, and obesity, are associated with statistically significant improvements in patient outcomes (Jarl et al., 2013; Lentz et al., 2002; Ritten et al., 2016; Whittemore et al., 2009). Despite this evidence, there is a dearth of information about how these interventions are delivered by NPs in the clinical setting. Little is known about NPs' experiences providing nutrition counseling in clinical practice, including their

educational experiences, self-efficacy, attitudes, and practices related to nutrition. The purpose of this study was to describe NPs' experience in providing nutrition counseling to adult patients in primary care practice. Information gained from this study has the potential to inform interventions that aim to foster nutrition counseling and positively impact patients' dietary practices.

Methods

Design

A qualitative descriptive research design utilizing virtual interviews (Sandelowski, 2000) was conducted to explore the NP's experience providing nutrition counseling to adult patients in primary care practices. A semi-structured interview guide, based on a comprehensive literature review, was developed by the first author and used in each interview. The interview guide was pilot tested with two primary care NPs prior to the study to establish face validity and feasibility. This study was approved by the Northeastern University Institutional Review Board (IRB).

Sampling and Recruitment

A convenience sample of NPs who treat adults in primary care clinics in the U.S. were recruited online through the Eastern Nursing Research Society, Midwest Nursing Research Society, Massachusetts Coalition for Nurse Practitioners, Western Regional Advanced Practice Nurses Network, Northeastern University Alumni Network, and Northeastern University Clinical Faculty. To recruit participants, an IRB-approved posting was authorized and distributed by each respective society or network. Additional NPs were recruited via snowball sampling.

The eligibility criteria for enrollment of subjects included board-certified Family or Adult NPs who are currently in practice treating adults in primary care settings. Interested participants were screened by the first author via email. Upon completion of the interview, participants could

elect to enter a raffle to win a $100 gift card. The final sample size of 18 NPs was determined when data saturation was achieved based on consensus between the first and second author.

Data Collection

Data were collected through semi-structured virtual interviews via Microsoft Teams (Microsoft Corporation, 2017). A copy of the unsigned consent form was emailed to participants prior to the interview. Participants were given the opportunity to ask questions and verbalize understanding of the consent prior to data collection. Virtual interviews were conducted by the first author between March 2021 and May 2021 and ranged from approximately 20 to 40 minutes with an average length of 28 minutes. Interviews were audio-recorded, de-identified, and professionally transcribed verbatim. Transcripts were verified by the first author against de-identified audio recordings.

Interviews began with an introduction and a verbal demographic and practice characteristics questionnaire. The interview guide is provided in Table 1.

Table 1

Interview guide

Opening Questions
In your own words, how would you define “nutrition counseling”?
What is your experience, if any, with providing nutrition counseling in clinical practice?
Follow-up Questions
What types of clinical scenarios, if any, might prompt you to provide nutrition counseling?
Please describe your approach to nutrition counseling.
What is your experience with patient responsiveness to your approach?

- What helps or hinders this response?

What informed your approach to nutrition counseling?

- What specific resources, if any, are available to you to facilitate nutrition counseling?

How do you feel about providing nutrition education to patients?

How important, if at all, is nutrition in your practice?

What do you think the primary care NP's role should be with providing nutrition counseling?

Closing Question

Is there anything else you would like to add to this discussion?

Data Analysis

Transcripts were entered into NVivo 12 (QSR International, 2018) software for data analysis. Once the first interview took place, data collection and analysis using thematic analysis as described by Braun and Clark (2006) were conducted concurrently. Data were read repeatedly to identify initial patterns. Data items were extracted and systematically organized into meaningful groups labeled as codes. As the process continued, codes were analyzed to determine how they may combine to form overarching themes and sub-themes. Discrepancies in themes were resolved through discussion among the research team, which included two nurse scientists with expertise in qualitative research. Trustworthiness and authenticity of the findings were established using analytic memos, member checking, and peer debriefing. Direct quotes from participants were used in the results to establish credibility. Results from the demographic and practice characteristics questionnaire were summarized using descriptive statistics.

Results

Demographic Characteristics

Table 2 summarizes the demographic and practice characteristics of the primary care NPs. All participants were female and approximately 80% were family nurse practitioners. Most of the participants practice in urban or suburban areas in the Northeastern part of the U.S. A majority of the participants have been in practice for more than 20 years.

Table 2

Demographic and Practice Characteristics

Characteristics	n (%)
Gender	
Male	0
Female	18 (100)
Prefer to self-describe	0
Prefer not to answer	0
Age (years)	
20-35	4 (22)
36-50	7 (39)
51-65	4 (22)
>65	3 (17)
Type of NP	
Adult	4 (22)
Family	14 (78)
Practice Care Setting	

Private practice	2 (11)
Group practice	8 (44)
Hospital-based practice	3 (17)
Other	5 (28)
Practice location	
Rural	4 (22)
Urban	7 (39)
Suburban	6 (33)
Other: Virtual	1 (6)
Region	
Northeast	15 (83)
Southeast	1 (6)
Midwest	2 (11)
Length of Practice (in years)	
5 or <	5 (28)
6-10	5 (28)
11-20	1 (6)
> 20	7 (39)
Highest Nursing Education Attained	
Masters	13 (72)
DNP	4 (22)
PhD	1 (6)
Nutrition Education in Graduate School	

Yes	9 (50)
No	9 (50)
Nutrition Course	
Separate course	0
Integrated education	9 (50)
Additional Nutrition Training	
Yes	16 (89)
No	2 (11)
Nutrition Counseling Per Visit (in minutes)	
None	0
1-4	4 (22)
5-8	11 (61)
>9	3 (17)
Use of Referral Resources	
Yes	16 (89)
No	2 (11)

Themes

Five themes emerged from NPs' descriptions of their experiences in providing nutrition counseling to adult patients in primary care practice: (1) role of nutrition counseling in NP primary care practice; (2) developing NP self-efficacy in nutrition counseling; (3) nutrition counseling is more than the provision of information; (4) emotional aspect of nutrition; and (5) barriers to behavior change.

Role of Nutrition Counseling in NP Primary Care Practice

A majority of the participants defined nutrition counseling as educating patients on healthy eating and working with them to produce sustainable, realistic goals around making healthy choices. One participant provided a definition of nutrition counseling.

> "…conveying information to a patient from their own starting point with their own goals in achieving better health and wellness." (ID 1)

All participants highlighted the importance of nutrition counseling in their clinical practice. Participants described how foundational nutrition is to many aspects of their patients' lives and how it impacts general health and wellness across the lifespan.

> "…once you start practicing, you know that there's nothing more important than nutrition. Everything is based on how people eat… you have to involve nutrition in most of everything you do." (ID 18)

Participants felt that the delivery of nutrition counseling is within the scope of NP practice and believed it to be a necessary part of their role. Participants described feeling "empowered" by providing nutritional information and counseling for their patients. Some felt that NPs are particularly well-placed for nutrition counseling given their role in providing holistic, compassionate care and comprehensive patient education. One participant described her role as delivering the necessary information then being a "cheerleader" to encourage patients to sustain healthy habits.

> "I think nurse practitioners hopefully have an established relationship with patients but are also more equipped than other health professionals in having sensitive conversations with patients." (ID 17)

Some participants highlighted the importance of nutrition for health maintenance; therefore, these participants incorporated nutrition counseling into most visits as part of their

routine care. Several participants discussed the role of nutrition counseling in disease prevention, particularly for chronic diseases, such as diabetes. Others felt that it is the role of the NP to at least initiate a conversation about nutrition counseling but that it may not be their role beyond that. These participants often refer their patients for nutrition counseling.

