APPLICATION OF THE SOCIAL DETERMINANTS OF HEALTH TO GERIATRIC PATIENTS BY NURSE PRACTITIONER STUDENTS

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APPLICATION OF THE SOCIAL DETERMINANTS OF HEALTH
TO GERIATRIC PATIENTS BY NURSE
PRACTITIONER STUDENTS

by

Theresa G. Schnable MS, RN, CNE

A Dissertation submitted to the Faculty of the Graduate School,
Marquette University,
in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy

Milwaukee, Wisconsin

December, 2023
ABSTRACT
APPLICATION OF THE SOCIAL DETERMINANTS OF HEALTH TO GERIATRIC PATIENTS BY NURSE PRACTITIONER STUDENTS

Theresa G. Schnable, MS, RN, CNE

Marquette University, 2023

Patient outcomes are influenced by the social determinants of health (SDOH), which influence differing exposures to opportunities or health risks. Holistic care of geriatric patients includes considering SDOH in patient assessment, diagnosis, and care delivery. Understanding how NP students care for geriatric patients using a SDOH lens provides insight into their practice behaviors and helps educators understand how to strengthen NP programs to achieve better patient outcomes and advance health equity for the geriatric population. The purpose of this study was to describe how NP students conceptualize SDOH for geriatric patients, explore NP student comfort in asking about patient SDOH as part of their assessment, and to describe how NP students apply their knowledge of SDOH to their assessment and plan of care for geriatric patients.

This study utilized a multi-method descriptive approach with both qualitative and quantitative methods within three separate study arms. Participants included family nurse practitioners (FNP) and adult gerontology primary care nurse practitioners (AGPCNP) in their last clinical practicum who took care of geriatric patients in an outpatient setting. Qualitative and quantitative data was collected from study participants in the form of survey responses, debriefing sessions, and care management plans.

The findings of this study revealed that NP students could identify SDOH associated with geriatric patients. They were most comfortable asking about, and most frequently identified, considered, and incorporated SDOH of social support, transportation, and access to care into the plan of care of geriatric patients. NP students were least comfortable asking about, and least frequently identified, considered, and incorporated SDOH of discrimination, civic participation, and crime and violence into the plan of care of geriatric patients. Identification and interventions by NP students were limited to the most common SDOH.

This study contributes to the understanding of the transfer of knowledge about SDOH to the clinical practice of NP students when caring for geriatric patients. This study informs nurse educators on how to strengthen NP programs to teach SDOH and practical SDOH mitigation interventions in the plan of care for geriatric patients.
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CHAPTER I
INTRODUCTION

Introduction

The social determinants of health (SDOH) influence differing exposures to opportunities or health risks. Healthy People 2030 establishes national objectives to improve overall health and well-being health organized through a social determinants of health framework (Office of Disease Prevention and Health Promotion, [ODPHP], n.d.-a). Five key domains, including economic stability, social and community context, education access and quality, healthcare access and quality, and neighborhood and built environment help to understand how social and structural factors impact individual and population health.

SDOH affect well-being and quality of life over the lifespan, and geriatric patients, who are older adults aged 65 years and older, have unique physical and social concerns associated with aging. Nurse practitioners (NPs) provide holistic clinical care for patients across the lifespan, including older adults. Therefore, it is important for NPs in practice to consider SDOH in patient assessment, diagnosis, and care delivery.

Nursing education has an opportunity and responsibility to prepare NP students to incorporate SDOH into their clinical care. However, more knowledge is needed to understand how NP students understand and apply SDOH to their care of geriatric patients. Investigation into this topic will provide insight into NP student behavior areas of focus for NP educators. Chapter One includes the following sections: (a) the background of the study, (b) statement of the problem, (c) purpose and research
questions, (d) significance of the study, (e) theoretical framework and substruction, (f) terminology, and (g) assumptions.

**Background of the Study**

The nursing profession has been concerned with holistic care and social justice since its inception (Thornton, 2019; Thurman & Pfitzinger-Lippe, 2017). Holistic nursing is focused on the care of the whole person, including physiological, psychological, sociological, emotional, relational, and spiritual well-being, which are all impacted by one’s environment (Thornton, 2019). The earliest reports of nursing from the time of Florence Nightingale include concern with the social conditions and structures that impacted health as a priority concern and advocating for improved social systems, and nurses’ caring roles in many settings put them in a position to address and advocate for the holistic needs of every patient (Thurman & Pfitzinger-Lippe, 2017).

SDOH are “the conditions in the environments where people are born, live, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (ODPHP, n.d.-c, para. 1). Healthy People organized SDOH into five overarching domains including economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context. Healthy People utilizes this social determinant of health framework to direct national objectives to advance health equity (ODPHP, n.d.-a). *Health equity* means achieving the highest level of health for everyone by focusing on valuing all people, addressing injustices, and eliminating disparities in health and health care (ODPHP, n.d.-a).
By 2030, over one-fifth of the U.S. population will be older than 65 years of age (Forum, 2020; Vespa et al., 2020). While SDOH affect people throughout the lifespan, they impact the ability of older populations staying healthy as the age (ODPHP, n.d.-d). For example, the health of geriatric adults is impacted by the availability of resources like grocery stores, health care services, transportation, safety, social support, discrimination, poverty, and literacy. Older adults may also be affected by climate change (WHO, 2021), availability and condition of sidewalks, accessible housing, or exposure to toxins.

The National League for Nursing (NLN) called for SDOH to be incorporated across nursing curricula for both graduate and undergraduate nursing programs (NLN, 2019), and similar recommendations have been proposed by the National Organization for Nurse Practitioner Faculties (NONPF, 2013). Nurse practitioners (NPs) are master’s or doctorly prepared registered nurses, trained to function as independent practitioners in the treatment and diagnosis of specific populations (American Association of Nurse Practitioners, 2023). Family nurse practitioners (FNP) and adult-gerontology primary care nurse practitioners (AGPCNP) care for geriatric patients, or older adults aged 65 years and older in primary care settings. FNP and AGPCNP are certified to practice following the conclusion of an education program of study and successful completion of a certification exam (Peacock et al., 2022). All programs of study must meet education requirements according to the specific NP role and population foci (National Task Force on Quality Nurse Practitioner Education [NTF], 2022).

NPs care for patients across the lifespan including older adults who may experience vulnerability in the healthcare system. WHO defined vulnerability as “the degree to which a population, individual, or organization is unable to anticipate, cope
with, resist and recover from the impacts of disasters” (Wisner et al., 2002, p. 5). It added that examples of vulnerable groups may be children, pregnant women, elderly people, and people who are immunocompromised, malnourished, or live in poverty due to the high disease burden they face in an emergency (Commission on SDOH, 2008).

**Statement of the Problem**

Although the need for nurses to demonstrate holistic healthcare delivery is widely acknowledged, the concepts of SDOH and health equity are not yet consistently integrated into nursing education at all levels (National Academies of Science, Engineering, and Medicine [NASEM], 2021; Colburn, 2022) nor is competence assessed. There are extensive descriptions of educational strategies reported, such as curricular changes, service learning, clinical rotations, simulations, or class projects, used to teach SDOH to future healthcare professionals (Adams, 2021; Allen et al., 2019; Altman et al., 2021; Amerson, 2019; Bagdan, 2018; Bell & Buelow, 2014; Bishop et al., 2021; Bower et al., 2021; Brown et al., 2021; Cantey et al., 2016; Clark, 2022; Debrew et al., 2020; Decker et al., 2017; Dimaano & Spigner, 2017; Doobay-Persaud et al., 2019; Ea et al., 2023; Ezeonwu, 2019; Gorman, 2018; Granger, 2014; Hager et al., 2019; Hekel et al., 2023; Janeway et al., 2020; Jenerette et al., 2021; Lebo, 2023; Lesselroth et al., 2021; McKinley Yoder & Pesch, 2020; Myers et al., 2018; Pollio et al., 2023; Porter et al., 2020; Pullium, 2020; Quinn et al., 2019; Reid & Evanson, 2016; Riley et al., 2020; Ruiz, 2020; Schroeder, 2019; Sisler et al., 2019; Thornton & Persaud, 2018; Villarruel et al., 2014; Voss, 2018; Whisenant et al., 2020; Woolsey & Narruhn, 2018, 2020; Zappas et al., 2021; Zomorodi et al., 2018). However, the literature inconsistently describes the application of these strategies to student practice, particularly in FNP and AGPCNP
education (Bryant-Moore et al., 2018; Buys & Somerall, 2018; Coppa & Barcelos Winchester, 2020; Davis et al., 2021). While care of vulnerable patients and SDOH are likely included in NP program curricula, it is not clear how students apply this knowledge to patient care.

**Purpose of the Study**

The aims of this study are to first describe how NP students conceptualize SDOH for geriatric patients, and second, to explore their comfort in asking about SDOH as part of their patient assessment. A third aim is to describe how NP students apply their knowledge of SDOH and findings from their assessment into their plan of care for geriatric patients.

**Research Questions**

The specific research questions for this study are:

1. Do NP students identify at least two SDOH associated with geriatric patients during a clinic visit?
   
   \[ \text{H0:} \text{NP students do not identify at least two SDOH associated with geriatric patients.} \]

2. What information do NP students seek and consider about SDOH in a clinic visit with geriatric clients?

3. How do NP students describe or demonstrate applying SDOH into their plan of care for geriatric patients during a clinic visit?

4. How do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit?
**Significance of the Study**

Social determinants influence all aspects of the human experience, while health and wellness are closely associated with social conditions and structures. NPs are concerned with the holistic health of patients, and so it is important to understand how NP students address SDOH when taking care of geriatric patients. Outcomes of the care experience could be markedly different if SDOH are not thought about when determining a patient plan of care. Addressing SDOH from a holistic lens impacts the health care of geriatric patients but is dependent on NP comfort with asking about SDOH and having solutions or resources to act upon new information provided from patients. Therefore, this research is significant because it will guide educational programs in the planning and assessment of curriculum and educational strategies in the training of NP students.

**Theoretical Framework and Substruction**

This study aligns with *A Framework for Educating Health Professionals to Address the Social Determinants of Health* published by the National Academies of Science, Engineering, and Medicine (NASEM, 2016). The study model (Figure 1) is adapted from the original framework which describes a vision for an educational structure to engage healthcare workers in systems-level action to address the social determinants of health. The essential components to the education of healthcare professionals when teaching about the SDOH are identified as transformative learning, dynamic partnerships, and lifelong learning. Transformative learning compels a greater understanding of the complexities between health and health systems and dynamic partnerships encourage mutual learning and problem solving (NASEM, 2016). The
adaptation only focuses on the educational aspect, one of the three components, because this study population includes only students, not certified practitioners.

In the original framework, transformative learning is constructed around the three domains of education, community, and organization, with each a corner of the visual triangle. Within these three largest domains, nine components further describe aspects of each domain, but may apply to any of the domains. In this adapted model, lifelong learning moves from the center of the triangle, into the middle of the concentric circles and speaks to the relationship between initial education and lifelong learning required of healthcare workers. Components within the education domain of the original framework and the adapted concentric circle model include learning that is experiential, integrated, and collaborative which informs integration into practice (NASEM, 2016).