> "I think it should be within their role to initiate it. I think if they have that specialty focus, they can certainly continue it, but I think it should be part of their initiation with the general assessment." (ID 3)

Developing NP Self-efficacy in Nutrition Counseling

Most participants discussed their limited formal nutrition education. Participants described receiving the "bare minimum" in graduate school. A few participants had a stand-alone nutrition course in their undergraduate nursing program. Most of the nutrition education they received was in the context of chronic disease management. Given these limitations in formal education, some participants expressed the need for more nutrition education in the form of a full course or more material integrated into the nursing graduate curriculum.

> "[nutrition counseling] definitely is [an] undertaught area and underemphasized area I think…it's a problem through medical school for doctors too…I think it could go such a far way and it's just definitely neglected." (ID 16)

A few participants reported that the behavioral skills required to assist patients with making difficult changes were not consistently taught in nursing programs. They felt the lack of nutrition education impacted their practice and they would need more training to implement effective nutrition counseling.

> "I knew the basics of nutrition, but no one taught me how to reach a patient, no one taught me how to motivate a patient, that kind of stuff. So, I thought it was useful. I think

you incorporate little pieces of it. You don't have to do it formally, but I think it's important." (ID 8)

For others, the reported lack of graduate school education in nutrition did not hinder their ability to provide nutrition counseling. They felt they either had the information they needed from other sources, or they could easily access the information. Participants' approaches to nutrition counseling were informed by experiences with patients over time, collaborating with other professionals, including nutritionists, and personal experiences with nutrition, such as their own struggles with weight and healthy dietary practices. Participants attend conferences or read various reputable websites, such as Up-to-Date or the American Heart Association. A few pursued certifications in Lifestyle Medicine or Integrative Health Coaching, which increased their self-efficacy and gave them a clear nutritional path in their clinical practice.

"I just think that the lifestyle piece is what's missing, the coaching, the communication and if those things can be really just more emphasized." (ID 5)

Participants who had enhanced their education with certifications or other degrees were trained in counseling styles or techniques to help guide patients through the behavioral aspects of nutrition counseling. Those that had received this training felt that their nutrition counseling efforts were effective. One counseling style, motivational interviewing (MI), was utilized by a few participants.

"…health coaching is almost like motivational interviewing on steroids…and a lot of it is finding out why it matters to them, what will be different and what's important. What's important in your life. Why does it matter to you? Why do you care about losing weight? Really getting to those things that matter and helping them verbalize and realize for themselves what matters." (ID 5)

Nutrition Counseling is More Than the Provision of Information

Nutritional Assessment

All participants reported providing nutrition counseling to their patients. Participants described many clinical scenarios that might prompt the use of nutrition counseling including chronic disease management, such as diabetes, congestive heart failure, hypertension, and obesity as well as acute conditions such as dermatological complaints, constipation, diarrhea, and fatigue. While approaches to nutrition counseling vary, most participants start by asking patients general questions about dietary habits and assess their level of receptiveness to the discussion. Some use 24-hour food diaries or have patients recall what they have eaten that day or week to better understand their dietary habits and preferences.

> "I guess it's starting, "how are you? Tell me about what you've been eating in the last couple of weeks or depending on that, what did you eat this morning? …what are your goals, what has worked for you before when you felt really healthy?"…we kind of just go through depending on their interests or the non-verbals that I get. I assess their interest to talk about this." (ID 7)

Tailoring the Approach

Once participants get an initial nutritional assessment, some report working with patients to identify dietary changes that can be made. Participants may provide guidance as to how these changes can be made and try to tailor their approach to each individual's needs.

> "I don't follow any particular nutritional approach. I look at where they're at and see what changes they can make. So sometimes it might be really limited to trying to help them get rid of soda for instance or for others it's much more detailed, trying to get them

to moving towards the Mediterranean diet, but it's very individual and really based on where they're at and what changes they can make." (ID 5)

Some help patients with setting realistic and sustainable goals in incremental steps. To help achieve these goals, participants use a multitude of resources such as videos, handouts, and reputable websites. Many participants suggest smartphone apps, such as Noom, some of which had been used by the participants themselves. Some patients want to follow the latest fad diet, such as the keto diet, or use a dietary program, such as weight watchers, and the participants try to support these patients and stay abreast of the current dietary trends. Several providers recommend the Mediterranean diet to their patients and see it as a "sustainable lifestyle" rather than a trend that may come and go.

"Just researching different diets because people would be like, 'oh, does the keto diet work? Oh, does the Atkins diet work?' and just having information to say these are the positives, these are the negatives." (ID 11)

Referrals

Participants who obtained certifications to enhance their nutrition knowledge and counseling skills created specific clinical roles around the provision of nutrition or lifestyle counseling and did not need to refer out for nutrition counseling. One participant with a lifestyle medicine certification schedules monthly or more frequent check-ins with patients who are working on nutrition-related goals. Other participants did not provide continued nutrition counseling and referred their patients for support. Some participants were able to refer within their clinic and used ancillary staff, including registered nurses (RNs), to provide nutrition counseling or diabetic teaching centered around nutrition. In one clinic, the RNs provided healthy eating classes every month. Others referred to nutritionists or dieticians; however, not all

participants had access to the same services and described the necessity of being the sole provider of nutrition counseling. Options for assistance were limited due to reimbursement concerns or their geographical location, such as a rural area, where it is difficult to access dietary services. These participants described providing all medical care and felt that if they did not provide nutrition counseling, no one else would.

> "I feel like it's a necessary part of my job. I've never felt like I can't do it or that it's not my job and that's just because of the demographic that I serve. I was kind of like the all-inclusive provider. I was the cardiologist, the nephrologist." (ID 4)

While a few participants had difficulty with referrals to nutritionists or dieticians due to lack of coverage by Medicare or lack of availability, most participants use nutritionist or dietician referrals for nutrition counseling. Some participants felt that patients should see the nutritionist or dietician just like any other specialist given their enhanced knowledge and training and ability to concentrate solely on nutrition.

> "The availability of the dietitian is helpful because she focuses just on that and has more time." (ID 3)

Emotional Aspect of Nutrition

The emotional aspect of nutrition played an important role in participants' discussions with patients. Some participants are sensitive to communicating with non-judgmental tones and making sure their patients feel heard. Participants perceived some patients viewed unhealthy dietary choices as a "personal failure of their own." Participants identified feelings of guilt, embarrassment, shame, and self-doubt among their patients. Patients who are parents were thought to feel responsible for the dietary practices in their households. One participant perceived that mothers who are obese experience guilt when their children gain weight.

> "…there's mom guilt. 'I'm obese, I'm watching my child become obese... I don't want them to have to live through what I'm living through right now' and so it's getting them healthy as a family even though I don't see the child, but it's like, 'what do you think that we can do?', make changes in the entire home. (ID 10)

Several participants saw a connection between mental health and dietary practices. Participants highlighted their patients' use of food as a coping mechanism in response to anger or stress. One participant works with her patients to decipher what emotional triggers may lead to unhealthy dietary choices and uses a problem-solving approach to help patients make better choices in those moments. At times, this can mean replacing an unhealthy dietary behavior with a healthier behavior.