Both the original framework and the adapted model fit within a larger conceptual model which seeks to educate healthcare providers and develop a competent workforce that can address the social determinants of health (NASEM, 2016). This larger conceptual model illustrates the social, political, and economic structures that influence the health of populations. Through education, healthcare professionals including NPs, collaborate with these systems to improve health outcomes and reduce health inequities. NASEM’s original framework of lifelong learning by healthcare professionals using transformative learning approaches is situated at the center of the larger conceptual model as an intermediary determinant of health (NASEM, 2016).

This adapted model informs this research study. The purpose for teaching SDOH in NP education is so that practicing NPs use a SDOH lens when addressing patient health issues and concerns. Transformative educational experiences, such as experiential
learning, collaborative learning, and the integrated curriculum, in addition to lifelong learning and continuing professional development, must be implemented into provider practice to affect patient outcomes.

Studying NP students in their final clinical practicum provides an opportunity to explore how their training in SDOH is applied to their clinical practice. Following exposure and learning about the educational concepts of SDOH, one aspiration for NPs in clinical practice is the demonstration of their knowledge and application to clinical care to improve patient outcomes. This fits within another framework which evaluates training programs, called the New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2021). While the Adapted Educating Healthcare Professionals to Address the Social Determinants of Health model provides a structure for planning educational experiences to teach SDOH to healthcare professionals, the Kirkpatrick model provides a structure for evaluating educational experiences.
Figure 1

Adapted Educating Healthcare Professionals to Address the Social Determinants of Health Model


The four levels of the New World Kirkpatrick Model include 1) Reaction, 2) Learning, 3) Behavior, and 4) Results (Kirkpatrick & Kirkpatrick, 2021). The Reaction
Level is the degree to which participants find the training engaging and applicable. The Learning Level describes the acquisition of knowledge, attitudes, skills, and confidence. The application of the training falls within the Behavior Level. And finally, the Results Level measures indicators and outcomes. This study will evaluate NP students at Level 2 Learning and Level 3 Behavior, or knowledge of SDOH and actions through application of SDOH, respectively. The Kirkpatrick model has been used to evaluate the integration of SDOH in nursing curriculum (Muirhead et al., 2022) and the outcomes of virtual reality and screen-based simulations in nursing and health care education (Phillips et al., 2023).

**Substruction Model**

Theory substruction ensures congruence between theoretical and operational aspects of a study and includes the constructs, concepts, variables, and indicators (McQuiston & Campbell, 1997). In the theory substruction of this study, the construct is the social determinants of health (SDOH) of the geriatric population in NP education (Figure 2). The concepts are comprised of the proficiency to incorporate SDOH into the four domains of nurse practitioner education, or assessment, diagnosis, treatment, and evaluation. The variables include knowledge of SDOH, comfort with SDOH, and the likelihood of incorporating SDOH. These variables can be measured both quantitatively and qualitatively through surveys, debriefing, and demonstration in the management plan.
Definition of Terms

Throughout this paper, the following terms are used with the assumed definitions:

**Adult Gerontology Nurse Practitioner.** Advanced practice registered nurse (APRN) that cares for adult patients from young adulthood to older adulthood.

**Clinical Practicum.** Practical hands-on application of coursework content under the supervision of skilled licensed practitioner who is a clinical teacher or preceptor.

**Clinical Simulation.** Educational strategy that imitates real life clinical patient encounters for training purposes (INACSL Standards Committee, 2016).

**Family Nurse Practitioner.** APRN that cares for patients across the lifespan.

**Geriatric Adult.** Adult 65 years of age or older. Alternate term **Older Adult.**
Health. A “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2005, p. 1)

Social Determinants of Health. The “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (ODPHP, n.d.-c, para. 1).

Assumptions

This study has a couple of assumptions. First, it is assumed the content around SDOH, health disparities, and health equity is taught in FNP and AGPCNP graduate programs. Second, it is assumed that the FNP and AGPCNP students in the study care for patients who are 65 years of age or older in their final clinical practicums.

Conclusion

The social determinants of health (SDOH) influence differing exposures to opportunities or health risks over the lifetime. Older adults have unique physical and social concerns associated with aging, and SDOH impact well-being and quality of life in this population. NPs provide holistic clinical care for patients across the lifespan, including older adults. Therefore, it is important they consider SDOH in patient assessment, diagnosis, and care delivery. Nursing education must prepare NP students to incorporate SDOH into clinical care. Describing how NP students conceptualize and incorporate social and structural factors of geriatric patients provides insight for nursing educators teaching in NP programs. This paper is divided into five chapters. Chapter One included (a) the background of the study, (b) statement of the problem, (c) purpose and research questions, (d) significance of the study, (e) theoretical framework and
substruction, (f) terminology, and (g) assumptions. Chapter Two discusses a review of
literature describing the social determinants of health, healthcare considerations of the
geriatric population, FNP and AGPCNP education, and educational strategies for
teaching about SDOH. Chapter Three describes the methods of this study. Chapter Four
describes the results of the study, while Chapter Five discusses implications for the
practice of nursing education.
CHAPTER II
LITERATURE REVIEW

Introduction

Nurse practitioners (NPs) provide clinical care for patients across the lifespan. With the growing geriatric population, the supply of healthcare providers who are trained in the care of geriatric patients does not meet the demand (Institute of Medicine [IOM], 2008; Rowe et al., 2016). Patient outcomes are influenced by the social determinants of health (SDOH), which cause differing exposures to opportunities and health risks. To advance health equity for the geriatric population, efforts must be made to improve professional training and knowledge so NPs will incorporate SDOH into the patient management plan in the clinical setting. Chapter Two includes a review of the literature organized into the following concepts: (a) the social determinants of health, (b) health considerations for the geriatric population, (c) calls to action, (d) nurse practitioner education, (e) the intersection of nurse practitioner education, the social determinants of health, and quality care for geriatric patients, (f) a unifying framework to educate healthcare professionals, (g) educational strategies in healthcare education, and (h) research methods.

The Social Determinants of Health

The social determinants of health are the “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (Office of Disease Prevention and Health Promotion [ODPHP], n.d.-c, para. 1). Healthy People 2030 organizes SDOH into five domains: economic stability, education, social and community
context, health and health care, and neighborhood and built environment (ODPHP, n.d.-c). Healthy People 2020 initially described a place-based framework in terms of both physical and social determinants and attributed underlying factors to each domain (Secretary’s Advisory Committee [Secretary], 2010). First, economic stability includes employment, food insecurity, housing instability, and poverty, while education describes early childhood education and development opportunities, high school graduation, enrollment in higher education, and language and literacy. The social and community context includes civic participation, discrimination, incarceration, and social cohesion. Health and health care includes access to health care in general, access to primary care, and health literacy. And finally, neighborhood and built environment includes access to food that supports healthy eating patterns, crime and violence, environmental conditions, and the quality of housing.

SDOH affect all people and can have both protective and undesirable influences on health (National Academies of Sciences, Engineering, and Medicine [NASEM], 2019; 2021). Awareness of social factors on health has improved dramatically since the year 2000, as evidenced by the marked increase in the number of publications available in health-related journals (NASEM, 2019). Since social context influences the delivery of healthcare services, focusing on social risk factors improves treatment of illness. When discussing the social determinants, health equity can be accomplished by improving social conditions and reducing social risk factors. Social care is provided by addressing community-level social conditions and individual-level social needs (NASEM, 2019; 2021).
Health Considerations for the Geriatric Population

The geriatric population in the United States has a variety of health considerations. By 2030, 21 percent of the U.S. population will be older than 65 years of age (Forum, 2020; Vespa et al., 2020). This population is increasingly racially and ethnically diverse, and by 2060 is projected to be 55 percent non-Hispanic White, 13 percent non-Hispanic Black, eight percent non-Hispanic Asian, with the fastest growth to 21 percent Hispanic of any race (Forum, 2020).

The growing geriatric population requires a large amount of nursing care and chronic care management in the U.S. (Forum, 2020; Institute of Medicine [IOM], 2008). There has been a significant increase of three or more diagnosed chronic conditions in the aging population (Everette et al., 2015), while most older adults have at least one chronic condition (Administration on Aging [AOA], 2022). In 2018, chronic diseases were the six leading causes of mortality for adults aged 65 and older in the U.S. (Forum, 2020), with some leading chronic conditions being arthritis, coronary heart disease, hypertension, myocardial infarction, cancer, and diabetes (AOA, 2022). African American older adults have higher rates of chronic diseases and disability than non-Hispanic older White adults (Wallace, 2015). Older adults with multiple chronic conditions require care coordination (McGilton et al., 2018). As the population of adults 65 years and over increases, there will be a need for skilled nursing care for 2.3 million people by 2030 and about 3 million people by 2060 according to US census data (Mather et al., 2015).

In addition to chronic diseases, age-related functional impairments impact independence and quality of life (Everette et al., 2015). Eighteen to 22% of older adults
report functional limitations in at least one area of vision, hearing, mobility, communication, cognition, or self-care (AOA, 2022; Forum, 2020). Functional disability, common in geriatric patients, can be determined by both physical impairments and contextual factors like social support, economic stability, or environment, which can lead to health decline (Colón-Emeric et al., 2014). Although many health conditions, such as diabetes mellitus, neurologic disorders, affective disorders, or dementia may contribute to functional disability, the extent of the person’s impairments and corresponding limitations, will determine the impact on their independence. Impairments may include cognitive changes, mood, sensory deficits, pain, adverse effects from medications, or gait issues.

Ten to 14 percent of adults 65 and older report clinically depressive symptoms which can also impact functional limitations, physical health, and dementia (Forum, 2020). In older adults, social isolation and loneliness are harmful to physical and mental health (Courtin & Knapp, 2017), and older adults with low incomes have a higher risk of experiencing loneliness (Pooler & Srinivasan, 2018). Social isolation and loneliness can increase the risk for chronic conditions, like depression and cardiovascular disease, and death (Courtin & Knapp, 2015; LaBorde & Williams, 2022; Pooler & Srinivasan, 2018).

In 2020, the medium individual income of older adults was $26,668 (AOA, 2022). While fewer older adults reported income below the poverty level between 1974 and 2018, increased age is associated with higher rates of poverty (Forum, 2020). Fourteen percent of people 85 years and older live in poverty, while nine percent of people aged 65-74 live in poverty. In 2020, 6.8% of the older non-Hispanic White population lived below the poverty line, as compared to 17.2% of older African
Americans, 16.6% of older Hispanic population of any race, and 11.5% of older Asian Americans (AOA, 2022). Additionally, more older women (10.1%) lived in poverty than older men (7.6%).

Income and economic stability can affect food security, housing, and chronic health condition management. Of older adults included in a national survey by the American Association of Retired Persons (AARP), almost 17 percent reported having trouble paying bills, while almost 23 percent of adults over 65 in a low-income household experienced food insecurity (Pooler & Srinivasan, 2018). As a further complication, food insecurity and housing instability are associated with lower medication adherence (Wilder et al., 2021).

In 2017, approximately 39 percent of older renter and owner households experienced housing cost burden, or housing and utility costs that exceeded 30 percent of income (Forum, 2020). While a goal of many older adults is to age in place, about 23 percent of older adults who participated in an AARP national survey were moderately or very concerned about making modifications to their homes so that they could continue to live in them (Pooler & Srinivasan, 2018). In this same survey, more than 20 percent of older adults reported being moderately or very concerned about having adequate transportation for appointments and/or social events, being able to shop for food, or being able to prepare meals for themselves.