> "If people have a problem with eating or they say well they know it and I know what I have to do but why don't you do it? So, there's some kind of mental hang-up there. Also, some people emotionally eat. There are eating disorders of overeating, compulsive eating. Some people they self soothe with food. They celebrate with food, which isn't bad but if it's overdone it can lead to problems. Yes, it's a big piece because everybody knows what to do, why don't we do it." (ID 15)

Several participants had their own emotional connection to nutrition. These participants described themselves as obese or morbidly obese and persevered through extreme weight loss. They reported that their own journeys made attention to nutrition a compulsory part of their lives and helped to shape their views on the importance of nutrition in one's life. One described her "life journey" as her training in nutrition counseling. Another participant shared that she is diabetic and uses her own experiences with diabetes to motivate her patients to adopt a healthy diet.

> "I'm a diabetic. So, I have to be so cautious about what I eat, and I don't feel bad to tell my patients 'Listen, I'm a diabetic too. I'm doing the same thing that you're doing and we have to do it correctly otherwise the diabetes will get bad. It will get chronic and other symptoms and dialysis and the whole thing' and they're like 'oh no, we don't want to go there.'" (ID 18)

Barriers to Behavior Change

Participants perceived that lack of motivation challenged their patients to adopt and sustain recommended dietary changes. Some participants identified fatalistic attitudes among their patients, particularly those with a family history of diet-related diseases, such as hypertension. In both cases, participants found it difficult to facilitate behavior change during short and often complex primary care visits.

> "A lot of times they say they don't feel it necessary. They actually say I know what I have to do. I just don't do it. It's a motivational piece then. So that's a whole other piece to break through and to find out what's getting in the way of their motivation for change, which again, I'm booked every fifteen minutes. I can't break into that." (ID 15)

For some patients, there are critical barriers beyond lack of motivation. Participants reported that some patients have to cope with more pressing concerns in their life, such as financial insecurity, that prevent them from focusing on necessary changes. Other patients experience difficulty with accessing or affording healthy foods. Accessibility in the rural setting can be difficult and some patients find it hard to access healthy foods and dietary services. As a result, these patients may turn to high calorie processed foods.

> "They live in a rural area can't get up to the grocery stores and so they're pretty much just eating what they can, the processed foods that are offered in the little community that

> they can get to on their four wheelers. So, there's cases like that for sure. Just their access to things." (ID 2)

Participants cited system-level barriers, such as lack of continuity of care with certain clinic structures. Some practice settings made it difficult to follow-up with patients and participants were unsure of the impact their nutrition counseling had. Time seemed to be more of a barrier in traditional primary care offices where participants feel there is an expectation to see more patients and see them quickly versus more holistic practices or those that were set up to accommodate lifestyle medicine practices.

> "…we're pressed for time. Not to cut corners, nobody cuts corners but if they have to scratch something unfortunately it's the nutritional piece and it's important." (ID 15)

A few participants felt that nutrition counseling doesn't "bring in the money" and what happens in practice is shaped by financial concerns; however, most participants stated they are easily reimbursed for their nutrition counseling services with both private insurance and Medicare. Most of their patients have conditions, such as obesity, that necessitate nutrition counseling and the billing for it can be linked to the condition.

> "I think it's just the model sometimes you just have to see patients so quickly and there's a lot… at least in my practice… there's a lot of emphasis on pharmaceuticals and so I'd love to see nutrition, but it doesn't bring in the money. So, I think the practice model needs to change for that." (ID 12)

Even if the successes were infrequent for some, participants expressed satisfaction when overcoming these barriers to nutrition counseling, particularly when their efforts resulted in meaningful changes and positive patient outcomes, such as weight loss or a reduction in the need for medication. A few participants relayed stories of their experiences with specific patients, one

of whom wanted to make dietary changes, but a language barrier had prevented him from being able to communicate this to his providers. For this patient and others, being faced with the realities of their disease progression was a motivating factor for change and their provider was able to guide them through the necessary changes.

> "It was great. That's what the point of this is, right? What we want to do is to help people, that's why we go into this. So, for it to actually work, the goal of it and then he verbalized his appreciation, and nobody ever took the time to really explain things to him. So, it was like oh that makes up for the last six months that have been awful." (ID 16)

Discussion

The findings from this study indicate that NPs feel nutrition counseling is a fundamental part of health and wellness and plays an integral role in primary care practice. The provision of nutrition counseling was seen as relevant for health maintenance and as part of treatment for comorbid conditions, which is consistent with prior findings from the literature (Wynn et al., 2010). Congruent with the results of a study by Deshefy-Longhi et al. (2008) in which NPs reported delivering various types of counseling in a majority of their patient encounters, including nutrition counseling, all participants in the current study report providing nutrition counseling in some capacity. Given the importance of nutrition counseling in adult primary care practice, it is crucial NPs are prepared to provide effective nutrition counseling.

Preparedness for effective nutrition counseling varied among the participants. Similar to other healthcare providers (Devries et al., 2017; Smith et al., 2015; Wynn et al., 2010), most participants in this study felt that formal nutrition education was lacking from their graduate school programs; however, for some participants, the lack of formal nutrition education did not seem to have a notable impact on their ability to provide nutrition counseling due to self-directed

learning. For other participants, it was clear they would benefit from better preparation to provide nutrition counseling. Researchers should aim to find a standardized approach to educate NPs either through enhancing graduate nursing curricula or through opportunities outside of formal NP education, such as with continuing medical education.

The participants in this study implicitly understood that nutrition counseling is more than just relaying information to patients. This idea supports findings from Wynn et al. (2010), which highlight the need to include behavior change skills in preparedness for nutrition counseling in order to positively affect behavior change. A few participants with additional training in this study discussed the use of MI to facilitate nutrition counseling. MI is an evidence-based, collaborative counseling style designed to address a patient's ambivalence about change and to help elicit behavior change (Miller & Rollnick, 2013). MI has successfully been utilized in many areas including diet, exercise, weight loss, and smoking cessation. Exposure to MI is associated with improvements in clinical outcomes, such as reductions in Body Mass Index (BMI) and systolic blood pressure (Lundahl et al., 2013; Martins & McNeil, 2009). Behavioral counseling in the primary care setting is often informed by MI (Gavarkovs, 2019). The National Organization of Nurse Practitioner Faculties and the American Association of Colleges of Nursing (NONPF & AACN, 2016) has suggested that NP curriculum content should include communication skills, such as MI, to support specific adult-gerontology primary care NP competencies. However, there is no standard approach for teaching MI content in nursing graduate programs. NP training in behavior change skills is a necessity for nutrition counseling in order to enhance provider self-efficacy and improve patient outcomes.

Participants in this study reported many resources that both shaped their approach to nutrition counseling and helped provide support for their patients. Among the most cited

resources were mHealth applications (apps). Participants discussed patients' use of nutrition-related mHealth apps, such as Noom and MyFitnessPal, as a facilitator to improving patient responsiveness to nutrition counseling. A previous study found that close to 70% of family NPs recommend mHealth apps to their patients, with diet and nutrition apps being among the most common (Mueller, 2020). More than half of these family NPs reported that mHealth apps complement patient care, improve patient outcomes, and facilitate health promoting activities, such as diet modification. Two systematic reviews that included intervention studies with mHealth apps to improve dietary behaviors showed positive dietary changes, such as increased consumption of vegetables, and improved health outcomes such as better weight control (DiFilippo et al., 2015; Schoeppe et al., 2016). The results of this study indicate that mHealth apps are not used consistently in practice; therefore, better implementation of resources that can complement NP delivery of nutrition counseling and potentially improve patient motivation, are needed.