While these factors are important considerations for health care providers, the training and competence for those who take care of older adults is inadequate (IOM, 2008; Rowe et al., 2016). Despite the recognized need for more gerontology content across healthcare education programs, curricula limitations remain due to lack of faculty,
funding, and pressure for time (Bardach & Rowles, 2012; IOM, 2008). In addition to professional healthcare providers, direct-care workers such as home health aides, nurse aides, and personal aides provide a large part of their care to older adults but receive minimal training in this area (IOM, 2008).

On top of inadequate training, the future healthcare workforce will be insufficient to meet the demands for older adults (IOM, 2008). Few medical students, nurses, and pharmacists are certified in gerontology, and workforce gaps limit care options for older adults (Everette et al., 2015). Projections estimate that between 2018 and 2030, the primary care workforce including physicians, NPs, and physician assistants trained in geriatrics will decrease in number by 8% but demand will increase by 50% (Health Resources and Services Administration, 2022). Although medical fellows in geriatric programs remains consistent, the number is insufficient to meet national goals, and similar shortages exist in the fields of nursing, social work, and other healthcare providers (Rowe et al., 2016).

Caring for the health needs of geriatric adults is also complicated by other concerns such as technology and medical information access and care coordination (McGilton et al., 2018). With the rapid move to electronic medical records and virtual visits, there is a digital divide, or a lack of information and communication technology skills and use by older adults (Mubarak & Suomi, 2022). Older age, lower levels of education, lower income, and membership in a minority group predict lower computer ownership, internet access, and use of digital health-related information (Tappen et al., 2022). Older adults utilize more healthcare services than younger persons, including prescription use, nursing home use, office visits, emergency services, and hospital stays,
however, the lack of coordination by providers during transitions between healthcare environments can lead to the risk of duplicated or forgotten services, treatment clashes, or stress for older adults (IOM, 2008).

While adults 65 years of age and older qualify for Medicare insurance, access issues to healthcare still exist within the program (Centers for Medicare & Medicaid Services [CMS], 2015). Denial of prior authorizations for services, human and system errors, and billing process confusion add burden to Medicare Advantage recipients (American Hospital Association, 2022; CMS, 2015; Office of Inspector General, 2022). However, the Centers for Medicare and Medicaid now recognize the impact of social factors on health. Medicare beneficiaries, including adults aged 65 and older and individual with disabilities, may use a Medicare Advantage (MA) plan (America’s Health Insurance Plans [AHIP], 2021). Medicare Advantage Organizations are required to offer benefits to help with food, transportation, and housing (CMS, 2023). Supplemental MA benefits may include in-home support services, home delivery of prescription medications, groceries, and other essential supplies, transportation, and services to provide social support (AHIP, 2021).

**Calls To Action**

The social determinants of health are a priority health focus of national and international organizations (National League of Nursing [NLN], 2019). In 2008, the World Health Organization’s Commission for Social Determinants of Health called for action on SDOH to achieve health equity around the world (Commission on SDOH, 2008). The Commission proposed three actions to close the health gap in one generation: (1) improve living conditions, (2) solve the inequitable distribution of power, money, and
resources, and (3) set up research and monitoring of health inequity and impact of actions. The Healthy People 2020 framework emphasized an ecological and determinants approach to health through interventions focused on social and physical factors at multiple levels (Secretary, 2010). Healthy People 2030 expanded on lessons from the previous 50 years of Healthy People, reiterating the goals to “eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all” and “create social, physical, and economic environments that promote attaining full potential for health and well-being for all” (ODPHP, n.d.-b, para. 3).

Taking these calls to action into consideration, the National League for Nursing (NLN) published their position statement *A Vision for Integration of the Social Determinants of Health into Nursing Education Curricula* (2019). While the SDOH are often taught in community and public health courses in nursing education, the NLN urges that these concepts be taught throughout the curricula of both graduate and undergraduate nursing programs. Incorporating SDOH into nursing education leads to the actualization of nursing professional values and commitment to health equity and social justice in practice. The NLN statement calls on faculty and leadership in nursing programs to foster community partnerships to expose students to the SDOH, thread evidence-based strategies throughout nursing courses in a variety of settings, facilitate faculty and staff discussions to address bias and improve understanding of SDOH impact on wellness, and support research that explores student understanding of SDOH and patient outcomes (NLN, 2019).

The updated American Association of Colleges of Nursing (AACN) *Essentials* include Social Determinants of Health as a featured concept that “serves as a core
component of knowledge, facts, and skills across multiple situations and contexts within nursing practice” (AACN, 2021, p. 12). Therefore, within the organizing model, SDOH are integrated throughout learning activities as a foundational concept. According to the AACN (2021), nursing competencies such as assessment, health promotion, and patient teaching while recognizing SDOH improve patient outcomes.

Despite guidelines from nursing organizations, the concepts of SDOH, population health, and health equity are not yet well integrated into prelicensure and graduate nursing programs (NASEM, 2021; Colburn, 2022). The report *The Future of Nursing: 2020-2030* created a framework to describe the nurse’s role in working towards health and healthcare equity (NASEM, 2021). In this framework, the preparedness of nurses in the next decade is strengthened through education. The report recommends the following domains for nursing education which must be integrated throughout nursing curricula: health equity and health care equity; social determinants of health; social needs; social justice; racism, ageism, classism, sexism; implicit bias, ethics, population health, environmental health; disasters and public health emergencies; and nurse well-being. Transformational change in nursing education will require development opportunities for faculty as well (Sumpter et al., 2022).

**Nurse Practitioner Education**

Nurse practitioners (NPs) are master’s or doctorly prepared registered nurses (Peacock et al., 2022), and are trained to function as independent practitioners (National Organization of Nurse Practitioner Faculties [NONPF], 2022). NP programs provide specialized education in one of six population foci, including family or individuals across the lifespan, neonatal, pediatrics, women’s health, adult-gerontology, or psych/mental
health (APRN Consensus Work Group & National Council of State Boards of Nursing APRN Advisory Committee [APRN Consensus], 2008). NP programs prepare graduates for certification in at least one population foci role and to meet eligibility requirements in at least one state (National Task Force on Quality Nurse Practitioner Education [NTF], 2022).

Family nurse practitioners (FNPs) are trained to take care of individuals and families across the lifespan, in a role which conceptually aligns with the Family Medicine Specialty, or physicians trained in and dedicated to primary care for patients of all ages (American Academy of Family Physicians, 2020). FNPs provide care for acute and chronic illnesses to individuals and families across the life span (Peacock et al., 2022). The adult-gerontology primary care NP (AGPCNP) stems from geriatric medicine which focuses on “health promotion, prevention, and diagnosis and treatment of disease and disability in older adults” (American Medical Association [AMA], 2023). AGPCNPs provide preventative, acute, and chronic illness care to patients from adolescence to older adulthood (Peacock et al., 2022).

There is a set of core competencies for all NPs, and further population-specific competencies for FNPs and AGPCNPs (Peacock et al., 2022). All NP curricula must meet national standards for APRN education and the specific NP role and population foci (NTF, 2022; Peacock et al, 2022). The AACN Essentials, The Nurse Practitioner Core Competencies, NONPF/AACN Family/Across the Lifespan NP Competencies, and the Adult-Gerontology NP Competencies serve to guide curricular planning for FNP and AGPCNP education programs (AACN, 2021; NONPF, 2013; 2017; NONPF/AACN, 2016). APRN core content includes graduate level courses in advanced physiology and
pathophysiology, advanced health assessment, and advanced pharmacology (APRN Consensus, 2008; NTF, 2022).

In addition to didactic content, all NP programs require supervised direct patient care clinical hours and must be distributed to meet competencies according to their populations (NTF, 2022). Direct patient care clinical hours are those in which “direct clinical care is provided to individuals, families, and groups in one of the six population-focused areas of NP practice and in primary care or acute care as appropriate” (NTF, 2022, p. 20). Initially, clinical simulation in all NP programs was only to be used to enhance direct patient care clinical hours and could not be counted as clinical hours above the minimum 500 hours (NTF, 2016). Since then, the National Task Force on Quality Nurse Practitioner Education increased their requirement to 750 direct patient care clinical hours, not including clinical simulation hours (NTF, 2022).

Simulation is an educational strategy that mimics real life situations (INACSL Standards Committee, 2016). Clinical simulation is used as an active learning experience in some NP programs. Simulation experiences should support competencies set by the AACN and NONPF and should always include a planned debrief using a theoretical framework or evidence-based models (INACSL Standards Committee et al., 2021; Lioce et al., 2020). One such debriefing method utilized in this study was called Debriefing for Meaningful Learning© (DML). DML is a debriefing method used in simulation and clinical settings with both prelicensure and graduate nursing students to encourage reflective thinking by learners after patient encounters (Dreifuerst, 2015). Through guided reflection by trained facilitators, learners are led through six phases including engaging, exploring, explaining, elaborating, evaluating, and extending. Using Socratic
questions, facilitators encourage the development of clinical reasoning and transfer of learning from one situation to the next during debrief of simulation experiences.

Following completion of a program of study, NP graduates are eligible to sit for a national certification exam according to their population of focus (Peacock, 2022). The FNP certification exam tests the examinee’s knowledge and ability in the population focus of family and individuals across the lifespan, including prenatal, pediatric, adolescent, adult, and geriatric primary care clinical knowledge in the domains of assessment, diagnosis, clinical management, and professional role (American Academy of Nurse Practitioners Certification Boards [AANPCB], 2022; American Nurses Credentialing Center [ANCC], 2018). The AGPCNP certification exam tests the examinee’s clinical knowledge of assessment, diagnosis, plan, and evaluation of patients from minors and young adults to older adults (AANPCB, 2023).

Both FNPs and AGPCNPs are competent and specialized in taking care of geriatric patients. Their knowledge and ability build on the NP competencies to care for the health needs of older adults (NONPF/AACN, 2016). To demonstrate just a few examples of their population foci competencies, FNP and AGPCNP curriculum must have content related to the geriatric population which include the functional assessment; signs and symptoms of mental status changes such as dementia; assessment of decisional capacity for older adults; education about preventative care and end-of-life issues; consideration of finances; and respect for the dignity of all humans despite their social identities (NONPF, 2013; NONPF/AACN, 2016).

NONPF also recommends including curricular content in FNP programs such as the relationship between health issues and social issues, like poverty, literacy, or
violence, and the impact of psychosocial factors on patient illness (NONPF, 2013). And the AANPCB certification exams for FNPs and AGPCNPs include the evidence-informed practice of the SDOH as a knowledge area (AACNPB, 2023; Peacock, 2022). However, SDOH content is not well integrated across undergraduate or graduate nursing programs (NASEM, 2021; Colburn, 2022). While there is not a centralized database to thoroughly investigate curricular activities across all nursing programs (NASEM, 2021), a few of the strategies used by individual NP programs are described in the literature (Bryant-Moore et al., 2018; Buys & Somerall, 2018; Coppa & Barcelos Winchester, 2020; Davis et al., 2021; Myers et al., 2018; Sisler et al., 2019) and will be discussed later in this chapter.

The Intersection of Nurse Practitioner Education, the Social Determinants of Health, and Quality Care for Geriatric Patients

The nurse practitioner has the opportunity to impact health inequities, health outcomes, and health delivery through NP interventions (Davis & Chapa, 2015). NPs can influence health outcomes by considering risks and exposures, ensuring health promotion plans take into account the impact of SDOH, and reducing the barriers to health programs, such as fees and transportation (Davis & Chapa, 2015). Providers can also promote equity in primary healthcare services, work to improve community partnerships, and use experience and evidence-based practice to lead social change (Andermann, 2016).

NPs affect health care delivery at the patient level by incorporating the ‘new SOAP note’, which includes a history inclusive of income, occupation, housing, food, transportation, and social support, a plan considering the SDOH, and referring patients to
community and government support services based on social needs (Andermann, 2016; 2018; Davis & Chapa, 2015). This attention to the social determinants has been referred to as formulating a social diagnosis and social prescribing (Andermann, 2016; 2018). Healthcare providers that specifically ask about patients’ social challenges report helping their patients more than those that do not (Naz et al., 2016).

As an example of NP interventions at the clinical or downstream level, NPs should incorporate concerns about climate change-related health complications during all aspects of the geriatric patient encounter, from asking the appropriate questions during the health history, like access to air conditioning or recent travel, to utilizing this information in the examination, differential diagnosis, treatment, and follow up (Nicholas et al., 2020). While the geriatric population may experience decreased ability for physiological adaptation, social and geographic factors may increase their risk for exposure to climate concerns. Climate stressors, such as higher temperatures, more intense storms and weather, air pollution, and exposure to infectious diseases aggravate both respiratory and cardiac diseases and pose acute concerns for the geriatric population (Nicholas et al., 2020).

People with disabilities, especially those over age 65, experience barriers to healthcare services due to system and environmental issues, transportation challenges, provider knowledge deficits, and financial limitations (Marrocco & Krouse, 2017). Basic competencies related to disabilities should be included in NP education. The NP can act as advocate and innovator by incorporating obstacles reduction strategies for geriatric patients with disabilities into their plan of care (Marrocco & Krouse, 2017). When evaluating a new disability in older adults, the provider should consider health conditions,
impairments, and contextual factors when making recommendations and plan interventions, such as the need for environmental modifications, assistive devices, additional help with medications, or help with daily activities (Colón-Emeric et al., 2014).

Primary care providers, such as NPs, deliver mental health treatment in primary care settings, and therefore, Grando and colleagues (2023) described a course to teach FNP students how to deliver culturally sensitive mental health services. As social isolation and loneliness is a concern for older adults, it is critical that NPs assess this risk and provide appropriate interventions (LaBorde & Williams, 2022). They should make appropriate physical health referrals and utilize social prescribing to connect patients with community resources and activities to improve social interaction and cohesion.

In addition to these patient-level interventions, NPs also impact structural determinants and policy, or upstream factors, by using patients’ experience to explain to policy makers how race/ethnicity, housing, and education all influence health (Davis & Chapa, 2015). The American Academy of Nursing (AAN) recently expanded its policy priorities on the social determinants of health from individuals, families, communities, and populations to include planetary health (Kuehnert et al., 2022). Planetary health refers to the human impacts on Earth’s systems which in turn affects our well-being (Kuehnert et al., 2022). To address the special needs of the geriatric population, policymaking is needed around caregiver workforce, care coordination, and prevention or wellness activities such as patient education, screening, nutrition, and physical activity (Everette et al., 2015). Nursing actions as policy must be directed at upstream, midstream, and downstream intervention levels affecting economic stability, education
access and quality, healthcare access and quality, neighborhood and built environment, social and community context, and planetary conditions (Kuehnert et al., 2022)

Gaps in education for providers of older adult populations have the potential to exacerbate further health disparities in patients with increasingly specialized needs. McNelis and colleagues (2021) conducted a survey of newly graduated FNP students from programs across the U.S. to understand their experiences in clinical education. The online survey asked students to describe the type and frequencies of direct patient care activities they had during their FNP program. Direct patient care tasks, as defined by the National Task Force on Quality Nurse Practitioner Education (2016), were broken down into categories based upon the 2011 ANCC Role delineation study (ANCC, 2012) which was used to create the ANCC NP certification exam.

Many participants reported infrequent to no experience with recommended clinical tasks while caring for older adults during their clinical education (McNelis et al., 2021). Direct patient care activities infrequently practiced never or one-to-two times by FNP students in clinical education settings included performing a mental health assessment, performing age-appropriate screenings, ordering diagnostic tests, performing primary care procedures, prescribing medications, and evaluating treatment and educational outcomes related to chronic pain (McNelis et al., 2021). Lack of experience in the care of geriatric patients, could exacerbate health disparities when interconnecting social, environmental, cultural, and economic factors are not taken into consideration.

A Unifying Framework to Educate Healthcare Professionals

Utilizing a handful of published frameworks to understand and address SDOH, the National Academies of Science, Engineering, and Medicine (NASEM) developed a
unifying framework (2016). The framework, which informs this research study, identifies transformative learning, dynamic partnerships, and lifelong learning as essential components to the education of healthcare professionals. Transformative learning, a foundational aspect of this framework, moves the learner to a greater understanding of the complex nature of health and health systems. Dynamic partnerships between a variety of stakeholders including healthcare workers, non-healthcare workers, policy makers, community members, and educators are required to learn from one another and solve problems in new ways. Informal and formal education is structured around the value for and commitment to lifelong learning (NASEM, 2016).

**Educational Strategies in Healthcare Education**

To understand current educational strategies used in healthcare education to teach students the social determinants of health, a literature search was performed in the following manner. A literature review was completed using the PRISMA guidelines with some modifications to track and evaluate articles, as illustrated in Figure 3 (Page et al., 2021). The databases of CINAHL, ERIC, MEDLINE, and PSYCH INFO were searched using the MeSH search term “social determinants of health”, “nursing education”, and “medical student education”. Criteria for inclusion were (a) written in the English Language (b) published between the years of 2013 and 2023, (c) published in a peer reviewed journal, (d) limited to the United States due to education, regulation, accreditation, and certifying bodies, and (e) discussed interventions to teach healthcare students the social determinants of health.

Forty-eight articles were selected to describe the teaching of social determinants of health in health professions education (Appendix A). Search terms initially yielded
494 articles, with two additional articles found by other sources. Citations were screened for relevance, duplicates were deleted, and articles were only kept according to the inclusion criteria. Of the 48 articles included in the literature review, educational strategies used in healthcare education involved curricular projects, service learning, clinical placement, simulation, interprofessional education (IPE), and educator training considerations.

The extant literature includes published interventions used in education to address the social determinants of health with students of various healthcare professions. Many healthcare education programs describe modifications to nursing curricula to include population health, SDOH, and health disparities content in their didactic courses using historical narrative and biography (Adams, 2021; Dimaano & Spigner, 2017), SDOH projects (Ezeonwu, 2019), virtual workshop (Lesselroth et al., 2021), case studies (Altman et al., 2021; Granger, 2014; Hekel et al., 2023), or coursework modules (Riley et al. 2020; Woolsey & Narruhn, 2018; 2020). Others have described SDOH concept-threading through educational activities across programs (Ea et al., 2023; Myers et al., 2018; Porter et al., 2020; Quinn et al., 2019; Ruiz, 2020). Nonetheless, as presented in the NASEM framework, health professionals require transformative learning opportunities to gain the knowledge and competencies to address the social determinants of health (NASEM, 2016). The education domain of the NASEM framework includes experiential learning, collaborative learning, integrated curriculum, and continuing professional development. Educational interventions for future healthcare providers found in the literature will be described within this organizing framework.
A few articles described the use of structural competency as a framework for approaching the teaching of SDOH (Sisler et al., 2019; Woolsey & Narruhn, 2018; 2020). Structural competency is the trained ability to recognize how clinical symptoms,
attitudes, or diseases, are also consequences of systemic policies contributing to social and economic disparities, biases, and inequities (Metzl & Hansen, 2014). Therefore, this framework moves away from understanding health based on culture, instead moving toward identification of inequities based on social identities such as race, ethnicity, social class, religion, gender, or sexual orientation (Metzl & Hansen, 2014).

Woolsey & Narruhn (2018) incorporated the framework of structural competency into a social justice course for advanced practice and advanced public health graduate nursing students. Through discussion, the course content included the effects of structural factors on individuals, populations, and professional nursing practice. Quantitative and qualitative student evaluations found that class content helped students understand how inequities in health and health care delivery develop, though they wanted more concrete solutions to address these inequities during patient encounters.

Likewise, the concepts of structural competency were taught to Doctor of Nursing Practice (DNP) students through a 3-hour module embedded into a didactic course (Woolsey & Narruhn, 2020). Using a mixed methods design, qualitative and quantitative data collected by a survey instrument revealed that students gained the knowledge of structural terms and were able to identify structural effects on patient health. However, this strategy did not significantly change DNP students’ sense of empowerment or ability to affect patient care change.

**Experiential learning**

Learners have an opportunity to challenge their own beliefs, assumptions, and biases through experience and reflection (NASEM, 2016). Though short-term or single experiential learning activities may be valuable, the National Academies recommends a
broader approach, incorporating interprofessional education, community-engaged learning, and health outcomes research (NASEM, 2016). Subcomponents of experiential learning include applied learning, community engagement, and performance assessment. Applied learning is distinguished from volunteering due to its emphasis on mutual learning by all involved persons. Community engagement speaks to mutually beneficial relationships of healthcare training programs and communities. And third, performance assessment requires the demonstration of clear competencies for transformational learning (NASEM, 2016).

**Service Learning.** One example of applied learning, which emphasizes education while interacting with people, is service learning (SL) (NASEM, 2016). Many SL opportunities to teach future healthcare students about the social determinants of health have been documented in the literature (Allen et al., 2019; Bell & Buelow, 2014; Bower et al., 2021; Brown et al., 2021; Bryant-Moore et al., 2018; Doobay-Persaud et al., 2019; Janeway et al., 2020; Schroeder et al., 2019; Voss, 2018; Whisenant et al., 2020; Zomorodi et al., 2018). SL examples included service at non-profitable organizations such as schools (Allen et al., 2019; Schroeder et al., 2019), safety net clinics (Bell & Buelow, 2014), rural community organizations (Bryant-Moore et al., 2018), housing shelters (Schroeder et al., 2019), or neighborhoods and households (Whisenant et al., 2020; Zomorodi et al., 2018).

In one program, graduate nursing students engaged in focus groups, community assessment, and best-practice research around the effects of school consolidation in rural communities (Bryant-Moore et al., 2018). Through this project, students reflected on their understanding of health disparities and the SDOH, connecting on how education,
long bus rides, and external factors shaped the health of their clients in rural communities. In another article, students reported ‘eye opening’ experiences through directly seeing the SDOH factors at play in people’s lives and the ability to relate it to their future profession (Brown et al., 2021). SL opportunities offer students an opportunity outside of clinical practicums to explore the relationship between social structures and social needs and how this may impact the health of the people they will work with in their future healthcare profession.