Participants' personal experiences with dietary practices influenced their preparedness for nutrition counseling. These personal experiences, which were emotional at times, enhanced their self-efficacy and positively impacted their delivery of nutrition counseling. Emotional experiences related to nutrition also played a role for patients. Participants reported that patients' emotional state influenced their dietary choices. These study findings are consistent with the literature on mental health, including emotional well-being, and its role in unhealthy dietary choices and poor appetites (Barre et al., 2011; Engel et al., 2011). It is imperative that providers understand how the emotional aspect of nutrition can impact their patients' dietary behavior so they can adequately address these issues in practice.

Participants in this study cited time and compensation as system-level barriers to nutrition counseling, consistent with primary care physicians in previous literature (Tucker et al., 2017; Wynn et al., 2010). Although providers such as Wright & Zelman (2018) have proposed the "Nutrition Minute", a time-efficient tool used to provide a nutrition assessment and identify nutritional gaps, there is a need for time saving strategies with nutrition counseling that employ reliable and valid tools to help minimize this barrier. Lack of compensation was cited by few participants in the current study; however, several participants were concerned that nutrition counseling did not benefit their practices financially. While most participants stated they were aware of the reimbursement codes related to nutrition counseling, many providers did not utilize primary care visits for continued nutrition counseling and may benefit from better awareness of existing compensation.

Limitations

This study had limitations that must be considered when incorporating findings into future research or primary care practice. This study involved the subjective experiences of NPs, which is vulnerable to social desirability. This study represented NPs who chose to participate in the study introducing response bias, and findings may not be transferrable to all NP practices. Participants were asked to recall their experiences thus possibly introducing recall bias. In addition, most of the participants in this study have been in practice for more than twenty years. As a result, training and experiences among those who have more recently begun practice may differ from the training and experiences primarily described in this study. Lastly, despite efforts to acknowledge the author's bias and ensure rigor, there is potential for unintended bias.

Conclusion

This study adds to the limited literature on NP provision of nutrition counseling in the primary care setting by providing an in-depth and comprehensive understanding of NPs' attitudes, educational experiences, self-efficacy, and practices related to nutrition counseling. The findings from this study suggest that although NPs understand the importance of providing nutrition counseling in primary care practice and provide it in some capacity, the continuance of nutrition counseling is limited by a multitude of barriers. Future research should evaluate ways to enhance preparedness for nutrition counseling among NPs, assess specific resources and tools to aid in nutrition counseling, and determine best practices with communication style when delivering nutrition counseling. There is a need for further research that explores the inclusion of MI, or other behavior change skills, in nutrition education and how it can be translated into clinical practice, given the robust data on its effectiveness.

Implications for Nursing

As nutrition-related diseases continue to rise in the U.S., it is imperative that primary care NPs take on a greater role in prevention and management of these diseases through nutrition counseling. The results from this study will aid in the development of future interventions to enhance NP delivery of effective nutrition counseling. These interventions have the potential to positively impact patients' dietary practices and improve clinical outcomes.

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Chapter IV:

Nutrition Counseling and Use of Telehealth During the SARS-CoV-2 Pandemic: A Qualitative Descriptive Study of Primary Care Nurse Practitioner Experiences

Authors:

Mary Margaret "Maggie" Eaton, RN, FNP-BC

Candidate for PhD in Nursing, Northeastern University

1050 Heritage Landing Drive

Chattanooga, TN 37405

m. (617) 939-8515

Eaton.m@northeastern.edu

Magmay45@hotmail.com

Lisa Duffy, PhD, MPH, RN, CPNP-BC

Assistant Professor, Bouvé College of Health Sciences,

School of Nursing

Northeastern University

Office 617.373.5448

l.duffy@northeastern.edu

106H Robinson Hall

Boston, MA 02115

Participating Investigators: Maggie Eaton prepared the initial draft of the manuscript, established the study design, conducted the initial search, and analyzed the data. Dr. Lisa Duffy assisted with data analysis and interpretation, critically reviewed a draft of the manuscript, and participated in technical editing of the manuscript.

Abstract

Background: The SARS-CoV-2 pandemic resulted in significant changes to the structure of primary care in the U.S. After the onset of the pandemic, NPs reported an increased use of telehealth and fewer preventive health visits despite evidence that individuals in the U.S. experienced significant dietary and behavioral health changes. It is not well understood what NPs have experienced with the sudden change in primary care delivery and whether this change has affected nutrition counseling in clinical practice.

Purpose: The purpose of this study was to understand how nutrition counseling among NPs in primary care practice was affected during the SARS-CoV-2 pandemic.

Methodology: Qualitative descriptive study design. Data were collected through virtual semi-structured interviews with 18 board-certified NPs who treat adults in primary care. Interviews were audio-recorded, de-identified, transcribed verbatim, and analyzed. Data collection and analysis took place concurrently, and data collection continued until data saturation was achieved.

Results: Three themes emerged from NPs' description of how nutrition counseling in primary care practice has been affected during the SARS-CoV-2 pandemic: (1) challenges faced during the pandemic; (2) use of telehealth; and (3) future of telehealth and nutrition counseling.

Conclusions: This study adds to the limited literature on how the SARS-CoV-2 pandemic has affected NP clinical practice and the delivery of nutrition counseling. Given the positive reports of telehealth utilization, future studies should assess the use of telehealth among primary care NPs to enhance nutrition counseling.

Implications: Telehealth has the potential to improve nutrition counseling in the primary care setting. Enhancing nutrition counseling via telehealth has the potential to impact positive clinical outcomes such as changes in dietary practices, reduced weight, and lower total cholesterol.

Keywords: Nutrition counseling; nurse practitioner; telehealth; SARS-CoV-2 pandemic

Introduction

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic and ensuing quarantine in the United States (U.S.) resulted in significant changes to the delivery of primary care including the implementation of telehealth (Alexander et al., 2020). Telehealth has been defined as encompassing the exchange of information for the provision of healthcare through electronic communication (Centers for Medicare and Medicaid Services [CMS], 2020). Primary care providers (PCPs), including primary care nurse practitioners (NPs), found themselves suddenly needing to replace in-person clinic visits with telehealth or virtual visits to deliver care. In-person visits decreased by approximately 50% during the SARS-CoV-2 pandemic, and the delivery of primary care through telehealth increased from 1.1 % of visits to approximately 35% of visits (Alexander et al., 2020). As the use of telehealth rapidly ingrained itself in our healthcare system, there was little time to understand how these changes impacted the care delivered to patients.

In a recent study, advanced practice registered nurses, including NPs, reported an increased use of telehealth and fewer preventive health visits after the onset of the SARS-CoV-2 pandemic (Kleinpell et al., 2021). Similarly, other researchers have reported a significant reduction in elective and preventive care services, such as hemoglobin A1C tests (Alexander et al., 2020; Whaley et al., 2020). As a result of the decrease in primary care visits and less frequent assessments during telehealth visits than in-person visits during the SARS-CoV-2 pandemic, researchers have also reported changes in features of primary care visits, such as a reduction in blood pressure and cholesterol assessments (Alexander et al., 2020). Alexander et al. (2020) suggested an increased focus on the content and quality of telehealth visits, highlighting the need to adapt to changes in the delivery of primary care and mitigate the limitations of the use of

telehealth. Prevention is an important component of primary care, and the recent lack of preventive health visits may have negative consequences on patient outcomes.