While SL experiences are often in community-based organizations, medical students from one program participated in SL experiences in a hospital providing education to surgical patients about their conditions and postoperative care considerations. Students concurrently received didactic information about screening for and addressing social needs and barriers. Pretest-posttest data demonstrated a significant increase in self-assessed SDOH knowledge, understanding about the population, and confidence (Janeway et al., 2020). Following a flipped classroom course redesign in which nursing students spent 2-4 hours per week at a SL community site, students also reported a self-assessed increase in knowledge and confidence in addressing patient SDOH (Schroeder et al., 2019). Not only can SL experiences improve student healthcare professional knowledge about SDOH and social needs, but they can improve student confidence in taking action to address social needs in their future roles with patients.

Voss (2018) used the framework of emancipatory knowing, in which students learn to challenge social and structural issues and advocate for social justice, for service-learning in an undergraduate nursing program. Following a service-learning experience and reflection, nursing students expressed emancipatory knowing in an interpretive
analysis as gaining understanding, critique, uncovering new truths, creative processes, and personal knowing (Voss, 2018). Another article utilized critical service learning (CSL), which builds on SL to intentionally work towards social change, power redistribution, partnership development, and deeper reflection, across a Master of Science (MSN)/ Master of Public Health (MPH) curriculum (Bower et al., 2021). Through CSL, students were able to discuss institutional and social conditions and their connections to the health of clients at their service sites. Service-learning can be used as a strategy to teach about SDOH, health inequities, and social justice issues, as well as a pedagogical tool to affect change through reflection.

**Clinical Rotations.** Whereas service learning usually involves non-career specific volunteering or service, clinical rotations allow students the opportunity to apply professional clinical skills with human patients supervised by an instructor or preceptor. Some healthcare education programs have designed clinical rotations to expose their students to the complex social realities of patients in the community, such as in mobile clinics (Bishop et al., 2021); correctional facilities (Gorman, 2018); community health centers, homeless shelters, home care, or local agencies (Clark, 2022; Decker et al., 2017; Pullium, 2020; Ruiz, 2020; Villarruel et al., 2014); and health centers in academic and clinical partnerships (Coppa & Barcelos Winchester, 2020). One medical school offered a clinical elective with online modules focused on medical care in non-traditional settings, like shelters or under overpasses (Bishop et al., 2021). Students learned about compassionate communication, rapport-building, community resources, and the relationship between social and medical needs. In another program, nursing students
assessed food insecurity, housing safety, and ability to pay for medications while walking and talking with the clients at a clinical site (Pullium, 2020).

In a nursing program, prelicensure students worked with substance use disorder treatment groups, veterans, and GED completion programs at a correctional facility as a clinical component of a public health course. Students journaled about their experiences in the jail and reflected on institutionalized racism, the causes of SDOH, and implicit bias (Gorman, 2018). Similarly, as part of a SDOH concept-based curriculum design change, Decker and colleagues (2017) described 3rd and 4th year nursing students engaged in community health clinical experiences. The 3rd year students spent their community health clinical at a homeless day shelter, while 4th year students dispersed to specialized and individual sites, such as a medical clinic, home health care and home hospice, schools, urgent care, or a camp for adults with disabilities. After the clinical experience, the 3rd year students reported a positive change in attitude towards people with insufficient resources, and the 4th year, students were able to explain the social determinants of health (Decker et al., 2017).

Villarruel and colleagues (2014) described a clinical experience exemplar to educate providers about the influence of the social determinants on health disparities. Students were paired with NPs working with persons who were unhoused, uninsured, or underinsured. Working outside of traditional clinics, NP students interacted with patients in the community and learned to address medical concerns complicated by social concerns like insurance or access issues, unstable housing, income instability, or safety concerns. Similarly, Coppa & Barcelos Winchester (2020) described the creation and use of academic-clinical partnerships (ACP) to improve primary healthcare NP education.
Their educational intervention created settings for the application of community classroom concepts, such as SDOH and cultural competence, for FNP and adult-gerontology nurse practitioner students. The ACPs created a dual academic role for NP faculty providing mutual benefit for both clinical agencies and educational programs. Clinical settings included health care facilities, homeless shelters, school, and home settings within the ACPs. Following clinical rotations at ACPs, student mastery of SDOH concepts was assessed through competency-based evaluation using a clinical evaluation tool. There was a significant improvement in evaluation scores between midterm and the end of the clinical (Coppa & Barcelos Winchester, 2020).

**Simulations.** Many programs use poverty simulations to introduce students to the important health determinant of income instability (Amerson, 2019; Bell & Buelow, 2014; Davis et al., 2021; Debrew et al., 2020; Decker et al., 2017; Jenerette et al., 2021; Reid & Evanson, 2016; Zomorodi et al., 2018). Following participation in poverty simulations, students reported that they had a realistic understanding of the stressors brought on by the need to balance financial priorities, as well as a better understanding of community resources (Reid & Evanson, 2016). Some nursing students reported a change in attitude following the simulation and planned to change their own nursing practice (Debrew et al, 2020), while the use of a tiered approach with pre-work activities prior to the simulation also reduced judgmental attitudes and improved student feelings of empowerment (Decker et al., 2017).

Clinical simulation has also been used as a SDOH educational strategy across multiple degree levels (Cantey et al., 2017; Jenerette et al., 2021; Lebo et al., 2023; Sisler et al., 2019). Student-developed low-fidelity simulations helped undergraduate nursing
students identify SDOH that affect patients and families around issues that they thought were most important (Cantey et al., 2017). One nursing program utilized telemedicine simulations to address sensitive topics like SDOH and implicit bias (Lebo et al., 2023). Participants reflected on their own bias and improved their understanding of barriers related to SDOH. One graduate program trained community adolescents as standardized patients to teach NP students about unmet pediatric needs through simulation (Sisler et al., 2019). NP students displayed discomfort in screening patients for the SDOH, creating care plans for social needs, and demonstrated a gap in knowledge about available resources. At the doctoral level, simulation was used to encourage PhD nursing students to challenge and address social conditions (Jenerette et al., 2021). These students reported a need to act following the social justice advocacy experience. Therefore, although students may feel discomfort in discussing SDOH with clients, simulation can produce feelings of empowerment to address the SDOH among nursing students.

Gamification. By incorporating game elements into content delivery, one undergraduate nursing program created a board game to teach SDOH, levels of prevention, and resiliency in an elective course (Pollio et al., 2023). As a game, this activity helped students to make critical thinking decisions while they worked with complicated patient scenarios realistic to the primary care setting. Student confidence increased in their understanding of the nursing role with the SDOH while enjoying the experience.

Study Abroad. Another program developed a global health certificate program to educate undergraduate students about the impact of SDOH on people’s lives (Amerson, 2019). This program included a final immersive study abroad course in Peru. The
program evaluation demonstrated high student satisfaction, and the student learning outcome of knowledge of social determinants of health was evaluated through written papers. Students were able to apply their new knowledge to solve health problems in their study abroad experience.

**Collaborative learning**

The overarching goal of collaborative learning is for students, communities, and health professionals to learn from and with each other (NASEM, 2016). Although there may be many different types of methods, collaborative learning may include problem or project-based learning in which learners are engaged and practice in real world contexts. Buys & Somerall (2018) described collaborative learning through the incorporation of screening tools and referral toolkits following an assessment of population needs. FNP students were assigned a project in which they completed a literature review about SDOH and a screening tool to be used in the clinical setting. They also developed information sheets with appropriate resources in the geographic area of their clinic site. In their clinical rotation, students worked with their preceptors to ensure appropriate screening and resource referrals. At the end of the semester, students completed another paper and presentation to describe their experience, referral counts and details, and overall reflection. Some preceptors worked with students to take out or add social questions to a screening tool, and some students also made providers aware of reimbursement for addressing SDOH. There was significant buy-in from many clinical sites which adopted the student referral sheets. Moreover, this project helped FNP students explore methods to practically address SDOH, and preceptors and clinics were able to teach and learn from the students as well.
**Integrated Curriculum**

As defined by the National Academies, the integrated curriculum refers to the delivery of educational opportunities through interprofessional education (IPE) (NASEM, 2016). Healthcare students are often taught within their professions, instead of through collaboration throughout their programs. Various authors described interprofessional collaborations of various healthcare students to teach SDOH and community health through service-learning (Allen et al., 2019; Whisenant et al., 2020; Zomorodi et al., 2018), case-based activities (Bell & Buelow, 2014; Hager et al., 2019), interprofessional partnerships (McKinley Yoder & Pesch, 2020), or workshops (Lesselroth et al., 2021). In one collaboration, healthcare students, such as nursing, health administration, community health, radiological sciences, speech and language pathology, respiratory therapy, or pre-medicine majors worked in interprofessional teams to complete case studies and community program projects within a patient advocacy course (Bell & Buelow, 2014). In another interprofessional activity, medical and pharmacy students worked together on a case study focused on the assessment of rural community health needs, SDOH, and opioid misuse (Hager et al., 2019). Students demonstrated a self-reported improvement in the ability to work in interprofessional teams with an enhanced understanding of the value of interprofessional collaboration and the role of SDOH in their future careers.

SDOH learning outcomes were enhanced through an IPE service-learning project involving school-based screenings by dental hygiene and nursing students (Allen et al., 2019). In this project, students from both programs learned from one another and demonstrated an understanding of potential social, cultural, and financial health barriers. Zomorodi and colleagues (2018) described another collaboration between a home care
agency and interprofessional healthcare students which focused on patient issues that may have led to rehospitalizations. Graduate student dyads from nursing, pharmacy, and occupational therapy programs made home visits with the agency, identifying patients who had multiple hospital visits in the last year, chronic illnesses, or 10 or more prescribed medications. Student dyads then identified barriers and potential risks for rehospitalization, and in some cases, made referrals for additional resources. Results from both qualitative and quantitative data demonstrated improved student comfort and ability with working with other members of the interprofessional team in addressing SDOH.

Whisenant and colleagues (2020) described an interprofessional SL experience where student teams from medicine, nursing, social work, and physician assistant programs worked with social workers to identify and address the SDOH and improve population health outcomes during visits to households in a selected community. SL experiences were also scaffolded with curricular content that reinforced topics around the SDOH domains, policy, and partnership using other strategies such as case studies, discussions, projects, lectures, and reflective writing content. Medical students self-reported in course evaluations the ability to identify the social factors that affect health, and an improved ability to collaborate in an interprofessional team. As a result, SL provided an active learning approach for practicing interprofessional collaboration in real world settings while also exploring how social factors affect the health and well-being of populations.

Lesselroth and colleagues (2021) created a workshop to teach structural and social determinants of health to medical and physician assistant students utilizing a Design Thinking (DT) framework. DT is a framework which uses empathy to find and solve
problems systematically. The workshop facilitated reflection upon personal practice in future healthcare professions and the impact of social needs on health. While participants found the content useful, 50% did not think they would use DT in their future practice.

Nursing students collaborated with a local fire department in an academic partnership (McKinley Yoder & Pesch, 2020). As a clinical placement in a clinical course, students worked with clients who had brief encounters with the fire department, but needed more resources than the paramedic firefighters could provide. The nursing students offered callers a home visit with follow up care and referrals. Through this patient encounter and clinical experience, nursing students collaborated with the fire department to prevent emergency calls through prevention, while gaining insight about client home environments and life experiences. These reported interprofessional education strategies provided healthcare professional students a variety of valuable experiences to increase their knowledge and understanding of the role of social factors in their patients’ health, as well as insight on behaviors and SDOH interventions which may be helpful for patients in their professional roles.

**Professional Development**

Finally, continuing professional development includes faculty development and interprofessional workplace learning (NASEM, 2016). Faculty, community members, and preceptors need to develop skills by engaging in education related to SDOH and curricular content to offer transformative learning experiences for students. In a SDOH-integrated curriculum, each faculty member must know how to apply the general concepts to their own setting, population, or content (Thornton & Persaud, 2018). Zappas and colleagues (2021) emphasized the need of nursing educators to also take part in
personal and professional development in the areas of cultural intelligence, racism, and facilitating difficult conversations to learn to speak out about social injustices, challenge stereotypes, and reduce systemic racism or discrimination in the academic setting.

Altman and colleagues (2021) recommended that nursing educators look at their own positionality in the classroom, including the relationship of their own social identities with systems of power and privilege.

Support from nursing leaders is needed for continuing education and implicit bias awareness at all levels of nursing to eliminate unconscious bias and its negative effects for patients (Stamps, 2021). Additionally nursing leaders must encourage growth of a diverse representation of nursing graduates and nursing faculty who wish to address the SDOH (Thornton & Persaud, 2018). To that end, Muirhead and colleagues (2022) proposed a model for evaluating SDOH integration into nursing education, practice, service, and scholarship utilizing the Kirkpatrick framework in which survey feedback served to inform curriculum development, faculty development, interprofessional collaboration, and community engagement.

Research Methods

Quantitative methods (Janeway et al., 2020; Lesselroth et al., 2021) and qualitative methods have been used to describe the outcomes of educational programs on understanding the SDOH (Allen et al., 2019; Bryant-Moore et al., 2018; Buys & Somerall, 2018; Debrew et al., 2020; Gorman, 2018; Myers et al., 2018; Schroeder et al., 2019; Sisler et al., 2019). Thirteen authors utilized mixed methods or a combination of both qualitative and quantitative data to evaluate SDOH educational interventions (Bagdan, 2018; Brown et al., 2021; Cantey et al., 2017; Clark, 2022; Coppa & Barcelos
Winchester, 2020; Decker et al., 2017; Pollio, et al., 2023; Voss, 2018; Woolsey & Narruhn, 2018; 2020; Zomorodi et al., 2018). Some quantitative survey tools have been developed to assess healthcare providers’ knowledge, likelihood, and comfort with the assessment of patient social determinants of health (Klein et al., 2011; Persaud, 2018; Phillips et al., 2020).

Surveys are usually used in non-experimental research designs to observe or record information about what is occurring in a population (Coates, 2004). They often gather data on activities, attitudes, and experiences. Surveys have been used to collect data in nursing and nursing education research (Coates, 2004; Coppa & Barcelos Winchester, 2020; Hager et al., 2019; Janeway et al., 2020; Lesselroth et al., 2021; Schroeder, 2019).

Social media has been used as a recruitment tool in nursing research (Bethel et al., 2021; Leighton, et al., 2021; McNelis et al., 2023). As a convenience and snowball sampling method, it allows participants to view recruitment materials and opt in if convenient to participate (Bethel et al., 2021; Leighton et al., 2021). Recruitment materials should use pictures or videos to grab interest and increase response rate (Bethel et al., 2021). As a newer recruitment method, researchers should be aware of potential ethical considerations in social media recruitment, such as privacy and investigator transparency (Benedict et al., 2019; Gelinas et al., 2018) and the potential for selection bias which could limit generalizability (Benedict et al., 2019).

Conclusion

The geriatric adult population has special healthcare needs related to their advanced age and the influence of social determinants. Because NPs provide care for
geriatric patients their educational preparation should include how to incorporate SDOH in their assessment and plan of care for this population. There have been many calls to action by nursing and health organizations to address these social and structural factors to advance health equity, yet the outcomes of these educational efforts are poorly understood and not well documented. Educational programs need to assess and evaluate their curricula for healthcare professionals associated with SDOH and determine how those efforts are applied by students in patient care. This chapter reviewed the literature associated with (a) the social determinants of health, (b) health considerations for the geriatric population, (c) calls to action, (d) nurse practitioner education, (e) the intersection of nurse practitioner education, the social determinants of health, and quality care for geriatric patients, (f) a unifying framework to educate healthcare professionals, (g) educational strategies in healthcare education, and (h) research methods. Chapter Three provides an overview of the study methodology.
CHAPTER III
METHODOLOGY

Introduction

The social determinants of health (SDOH) are the conditions in which people live that describe varying opportunities and risks impacting health and well-being (Office of Disease Prevention and Health Promotion [ODPHP], n.d.-c). Transformative educational experiences have been used in nurse practitioner (NP) programs to teach the SDOH (Bryant-Moore, et al., 2018; Buys & Somerall, 2018; Coppa & Barcelos Winchester, 2020; Sisler et al., 2019; Villaruel et al., 2014) which is important so that NPs in practice have the knowledge and ability to address patient health issues and concerns from a SDOH lens (NASEM, 2016). While the SDOH are taught in NP curricula, and NP students learn through clinical experiences in their programs, this study explored how the SDOH are applied by NP students into their assessment and plan of care in their final clinical practicum for geriatric patients during outpatient clinic visits as they prepare for transition to practice.

This study employed a descriptive, multi-methods design including participants who were students in their final practicum experiences in either a family nurse practitioner (FNP) or adult gerontology primary care nurse practitioner (AGPCNP) program. The first arm of this study was embedded into an existing research study (A. McNelis, personal communication, January 19, 2022) with FNP students using screen-based virtual simulation patients in their final practicum after completing 680 hours of traditional outpatient clinic visits. The second arm included FNP and AGPCNP students in their final practicum providing direct patient care to geriatric patients in outpatient
clinics, and the third arm included FNP and AGPCNP students in their final practicum providing direct patient care to geriatric patients recruited through social media. Chapter Three is organized into the following topics: (a) research design, b) aims and research questions, (c) participants, (d) instrumentation, (e) data collection, and (f) data analysis.

**Research Design**

This study used a multi-method descriptive approach with both qualitative and quantitative methods within separate study arms to better describe how NP students understand the social determinants of health (SDOH) and how they apply this knowledge to their assessment and plan of care for geriatric patients. It concurrently utilized separate recruitment, data collection, and qualitative and quantitative analysis approaches to describe the phenomena of study. Multi-method research, a term used broadly, means the use of two or more approaches to collect data within the same study to address the aims (Anguera et al., 2018; Brewer & Hunter, 1989; 2006; Hunter & Brewer, 2015). This could involve the use of two quantitative methodologies, two qualitative methodologies, or both a qualitative and quantitative approach. The terms mixed methods and multi-methods have often been used interchangeably, adding confusion and the blurring of these research strategies in the literature (Anguera et al., 2018). However, mixed methods research design involves both qualitative and quantitative approaches throughout the study, from the research questions and data collection to interpretation and recommendations, with the purpose to inform, converge, or triangulate the findings (Tashakkori & Teddlie, 2009), while integration is not required in multi-method research until inferences are made (Anguera et al, 2018; Johnson et al., 2007). Multi-methods or mixed methods approaches have been used in nursing education or social determinants of
health research (Irvine et al., 2020; McNelis, et al., 2014; Naz et al., 2016; Stewart, et al.,
2008; Tappen et al., 2022).

**Aims and Research Questions**

The aim of this study was to describe how NP students understand the social
determinants of health (SDOH) and how they apply this knowledge to their assessment
and plan of care for geriatric patients. It also explored NP student comfort asking
patient’s about SDOH as part of their assessment. Therefore, the specific research
questions for this study are:

1. Do NP students identify at least two SDOH associated with geriatric patients
during a clinic visit?
   
   $H_0$: NP students do not identify at least two SDOH associated with
   geriatric patients.

2. What information do NP students seek and consider about SDOH in a clinic visit
   with geriatric clients?

3. How do NP students describe or demonstrate applying SDOH into their plan of
care for geriatric patients during a clinic visit?

4. How do NP students describe their comfort with discussing the SDOH with their
   geriatric patients during a clinic visit?

**Participants**

This study employed nonprobability purposive sampling to include participants
that had the necessary characteristics and key insights to answer the research questions.
Three approaches, referred to as Study Arm 1, Study Arm 2, and Study Arm 3, were used
in this study to answer the research questions. The study plan was submitted to the
Institutional Review Board (IRB) at the researcher’s institution for exempt review because it involved minimal risk to participants (Appendix B). The participants and recruitment for each arm are described below.

**Study Arm One**

The sample for Study Arm 1 was recruited as part of a parent study that was seeking to understand FNP student mastery of the concepts of assessment, diagnosis, treatment, and evaluation across the lifespan using screen-based virtual simulation (A. McNelis, personal communication, January 19, 2022). The participants recruited from that study (N=31) included FNP students in their final clinical practicum experiences from one university in the United States during the summer of 2022 and spring of 2023. Inclusion criteria for participants were: 1) a graduate NP student in an FNP program at a single university in the US, (2) enrolled in their final clinical practicum experience, and (3) completed 680 hours of traditional precepted clinical experiences.

Participants were recruited to this study by the principal investigator of the parent study, who did not teach in the FNP program at the school of nursing. Prior to enrollment in the final clinical practicum, information about the study was distributed and posted on the course learning management system. At the beginning of the final clinical practicum, students were also contacted via email with the study information sheet and to answer any questions. Participants who enrolled in the parent study also agreed to participate in this study.

**Study Arm Two**

In Study Arm 2, study participants included NP students in their final practicum experiences from multiple universities with FNP and AGPCNP programs in the United
States. Inclusion criteria for participants were: 1) a graduate NP student in a family or adult-gerontology primary care program, 2) enrolled in an NP clinical with geriatric patients aged 65 years or older, and 3) in their final clinical practicum experience. Emails were sent to nursing administrators at nine schools of nursing with FNP and/or AGPCNP programs located in the Midwest to request permission to recruit students from their programs and seek information about their IRB process. The study plan was submitted to the IRBs of all participating colleges and universities for exempt review. Of the nine programs contacted, the recruitment request progressed through the administrator and IRB approvals at three schools of nursing for student participant recruitment.

Nursing faculty or administrators forwarded recruitment materials to eligible participants or posted them on their course learning management system during the spring 2023 semester. Recruitment materials included a 1-minute introduction video recording and an associated subject information sheet with a link to a Qualtrics survey. This Qualtrics survey included the agreement to participate, the creation of a unique participant identification number, and a Demographics Survey (Iteration 2) (Appendix C). Participants were offered an incentive of a $20 Amazon gift card if they completed all five of the weekly surveys. An email address was collected to send the weekly survey and incentives, and it was disconnected from study data. Seven FNP or AGPCNP students out of 86 students contacted from three schools of nursing agreed to participate in this arm of the study. Four of the seven who completed the consent responded to the surveys.