NPs have a health promotion-oriented approach to healthcare with a focus on disease prevention, health management, and patient education (American Association of Nurse Practitioners [AANP], 2015). Primary care NPs prioritize preventive care, such as nutrition counseling (Deshefy-Longhi et al., 2008; Ritsema et al., 2014; Weyer et al., 2017), which involves both the delivery of nutrition information and facilitation of behavioral change (United States Preventive Service Task Force [USPFTF], 2020). Nutrition counseling is an integral part of NPs' health promotion and disease management efforts in primary care practice; as a result, NPs have reported that over half of all their patient encounters include nutrition counseling (Deshefy-Longhi et al., 2008; Ritsema et al., 2014; Weyer et al., 2017). Due to the decrease in primary care visits during the SARS-CoV-2 pandemic and lack of focus on preventive services, the delivery of nutrition counseling may have been impacted. Prior to the SARS-CoV-2 pandemic, the use of telehealth had been demonstrated to result in positive clinical outcomes in a variety of clinical scenarios, including improved dietary behaviors (DeNicola et al., 2020; Kelly et al., 2016; Kruse et al., 2017; Ward et al., 2015). Nutrition counseling, delivered via telehealth, has been shown to be effective in those with chronic diseases (Kelly et al., 2016). These significant dietary changes included behaviors associated with decreased sodium intake, reduced total cholesterol, and weight (Kelly et al., 2016). Behavioral health changes are a necessary component of prevention and management of diet-related chronic diseases.

During the SARS-CoV-2 pandemic, individuals in the U.S. experienced significant dietary and behavioral health changes. Evidence demonstrates increases in self-reported overeating, increased consumption of unhealthy foods, such as high fat or sugar-laden foods, and

weight gain (Mason et al., 2021; Pellegrini et al., 2020; Zachary et al., 2020). Although researchers have reported that individuals are cooking more at home and eating out less than prior to the pandemic (Flanagan et al., 2020), weight gain may be due to statistically significant changes in self-reported dietary patterns, such as increased consumption of snacks and sweetened foods (Pellegrini et al., 2020; Zachary et al., 2020). In addition, researchers have reported other behavioral health changes during the pandemic, such as decreased physical activity, increased sedentary behaviors, and later sleep onset (Flanagan et al., 2020). As a result, there is an increased need for the provision of nutrition counseling by PCPs.

Due to the novelty of the SARS-CoV-2 pandemic, it is not well understood what NPs have experienced with the sudden change in primary care delivery and how this change has affected nutrition counseling in clinical practice. The purpose of this study was to understand how nutrition counseling among NPs in primary care practice was affected during the SARS-CoV-2 pandemic.

Methods

Design

A qualitative descriptive research design utilizing virtual interviews was conducted to explore how nutrition counseling among NPs in primary care practice was affected during the SARS-CoV-2 pandemic (Sandelowski, 2000). This study was part of a larger project, which aimed to better understand NP experiences with nutrition counseling in adult primary care. A semi-structured interview guide, based on a comprehensive literature review, was developed by the first author and used in each interview. The interview guide was pilot tested with two primary care NPs prior to the study to establish face validity and assess the use of appropriate language, understanding of the questions, and time required for completion. The pilot testing did

not lead to any changes in the content of the interview guide. This study was approved by the Northeastern University Institutional Review Board (IRB).

Sampling and Recruitment

A convenience sample of NPs who treat adults in primary care clinics in the U.S. was recruited online through the Eastern Nursing Research Society, Midwest Nursing Research Society, Massachusetts Coalition for Nurse Practitioners, Western Regional Advanced Practice Nurses Network, Northeastern University Alumni Network, and Northeastern University Clinical Faculty. To recruit participants, an IRB-approved posting was authorized and distributed by each respective society or network. Additional NPs were recruited via snowball sampling. Participants were asked to share the study recruitment letter with their eligible colleagues to consider participation in the study.

The eligibility criteria for enrollment of subjects included board-certified Family or Adult NPs who are currently in practice treating adults in primary care settings. Interested participants were screened by the first author via email. Upon completion of the interview, participants could elect to enter a raffle to win a $100 gift card. The final sample size of 18 NPs was determined when data saturation was achieved based on consensus between the first and second author.

Data Collection

Data were collected through semi-structured virtual interviews via Microsoft Teams at a time when face-to-face interactions were limited due to the SARS-CoV-2 pandemic (Microsoft Corporation, 2017). A copy of the unsigned consent form was emailed to participants prior to the interview. Participants were given the opportunity to ask questions and verbalize understanding of the consent. Interviews were audio-recorded, de-identified, and professionally transcribed verbatim. Transcripts were verified by the first author against de-identified audio recordings.

Interviews began with an introduction and a verbally administered demographic and practice characteristics questionnaire. To address the aim of this study, three additional questions were added to the original semi-structured interview guide of the larger research project. The questions used to address this research aim are provided in Table 1.

Table 1: Interview guide

Opening Question
How has nutritional counseling changed with the recent pandemic?
Follow-up Questions
Did you go completely to telehealth during the pandemic?
Do you think there's a place for telehealth in primary care going forward?

Data Analysis

Transcripts were entered into NVivo 12 software for data analysis (QSR International, 2018). Content analysis began after the first interview was transcribed and continued until data saturation had been met (Hsieh & Shannon, 2005). Transcripts were read word by word to enable extraction of phrases that captured key categories, aided by NVivo. As the process continued, these categories were labeled as codes and sorted into subcategories based on the relationships between the various codes. Focusing on the research aim of the study, subcategories were reduced to a smaller number of categories and labeled as themes. Discrepancies in themes were resolved through discussion among the research team until consensus was achieved. Trustworthiness and authenticity of the findings were established using analytic memos, member checking, and peer debriefing. Direct quotes from participants are presented in the results section to enhance credibility of the findings. Results from the demographic and practice characteristics questionnaire were summarized using descriptive statistics and reported frequencies.

Results

Virtual interviews via Microsoft Teams were conducted by the first author between March 2021 and May 2021 and ranged from approximately 20 to 40 minutes with an average length of 28 minutes.

Demographic Characteristics

Table 2 summarizes the demographic and practice characteristics of the primary care NP participants in the study. All participants were female and approximately 80% identified as family nurse practitioners. Most of the participants reported practicing in urban or suburban geographic areas in the Northeastern part of the U.S. A majority of the participants have been in practice for more than 20 years.

Table 2: Demographic and Practice Characteristics

Characteristics	**n (%)**
Gender	
Male	0
Female	18 (100)
Prefer to self-describe	0
Prefer not to answer	0
Age (years)	
20-35	4 (22)
36-50	7 (39)
51-65	4 (22)
>65	3 (17)
Type of NP	
Adult	4 (22)
Family	14 (78)
Practice Care Setting	
Private practice	2 (11)
Group practice	8 (44)
Hospital-based practice	3 (17)
Other	5 (28)
Practice location	
Rural	4 (22)
Urban	7 (39)

Suburban	6 (33)
Other: Virtual	1 (6)
Region	
Northeast	15 (83)
Southeast	1 (6)
Midwest	2 (11)
Length of Practice (in years)	
5 or <	5 (28)
6-10	5 (28)
11-20	1 (6)
> 20	7 (39)
Highest Nursing Education Attained	
Masters	13 (72)
DNP	4 (22)
PhD	1 (6)

Themes

Three themes emerged from NPs' description of how nutrition counseling in primary care practice has been affected during the SARS-CoV-2 pandemic: (1) challenges faced during the pandemic; (2) use of telehealth; and (3) future of telehealth and nutrition counseling.

Challenges Faced During the Pandemic

Many participants reported challenges related to nutrition counseling during the pandemic. Participants reported an increase in their patients' weight, and some have termed this "the pandemic of gaining 20 pounds." Some participants cited patients' limited accessibility to healthy foods as a driver for their weight gain, but most participants felt that being isolated at home and unable to participate in normal routines were the primary cause. As a result, participants were more accepting of weight gain in their patients.

> "We kind of lightened up on it a little bit or was a little more forgiving when somebody came in ten pounds up and not that we would read them the riot act or anything, but we understand, it's the time. A lot of people were just home and that's just natural."

Participants noted the disruption to patients' daily lives caused increased sedentary behavior and changes in dietary habits and practices, such as increased snacking, baking, and alcohol consumption. In addition to weight gain, a few participants saw changes in other clinical outcomes, such as laboratory values.

> "People are home where they're eating more, they're snacking more, they're drinking more. They're doing a ton of drinking, so a lot more alcohol counseling during the pandemic. I'm seeing a lot more elevated LFTs out there."

Alternatively, some participants experienced positive changes during the pandemic, such as patients' increased management of their mental and physical health. One participant stated that patients have reportedly used the time at home to do some self-reflection about their dietary practices.

> "I think that patients are more open to the importance of self-care and that includes nutrition and I just think self-care overall and looking at helping them to define what health is for them includes nutrition and mental health. I think people are a little bit more insightful into the goals for themselves personally… they've been so depressed, so anxious…everybody's gaining weight and we're all coming out of the woodwork… I think that it's been a little motivating for many."

Many providers were not able to address changes in weight or diet during the height of the pandemic due to reduced primary care visits. Specifically, some participants stated they did not provide nutrition counseling during this time. One participant felt there were more pressing issues than nutrition to address, such as the loss of loved ones. Another participant found it difficult to provide nutrition counseling without specific clinical information, such as in-person weight checks.

> "…I don't know if I was doing as much nutrition counseling...I didn't have a weight in front of me, I didn't have a blood pressure in front of me to look at…"

A participant who has a nutritionist as part of her healthcare team, continued to refer her patients to the nutritionist, particularly those with diabetes.

> "…even in spite of Covid, we had lots of things that stopped, but we still got our patients to see nutritionists and especially with diabetes and with huge teams and nutritionists are part of that team."

Use of Telehealth

Many participants in the study conducted primary care visits during the pandemic, but reportedly most of those visits occurred via telehealth. Participants reported the use of telehealth as the biggest change they experienced in their clinical practice. Prior to the pandemic, some participants stated their primary care offices did not have a platform for telehealth, therefore, some participants were initially concerned about patient access to care. However, most participants described the transition to telehealth as "easy" and felt it was done quickly and efficiently. One participant noted a sense of accomplishment from the communication, teamwork, and commitment it took for the entire health care team to make the transition.

> "As soon as it was covered… it was rolled out very quickly, very systematically and each week we have a huge outpatient. Like we'd have weekly to twice a week townhalls to make sure we're all rolling it out including the medical assistant, front desk staff. It's a true process of how to change processes. I felt very proud to work there about everyone having a voice in making it work out. It was great."

A few participants stated that usual practices did not change for their patients during the pandemic, including the provision of nutrition counseling. One participant worked for a virtual

healthcare start-up prior to the pandemic, which had worked well, and continued using the same practice structure during the pandemic. Due to the success she experienced with her virtual only practice, she felt that most of primary care can be done virtually.

> "…you can do a whole lot over video…there's occasionally times, that 10% when you need to potentially do an abdominal exam to say like I'm concerned about cholecystitis or I'm concerned about something else or is this just like constipation…there are times when people need to be seen in person for more acute complaints, but most of what is prevention can be done virtually…"

Strengths of Telehealth

Almost all participants felt positively towards telehealth and highlighted its many strengths, many participants stated their patients preferred telehealth to in-person visits. The most common strength reported was the convenience of telehealth for both the provider and the patient. Telehealth requires less time, no commute, and it often does not require time off work for the patients. Some participants noted that patients were more likely to follow up from previous visits due to the ease with which one can see their provider, particularly when frequent visits are required.

> "The convenience factor, I think patients are more likely to follow through with certain things or follow up especially if you're talking about hey, let's go over these labs and talk about the nutrition stuff. Whereas if they know they need to come in for a physical and have their blood pressure taken and all of that, we need to put hands on them, listen to their heart and lungs, do that whole thing. Especially for the follow up visits and touching base and checking in, I think for the convenience on the patient's end, I think it can be really useful."

A few participants felt they connected better with patients using telehealth since patients were more likely to attend appointments somewhere comfortable and familiar, like their home, and may be more open to sharing information. Some participants reported that telehealth is especially helpful when addressing mental health concerns due to this enhanced connection and the fact that physical exams are not usually necessary for these types of visits.

> "I like the telehealth model. I think it reaches people more and it seems a little more intimate. So that really helps with mental health care, which I'm interested in and talking about diet and exercise or people who have dietary issues. There's a big mental piece attached to that. So having that intimate environment we can talk one on one, somebody's in their home or somewhere comfortable. I find it elicits a better history."

Limitations of telehealth

Participants also noted the limitations of telehealth. Several participants felt that the patient-provider relationship was negatively affected by telehealth and for this reason they preferred in-person visits. Participants reported that environmental distractions at home and technological issues often made telehealth visits difficult.

> "There is something lost from getting in the room with a patient. It is different and there's all kinds of technological issues: the phone reception isn't good, they freeze on me, if I get a text message…during the phone call, I lose the audio. You know they're home; their kids are running around. That can happen in the office, but often not. Usually if they come in, they leave their kids..."

Some participants noted the inability to obtain measurements, assessments, or tests that are not feasible with telehealth, such as blood pressure readings and weights, which are of particular significance for nutrition counseling visits. Because this information was lacking in

their patient visits, some participants felt telehealth visits were less effective, particularly for yearly physicals versus episodic visits that may include nutrition counseling. Due to these limitations, some patients felt that telehealth could complement in-person patient visits but not replace them.

> "We don't bring a patient in until we've done a telemed visit first and then we would bring them in. So certainly, we're doing much less checking weights and checking blood pressures because we're just not physically seeing patients as much. So yes, that's got a big impact."

Future of telehealth and nutrition counseling

Several participants reported an increase in nutrition counseling due to the recent rise in primary care visits. Some felt that their efforts to motivate patients to resume a healthier lifestyle have been easier since the pandemic began. Participants reported that patients have been more responsive and attentive to counseling. One participant felt the fear of getting Covid has driven many to achieve a healthier lifestyle.

> "I mean Covid I think put a fear in everybody in such a way that people thought that if they stayed healthy that they might not get Covid. You can get Covid even if you're healthy, but I think people felt that being healthy was one step forward for not getting Covid… if they could try to work on that…"

As a result of this increased motivation, some participants reported that patients have returned to primary care practices ready to make the necessary changes to get back to their pre-pandemic routines.