**Study Arm Three**

Study Arm 3 was designed for ease and wide distribution of a survey instrument and demographics questions, without collecting identifiable information. Participant
inclusion criteria were: 1) a graduate NP student in a family or adult-gerontology primary care program in the U.S., 2) enrolled in an NP clinical with geriatric patients aged 65 years or older, and 3) in their final clinical practicum experience. Participants were recruited to this portion of the study through snowball sampling on social media, by email, and by word of mouth (Appendix D). Snowball nonprobability convenience sampling was conducted by using social media to connect with individuals on social media platforms, such as LinkedIn, Twitter, Facebook, and Instagram. A flyer was created to quickly present the invite with the link and QR code, and an image was helpful in social media distribution to grab interest and increase visibility in social media algorithms. The researcher posted on personal social media sites and encouraged the sharing of the recruitment invitation and flyer among colleagues and contacts. Social media group sites were identified that may interest eligible nurse practitioner students, and while permission was requested from four site administrators to post the recruitment invite to their page, none responded to the request.

Then the recruitment invite was emailed to 300 program directors and NP track coordinators at 251 nursing schools with eligible FNP and AGPCNP programs across the U.S. A list of eligible programs was initially discovered through the American Association of Nurse Practitioners (AANP) website. The program list was used to search nursing school program websites for the email addresses of FNP and AGPCNP track coordinators or graduate school directors, depending on each nursing program leadership organization. Only some programs from the AANP list had easily identifiable coordinators or program directors and listed email addresses for faculty. The identified program director or coordinator email addresses were compiled and emailed the
recruitment invitation and survey link to forward on to eligible students in their programs. Sixty-eight participants completed the survey.

**Instrumentation**

Two instruments were used to collect data. The instruments were (1) a demographic survey and (2) the *NP Social Determinants of Health Plan of Care Survey*, developed by the researcher and given to NP student participants after they provided care to a human or virtual patient who was 65 years or older. The two instruments are described in further detail below.

**Demographic Data**

Three iterations of the demographic survey (Appendix C) were used to collect demographic data about study participants. In Study Arm 1, demographic data was collected about the NP student participants as part of the existing parent study. This data included age, gender, race, highest nursing degree, number of years of nursing practice and specialty areas, registered nurse certifications, clinical placement selection, commute to clinical site, and frequency of activities with specific populations during clinical rotations (A. McNelis, personal communication, January 19, 2022). The data was collected anonymously using a de-identified study participant number and uploaded into an Excel database.

In Study Arm 2, demographic data was collected as part of the consent process through a Qualtrics survey using a de-identified study participant number. The data included age, gender, race, state of clinical rotations, number of years of nursing practice, if the participant’s practice focused on geriatrics. In Study Arm 3, this same demographic data was collected anonymously as part of a single Qualtrics survey.
NP Social Determinants of Health Plan of Care Survey

The NP Social Determinants of Health Plan of Care Survey is a self-report survey developed for this study and used to assess the student NP proficiency in incorporating the SDOH into their assessment and the plan of care of geriatric patients. Additional variables in the survey include knowledge of the SDOH, likelihood of incorporating SDOH, and comfort with SDOH. Minor changes among three iterations of this tool were used to answer research questions according to differing methods.

A single validated instrument that measured the desired variables was not located through an extensive literature search. Therefore, a survey was developed by the researcher incorporating concepts from surveys which have been used to assess healthcare provider understanding or skills related to the SDOH. Specifically, the survey questions were inspired by ‘the Social Determinants of Health Assessment Survey’ in Phillips et al. (2020), which was adapted from Persaud (2018), as well as ‘Resident Attitudes and Comfort in Discussing Social Issues’ by Klein and colleagues (2011). Phillips and colleagues (2020) and Persaud (2018) described the use of a survey which investigated confidence, likelihood to ask, and perceived knowledge about the SDOH among practicing nurses. The 71-item and 39-item tools were adapted from Klein and colleagues (2011), who developed a survey to assess pediatric interns’ attitudes and comfort in addressing the SDOH following a curricular intervention. A second survey by Klein and colleagues (2011) assessed intern knowledge of social issues and community resources. While these established survey instruments were helpful, they did not study the same variables of interest, and were too long for feasibility to be used in this study. Therefore, a new 10-question draft was developed by the researcher for this study.
To test content validity, this new survey was critiqued and evaluated by four content experts. The 10-item survey took reviewers between 12 and 15 minutes to complete. Following feedback and discussion with the content experts, the survey was modified. The resulting *NP Social Determinants of Health Plan of Care Survey* included four items and utilizes Likert-type, yes-no, and short answer open-ended questions, and took respondents about 10 minutes to answer.

**Data Collection**

Multiple forms of data provided rich information to describe the participant experiences. These forms of data were collected from three separate research arms. The research design, participant groups, recruitment, and data collection procedures are explained below (Figure 4).

**Study Arm One**

Participants in Study Arm 1 completed the final 70 hours of their required 750 clinical hours using screen-based virtual simulation with I-Human Patients® (IHP) over five weeks. All participants received a unique 13-digit study identification code, according to the parent study protocol, which participants used to fill out the *Demographics (Iteration 1)* (Appendix C) at the beginning of the parent study.
**Figure 4**

*Research Design*

<table>
<thead>
<tr>
<th>ARM/ SAMPLE</th>
<th>DATA COLLECTION PROCEDURES</th>
<th>ANALYTIC PROCEDURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARM 1</strong></td>
<td>Survey x 5 (QUAN &amp; QUAL)</td>
<td>Quantitative descriptive statistics</td>
</tr>
<tr>
<td>FNP students in final practicum, screen-based clinic visits with geriatric clients 1 school of nursing</td>
<td>Written Management Plan (QUAN &amp; QUAL)</td>
<td>Qualitative descriptive</td>
</tr>
<tr>
<td></td>
<td>Debriefing (QUAL)</td>
<td></td>
</tr>
<tr>
<td><strong>ARM 2</strong></td>
<td>Survey x 5 (QUAN &amp; QUAL)</td>
<td>Quantitative descriptive statistics</td>
</tr>
<tr>
<td>FNP or AGPCNP students in final practicum, in-person clinic visits with geriatric clients 3 schools of nursing</td>
<td></td>
<td>Qualitative descriptive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ARM 3</strong></td>
<td>Survey x 1 (QUAN)</td>
<td>Quantitative descriptive statistics</td>
</tr>
<tr>
<td>FNP or AGPCNP students in final practicum, in-person clinic visits with geriatric clients schools of nursing across country</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Concurrent Descriptive Multi-Method Design**
During the virtual patient encounters in the IHP screen-based cases, participants determined a differential diagnosis, ordered labs and imaging, and wrote a management plan for each virtual patient. The written management plan was collected and analyzed as evidence of the participant documentation of actions around the social determinants. Then they completed The NP Social Determinants of Health Plan of Care Survey (Iteration 1) (Appendix E) which was embedded into the screen-based I-Human Patients® program following one virtual geriatric patient outpatient clinic encounter each week for the five weeks.

Following the screen-based virtual simulation cases each week, participants were debriefed in a group via teleconferencing technology using best practice standards (INACSL Standards Committee et al., 2021). Trained and experienced debriefers used the debriefing method Debriefing for Meaningful Learning© (DML) to facilitate reflection and clinical reasoning (Dreifuerst, 2015). While these sessions focused on decision-making in clinical and diagnostic reasoning, social factors were also discussed. Faculty debriefers were trained regarding the concepts of the SDOH, debriefing using DML, and particular debriefing prompts associated with the geriatric patients that NP students in Arm One cared for as a part of this study.

For the parent study, debriefing cases were pre-selected each week. Social factors that affected patient health and provider decision-making were specific debriefing prompts in the pre-selected geriatric patient debriefings during weeks one and two of the five-week data collection period. While the debriefings for weeks three, four, and five in the parent study did not specifically focus on geriatric patients, participants and faculty debriefers still discussed the SDOH and how participants applied what they had been
taught to all patients across the lifespan. Therefore, debriefings from weeks three, four and five were also included in data collection for discussion of social determinants or social needs assessments.

Faculty debriefers were provided with prompts based on participant responses from the *NP Social Determinants of Health Plan of Care Survey* to be used at the end of each debriefing session, and debriefers reflexively based subsequent follow up questions off student discussion. Such initial prompts included:

- What did you learn from this patient’s story that impacts their current and future health?

- How did this patient's social factors contribute to your management plan?

- How comfortable are you assessing socioeconomics or income as a social determinant of concern for this patient?

- How might it affect the patient's ability to follow your management plan?

Debriefing sessions were recorded and transcribed with identifiers removed for data analysis. Data collection for Study Arm 1 is illustrated in Figure 5.
**Study Arm 1 Data Collection**

**Note:** Survey\(^1\) = NP Social Determinants of Health Plan of Care Survey (Iteration 1)

**Study Arm Two**

Participants in Study Arm 2 continued in their regularly scheduled clinical practicum. Each week, they were emailed a Qualtrics survey link to their provided email address. They completed the 10-minute *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F) related to a single geriatric patient encounter they had during their traditional outpatient clinical rotations each week for 5 weeks using their cellphone, a tablet, or computer. Participants used their confidential study participant number to answer survey questions. They were not asked any identifying patient information and the survey did not violate HIPAA guidelines. Participants were asked to
complete the survey within two hours after they saw their last patient for the clinical day, so they remembered the details. If the participant did not care for a patient who was 65 years or older that week, they started the survey but indicated no patients met this criterion. To avoid leading the participant to answer in a certain way, the Qualtrics survey did not allow participants to go backwards once a question was answered. The data collection process for Study Arm 2 is illustrated in Figure 6.

**Figure 6**

*Study Arm 2 Data Collection*

Note: Survey² = NP Social Determinants of Health Plan of Care Survey (Iteration 2)

**Study Arm Three**

Participants in Study Arm 3 completed the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix G). It was modified to collect general self-report data about the care of geriatric patients from a broader candidate pool. This iteration asked similar questions to the original survey used in arms one and two, but also asked how NP students from FNP and AGPCNP programs more generally incorporated the social determinants of health into the care of their geriatric clients.

Because this iteration of the survey was distributed to a wider pool via email and social media, additional considerations were taken. The survey was accessed via a link or...
QR code from the email or flyer invite. Due to this wide distribution, there was a chance for internet bots to take this survey, and so a ReCAPTCHA verification was added to this Qualtrics survey to prevent bot responses. Two questions were added to this survey to assess eligibility: (1) Are you in your final clinical course practicum experience in a family nurse practitioner or adult-geriatric primary care nurse practitioner program in the United States? And (2) Do you take care of patients who are 65 years or older during your clinical course rotations/practicum experiences? If either question was answered as no, eligibility was not met, and the survey skipped to the end with a thank you response. Additionally, to decrease participant time and effort, the survey was combined with the demographic questions, which were found at the end of the survey. With all of these considerations, iteration 3 of the NP Social Determinants of Health Plan of Care Survey was anonymous, had 14-items, included demographic data questions, had one collection time point, and took participants about 5 minutes to complete.