> "…people have come in and said I've gained the Covid 19…people making more confessionals to me and I'm like yes, I know. Then the next thing out of their mouth is

> ‘well, this is what I’m going to do to change it’. I said, ‘okay that’s great’. ‘I’m going to go outside more. I’m going to go for a walk and no more baking. We only bake once a week, not every day now’ and I’m like okay. So, I don’t even have to ask, they’re already telling me, ‘well, I’m going to get back on track’.”

Although most participants had not utilized telehealth for nutrition counseling, several felt that telehealth could play a significant role in future interventions aimed at addressing dietary practices among their patients. Most participants discussed the desire to continue using telehealth in the future and felt there was a role for telehealth in primary care. Many stated it was “here to stay.” One participant, who previously acquired a certification in Lifestyle Medicine and often sees patients for follow-ups for nutrition counseling, hoped to use telehealth for once-a-month check-ins related to nutrition. Some highlighted the fact that you don’t necessarily need to examine the patient for the provision of nutrition counseling, and the convenience of telehealth makes it easy to provide the follow-up visits for problem solving or troubleshooting that sometimes accompanies nutrition counseling.

> “I think telehealth’s great for nutrition counseling. You don’t need to be in person to do it. The only time you might want to be in person is if you’re concerned about disordered eating and someone’s losing weight and you want to track their weight but otherwise, I think it’s a great platform for nutrition counseling.”

Reimbursement of telehealth, which many reported being an issue before the pandemic, was no longer a concern with the expanded coverage provided by CMS. Participants found themselves suddenly and easily able to bill for services administered via telehealth platforms. Several participants describe replacing telephone calls with telehealth visits, which were now reimbursable.

> "I used to do those phone calls at 5:15 or in the car on my way home and it's just a lot and it's not billable…some patients honestly would rather have that discussion and pay 15 dollars and be like yes, they can have the back and forth and they can ask me whatever they want and they know that I'm not going to rush them and so they can make an informed decision."

Some questioned whether telehealth would continue to be reimbursed but hoped that insurance would not be a barrier for future use.

> "I love telemedicine. I would love to proceed forward with telemedicine if insurance would let me."

Discussion

The findings from this study demonstrate that primary care NPs faced challenges related to providing nutrition counseling following the onset of the SARS-CoV-2 pandemic. Participants encountered changes in patients' behavioral health and dietary patterns such as increased sedentary behavior and increased food and alcohol consumption that resulted in negative clinical outcomes, such as weight gain. Many participants were unable to address these changes due to the reduction in primary care visits and changes in clinical priorities as a result of the pandemic. However, a few participants reported no change to their usual practice during the pandemic. The transition to telehealth was the single biggest change experienced by almost all participants, of which most had a positive experience. Participants reported many strengths of telehealth, such as improved accessibility for patients care and convenience for both them and their patients. Participants also noted the limitations of telehealth, such as its negative effect on the patient-provider relationship, technological issues, and lack of pertinent clinical information that would normally be obtained during in-person nutrition counseling visits. After approximately a year

since the onset of the SARS-CoV-2 pandemic, some participants reported primary care visits are returning to pre-pandemic levels; as a result, they have been providing more nutrition counseling. Participants reported difficulty with addressing nutrition counseling during the SARS-CoV-2 pandemic, therefore, the effectiveness of telehealth on nutrition counseling is not well understood. Despite this, participants felt that telehealth will play a significant role in future interventions aimed at addressing dietary practices among their patients. Participants were hopeful that reimbursement of telehealth, which was expanded during the pandemic, would remain so they could continue using telehealth in their clinical practice.

As the participants in this study indicated, researchers also found that in-person primary care visits decreased significantly after the onset of the pandemic (Alexander et al., 2020). Despite the sudden change in healthcare delivery methods, most participants adjusted quickly to the use of telehealth. Most participants in the current study had a positive perception of telehealth and reported its many benefits, such as convenience and improved accessibility, which is similar to findings in the literature (Gomez et al., 2020). Gomez et al. (2020) reported telehealth limitations synonymous with what was described in this study, including the inability to provide in-person patient assessments and the loss of a personal touch. Future research on how this change in the patient-provider relationship is viewed from the patient perspective and what effect it may have on patient outcomes is warranted. Improved understanding of how best to utilize telehealth in the context of the therapeutic patient-provider relationship may help to mitigate some of these limitations.

Congruent with recent studies, many participants in this study reported that the pandemic has had a significant negative impact on dietary habits and clinical outcomes, such as increased consumption of snacks, and increased weight among their patients (Mason et al., 2021; Pellegrini

et al., 2020; Zachary et al., 2020). To further compound this issue, the reduction in primary care visits impacted participants' ability to provide nutrition counseling to their patients. It is imperative that providers understand how the pandemic has impacted lifestyles and dietary behavior so they can better implement the changes needed in clinical practice to adequately address these issues.

Consistent with primary care physicians' views that telehealth visits are particularly well-suited for counseling and discussions (Gomez et al., 2020), several participants in the current study noted that telehealth is an ideal platform for the delivery of nutrition counseling. In particular, the behavioral change aspect of nutrition counseling and the need for multiple contacts for effective behavior change necessitates an easier and more efficient visit than traditional in-person care. Research has shown that nutrition counseling, delivered via telehealth, can aid in dietary changes and improve clinical outcomes (Kelly et al., 2016). However, the extent to which these research findings can be translated into NP primary care practice warrants further investigation.

Many participants felt that telehealth should continue to have a role in primary care, but continued reimbursement for telehealth appointments was a concern. Due to the increased need for telehealth visits during the pandemic, CMS expanded the use of telehealth under the 1135 Waiver for a variety of providers, including NPs. This modification aided in facilitating beneficiary access to care and financial coverage equal to in-person visits (CMS, 2020). It is unclear whether commensurate reimbursement of telehealth services will continue for the long-term; however, results from this and other studies that show telehealth's positive impact on patient care may encourage lawmakers to consider its importance in the future of healthcare.

Limitations

This study is limited in the transferability of findings into future research projects or primary care clinical practice. This study involved the subjective experiences of NPs, which are vulnerable to social desirability. The recruitment method for this study was prone to self-selection bias. Participants who responded to the recruitment posting may have been more interested in nutrition or even more likely to enter into primary care practice and may not be representative of all NPs. Participants were asked to recall their experiences during a particularly stressful time period, thus possibly introducing recall bias. Lastly, despite efforts to acknowledge the author's bias and ensure rigor, there is potential for unintended bias.

Conclusion

This study adds to the limited literature on how the SARS-CoV-2 pandemic has affected NP clinical practice, in particular the delivery of nutrition counseling. Given the evidence of its effectiveness and positive reports of telehealth utilization, future studies should assess the use of telehealth among primary care NPs to enhance nutrition counseling in adult patients. Nutrition counseling in the primary care setting has the potential to impact positive clinical outcomes such as changes in dietary practices, reduced weight, and lower total cholesterol. As diet-related diseases continue to rise in the U.S., it is imperative that NPs take on a greater role in prevention and management of these diseases.

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Chapter V:

Summary and Conclusions

Nutrition plays a critical role in health promotion and disease prevention. NPs are well-positioned to take on the challenge of meeting the need for nutrition counseling, especially given NPs' health promotion-oriented approach to healthcare (AANP, 2015). These three manuscripts add to the existing body of knowledge by addressing the gap concerning the role of NPs providing nutrition counseling to adult patients in primary care practice. The primary research aim was to describe NPs' experience in providing nutrition counseling to adult patients in primary care practice. Given that the study was conducted during the SARS-CoV-2 pandemic, the secondary research aim was to understand how nutrition counseling among NPs in primary care practice was affected during the SARS-CoV-2 pandemic.

Manuscript One reviewed the existing literature and aimed to describe what is known about the role of NPs providing nutrition counseling to adult patients in primary care practice. This integrative review yielded few articles meeting the inclusion criteria, limiting our understanding of NPs' role in providing nutrition counseling. Articles that were eligible for review included studies that examined NP provision of nutrition counseling in addition to other health-promoting activities such as physical activity, making it difficult to determine if the reported clinical outcomes were related to nutrition counseling alone. In addition, the articles meeting the inclusion criteria were primarily non-randomized quantitative studies and lacked the rigor needed to provide evidence for the effectiveness of the interventions. However, this integrative review highlighted the need to better understand the NPs' experience providing nutrition counseling in clinical practice. The results of this integrative review revealed little about NPs' training, practices, attitudes, and self-efficacy related to nutrition counseling. An updated understanding of how NPs are prepared by graduate nursing programs, including behavioral skills used to facilitate behavioral change, could help guide potential future

modifications to NP graduate curricula. In addition, improved understanding of the NPs' practices, attitudes, and self-efficacy could help determine barriers and facilitators to nutrition counseling so they can be addressed in future interventions. In-depth qualitative interviews with NPs may provide integral information by identifying the practical implications of meeting the demands for nutrition counseling in primary care. This information can be used to develop educational interventions for NPs that have potentially significant implications for patient care and may positively impact patients' dietary practices, thus supporting the need for the qualitative descriptive study conducted by the author as described in Manuscript Two and Three.

Manuscript Two presented the results of the primary aim of the author's qualitative descriptive study. The findings from this study suggest that although NPs understand the importance of providing nutrition counseling in primary care practice and provide it in some capacity, the implementation of nutrition counseling is limited by a multitude of barriers. Given the importance of nutrition counseling in adult primary care practice, it is crucial that NPs are prepared to provide effective nutrition counseling. Future research studies may be designed to evaluate ways to enhance preparedness for nutrition counseling among NPs. Researchers should aim to find a standardized approach to educate NPs either through enhancing graduate nursing curricula or through opportunities outside of formal NP education. Furthermore, this study highlighted the importance of the inclusion of MI, or other behavior change skills, in nutrition education. Patients' lack of motivation to change was a commonly cited barrier and participants found it difficult to facilitate behavior change during short and often complex primary care visits. This finding suggests a need for further research that explores the efficacy of behavior change skills training to enhance provider self-efficacy and improve patient outcomes.

Future research studies may also be designed to assess specific resources and tools to aid in nutrition counseling. This study demonstrated that mHealth apps, which NPs have reported using in clinical practice, complement patient care and facilitate health promoting activities, such as diet modification (Mueller, 2020). mHealth apps have been shown to improve dietary behaviors, such as increased consumption of vegetables, and improved health outcomes such as better weight control (DiFilippo et al., 2015; Schoeppe et al., 2016). Unfortunately, mHealth apps are not used consistently in NP clinical practice. Improving the dissemination and implementation of additional resources that can complement NP delivery of nutrition counseling and potentially improve patient motivation, are needed.

Several participants in this study cited time as system-level barriers to nutrition counseling. There is a need for time saving strategies with nutrition counseling and the employment of reliable and valid tools may help minimize this barrier. A few participants cited lack of reimbursement as another system-level barrier. While most participants stated they were aware of the reimbursement codes related to nutrition counseling, providers may benefit from better awareness of existing reimbursement strategies.

Lastly, this study found that emotional experiences related to nutrition reportedly influenced provider preparedness for nutrition counseling and played a role in patients' dietary choices. Participants' personal experiences with dietary practices, which were emotional at times, enhanced their self-efficacy and positively impacted their delivery of nutrition counseling. It is imperative that NPs understand how the emotional aspect of nutrition can impact their own biases in addition to patients' dietary behaviors, such as patients' use of food as a coping mechanism in response to anger or stress. NPs can adequately address these issues in practice by

determining best practices with communication style, such as communicating with non-judgmental tones and making sure their patients feel heard when discussing nutrition.

Manuscript Three presented the results of the secondary aim of the author's qualitative descriptive study. The findings from this study add to the limited body of knowledge on how the SARS-CoV-2 pandemic has affected nutrition counseling in NP clinical practice. Participants reported that in-person primary care visits decreased significantly after the onset of the pandemic. As a result, participants transitioned to telehealth visits. Participants reported many strengths and limitations of telehealth, but overall felt that telehealth would play an important role in nutrition counseling in primary care. Telehealth reportedly improves access to care and has been shown to be effective in modifying dietary behaviors (Kelly et al., 2016; Kruse et al., 2017). Successful behavioral modification requires multiple interactions between the patient and NP. As such, telehealth has the potential to be a practical and efficient platform for delivery of nutrition counseling. Future studies should assess best practices for telehealth implementation among primary care NPs to enhance nutrition counseling in adult patients.

The SARS-CoV-2 pandemic has had a significant negative impact on dietary habits and patient outcomes highlighting the need for nutrition counseling in primary care (Mason et al., 2021; Pellegrini et al., 2020; Zachary et al., 2020). Nutrition counseling in the primary care setting has the potential to impact positive clinical outcomes (DeNicola et al., 2020; Kelly et al., 2016; Kruse et al., 2017; Ward et al., 2015). It is crucial that providers understand how the pandemic has affected lifestyles and dietary behavior so they can adequately address these issues in clinical practice. It is also important to address some of the reported limitations of telehealth noted in this study, such as its negative effect on the patient-provider relationship. An improved

understanding of how to best utilize telehealth in the context of the patient-provider relationship may help to mitigate this limitation.

Overall, these studies add to the limited literature on NPs' provision of nutrition counseling in the primary care setting by providing an in-depth and comprehensive understanding of NPs' attitudes, educational experiences, self-efficacy, and practices related to nutrition counseling, including the delivery of nutrition counseling during the SARS-CoV-2 pandemic. The results of these studies provide direction for expanded research that includes determining a guideline for best practices through dissemination and implementation of a nutrition education intervention. Interventions may include educating NPs to deliver nutrition counseling, either through enhancing graduate nursing curricula or through opportunities outside of formal NP education. A standardized approach to nutrition education has the potential to impact effective delivery of nutrition counseling. Given the importance of the inclusion of MI, or other behavior change skills, in nutrition education, next steps may include the development and evaluation of an intervention that aims to enhance provider behavior change skills with MI and the impact on patient-centered outcomes. Telehealth may be a valuable platform for delivery of this intervention considering its efficiency and time constraints on providers.

In conclusion, the importance of nutrition counseling in NP practice cannot be understated. It is imperative that interventions aimed at improving the delivery of nutrition counseling by NPs be developed and tested to establish best practice guidelines. Effective implementation of nutrition counseling could impact patients' dietary practices and improve clinical outcomes such as reduced weight and lower total cholesterol, which are responsible for the development of a number of chronic conditions. As diet-related diseases continue to increase

in the U.S., it is imperative that NPs take on a greater role in prevention and management of these diseases through the provision of nutrition counseling.

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