Data Analysis

Data analysis was performed using descriptive statistics and qualitative description on each arm of the study. Quantitative data was inspected, cleaned, and analyzed using Statistical Program for the Social Sciences (IBM SPSS 28) (http://www.spss.com). Qualitative data was analyzed by content analysis using the data management software program NVivo 12. Following analysis of data from each arm, qualitative and quantitative data was compared. Table 1 describes the research question, data collection, and data analysis methods which were used to answer each research question.
Table 1

Data Analysis and Data Collection Methods to Answer Research Questions

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection</th>
<th>Data Analysis</th>
</tr>
</thead>
</table>
| 1. Do NP students identify at least two SDOH associated with geriatric patients during a clinic visit? | Study Arm 1  
- Survey¹ (N= 31)  
Study Arm 2  
- Survey² (N=4)  
Study Arm 3  
- Survey³ (N=68) | Survey responses grouped, frequencies counted, descriptive statistics. |
| 2. What information do NP students seek and consider about SDOH in a clinic visit with geriatric clients? | Study Arm 1  
- Survey¹ (N= 31)  
- Debriefing transcriptions  
Study Arm 2  
- Survey² (N=4)  
Study Arm 3  
- Survey³ (N=68) | Survey responses grouped, frequencies counted  
Content analysis of debriefing transcriptions |
| 3. How do NP students describe or demonstrate applying the SDOH into their plan of care for geriatric patients during a clinic visit? | Study Arm 1  
- Survey¹ (N= 31)  
- Management Plan in IHP  
- Debriefing transcriptions  
Study Arm 2  
- Survey² (N=4)  
Study Arm 3  
- Survey³ (N=68) | Survey responses and management plan responses grouped, frequencies counted  
Content analysis of debriefing transcriptions, grouped, frequencies counted |
| 4. How do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit? | Study Arm 1  
- Survey¹ (N= 31)  
- Debriefing transcriptions  
Study Arm 2  
- Survey² (N=4)  
Study Arm 3  
- Survey³ (N=68) | Likert survey responses, descriptive statistics, paired t-test  
Content analysis of debriefing transcriptions |

Note:  
Survey¹= NP Social Determinants of Health Plan of Care Survey (Iteration 1)  
Survey²= NP Social Determinants of Health Plan of Care Survey (Iteration 2)  
Survey³= NP Social Determinants of Health Plan of Care Survey (Iteration 3)
Research Question One

Research Question One asked, *do NP students identify at least two SDOH associated with geriatric patients during a clinic visit?* Research Question One assessed NP student training at Level 2- Learning using the New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2021). Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3.

**Study Arm One.** In Study Arm 1, Research Question One was answered using one item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 1)* (Appendix E). This item asked participants what are this patient’s social determinants of health? Survey item responses were grouped by similar responses and analyzed using frequencies and descriptive statistics.

**Study Arm Two.** In Study Arm 2, Research Question One was answered by using one item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F). This item asked participants what are this patient’s social determinants of health? Survey item responses were grouped and analyzed using frequencies and descriptive statistics.

**Study Arm Three.** In Study Arm 3, Research Question One was answered by using one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix G). This item asked participants to list examples of social determinants of health associated with clients aged 65 years and older. Survey item responses were grouped and analyzed using frequencies and descriptive statistics.
**Research Question Two**

Research Question Two asked, *what information do NP students seek and consider about SDOH in a clinic visit with geriatric patients?* Using the Kirkpatrick Model, Research Question Two assessed the training of NP students at Level 3 Behavior (Kirkpatrick & Kirkpatrick, 2021). Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3.

**Study Arm One.** In Study Arm 1, Research Question Two was answered by one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 1)* (Appendix E). This item asked participants which of the following [SDOH] did you ask about? Survey item responses were grouped and analyzed using frequencies. Additionally, this research question was answered through content analysis of the recorded debriefing transcriptions of screen-based simulation debriefings.

Recorded and transcribed debriefings were subjected to content analysis. Content analysis is a qualitative research approach which can be used to report findings from the data and has been used in nursing education (Vaismoradi et al., 2013; Elo & Kyngas, 2008). Content analysis describes data through the coding and interpretation of qualitative data and through the quantification of coded data (Vaismoradi et al., 2013). In this study, an inductive content analysis approach was used involving the three phases of preparation, organizing, and reporting (Elo & Kyngas, 2008). Transcriptions were generated automatically by Zoom videoconferencing software used to host debriefing sessions (https://zoom.us). The researcher listened to all recordings and verified or corrected the transcriptions, while mentally formulating initial themes. Verified transcripts were imported into NVivo 12.
for further analysis (https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home). Themes were chosen as the unit of analysis, using only manifest content from the transcriptions. While reading the transcripts, open coding was performed so that headings, initial codes, and ideas were created as nodes in NVivo. Nodes, or codes, were grouped and organized under similar or broader categories. Transcribed responses were re-read, reviewed, and interpreted, while codes were refined and abstracted through an iterative process. Finally, transcripts were reviewed again, re-coded, and the codebook was finalized and agreed upon by other members of the research team.

**Study Arm Two.** In Study Arm 2, Research Question Two was answered by two items from the *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F). The first item asked participants what did you learn from this patient’s story that impacts their current and future health? The second item asked participants which of the following [SDOH] did you ask about? Survey item responses were grouped and analyzed using frequencies.

**Study Arm Three.** In Study Arm 3, Research Question Two was answered with one item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix G). This item asked participants in a typical patient encounter, which of the following do you consistently ask your clients aged 65 years and older about? Survey item responses were grouped and analyzed using frequencies.

**Research Question Three**

Research Question Three asked, *how do NP students describe or demonstrate applying the SDOH into their plan of care for geriatric patients during a clinic visit?*
Research Question Three assessed the training of NP students at both Level 2 Learning and Level 3 Behavior of the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2021). Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3.

**Study Arm One.** In Study Arm 1, Research Question Three was answered using content analysis of patient management plans, debriefing sessions, and one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 1)* (Appendix E). The survey item asked participants to describe how they would incorporate the SDOH into the plan of care. Data from the written management plan in the I-Human Patients® program were grouped and counted. Content analysis of debriefing transcriptions was used to discover themes using the method previously described.

**Study Arm Two.** In Study Arm 2, Research Question Three was answered with one item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F). This item asked participants to describe how they incorporated the SDOH into their plan of care for their geriatric client. Survey item responses were grouped and analyzed using frequencies.

**Study Arm Three.** In Study Arm 3, Research Question Three was answered with one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix G). This item asked participants in a typical patient encounter with clients 65 years and older, which of the following do you consistently incorporate into their plan of care? Survey item responses were grouped and analyzed using frequencies.
**Research Question Four**

Research Question Four asked, *how do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit?* This question informs educational researchers on the potential facilitators and barriers to Level 3 Behaviors of the New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2021). Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3.

**Study Arm One.** In Study Arm 1, Research Question Four was answered using one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 1)* (Appendix E). This item asked participants for their degree of comfort in discussing the SDOH with geriatric patients using a four-point Likert scale with response anchors extremely uncomfortable, somewhat uncomfortable, somewhat comfortable, or extremely comfortable. Survey item responses were analyzed using descriptive statistics. This question was further answered using content analysis of the recorded transcriptions of screen-based simulation debriefings.

**Study Arm Two.** In Study Arm 2, Research Question Four was answered using one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F). This item asked participants their degree of comfort in discussing the SDOH with geriatric patients using a four-point Likert scale with response anchors extremely uncomfortable, somewhat uncomfortable, somewhat comfortable, or extremely comfortable. Survey item responses were analyzed using descriptive statistics.

**Study Arm Three.** In Study Arm 3, Research Question Four was answered using one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration*
3) (Appendix G). This item asked participants their degree of comfort in discussing the SDOH with geriatric patients using a four-point Likert scale with response anchors extremely uncomfortable, somewhat uncomfortable, somewhat comfortable, or extremely comfortable. Survey item responses were analyzed using descriptive statistics.

Conclusion

Chapter Three discussed (a) research design, (b) aims and research questions, (c) participants, (d) instrumentation, (e) data collection, and (f) data analysis of this descriptive multi-methods study. Participants were students in their final clinical practicum experiences who take care of patients aged 65 years or older from either a FNP or AGPCNP program in the U.S. This study employed both quantitative and qualitative data collection and data analysis methods to study how NP students implement the SDOH into the care of outpatient geriatric patients. Chapter Four will discuss the findings from this study.
CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

Introduction

This study’s purpose was to describe how family nurse practitioner (FNP) and adult gerontology primary care nurse practitioner (AGPCNP) students conceptualize social determinants of health (SDOH) for geriatric patients, to explore their comfort asking about patient SDOH as part of their assessment, and to describe how they apply their knowledge of SDOH to the plan of care for geriatric patients. This chapter presents the results of the data analysis of four research questions. The presentation of the results is arranged by research question and according to the study arm.

Sociodemographic information describes study participants. Descriptive statistics and qualitative description are reported for each study arm. Descriptive statistics and frequency counts were used to answer Research Question One: do NP students identify at least two SDOH associated with geriatric patients during a clinic visit? Descriptive statistics and qualitative description were used to answer Research Questions Two, Three, and Four: what information do NP students seek and consider about SDOH in a clinic visit with geriatric patients?, how do NP students describe or demonstrate applying the SDOH into their plan of care for geriatric patients during a clinic visit?, and how do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit?
Demographics

*Study Arm One*

Thirty-one participants consented to participate in the study and completed the NP Social Determinants of Health Plan of Care Survey (Iteration 1) (Appendix E). Most of the participants in this study arm were female (87.1%), White (58.1%), of non-Hispanic or Latino origin (93.5%), and completed clinical rotations in the South (64.5%). Participant ages ranged from 24 to 56, with an average age of 34 years old. Most participants had been in practice for 0-5 (41.9%) or 6-10 years (35.5%) not in a practice area focused on gerontology (80.6%). Demographic data results from participants (N=31) are described in Table 2.
Table 2

Sociodemographic Characteristics of Participants in Study Arm 1

<table>
<thead>
<tr>
<th>Sociodemographic Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>27</td>
<td>87.1</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>8</td>
<td>25.8</td>
</tr>
<tr>
<td>Black or African American</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>White</td>
<td>18</td>
<td>58.1</td>
</tr>
<tr>
<td>More than one race</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>Not Hispanic or Latino</td>
<td>29</td>
<td>93.5</td>
</tr>
<tr>
<td>Region where majority of clinical rotation completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>Northeast</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>South</td>
<td>20</td>
<td>64.5</td>
</tr>
<tr>
<td>West</td>
<td>6</td>
<td>28.6</td>
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<tr>
<td>Years of nursing practice, not including NP clinical rotation</td>
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<td></td>
</tr>
<tr>
<td>0-5</td>
<td>13</td>
<td>41.9</td>
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<td>6-10</td>
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<td>11-15</td>
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<td>6.5</td>
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</tr>
<tr>
<td>26-30</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>Nursing practice focused in gerontology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>19.4</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td>80.6</td>
</tr>
</tbody>
</table>

Note. N=31. Participant ages ranged from 24 to 56 with an average of 34.13 years old (SD= 9.05).

Study Arm Two

Initially seven participants were recruited from FNP or AGPCNP programs in their final clinical practicum consented to participate in Study Arm 2 via a Qualtrics survey. Four participants completed the NP Social Determinants of Health Plan of Care
Survey (Iteration 2) (Appendix F) but one did not provide any demographic data. Of those that did, most of the participants in this study arm were female (n=2), White (n=3), of non-Hispanic or Latino origin (n=3) and completed clinical rotations in the Midwest (n=3). Participant ages ranged from 25 to 30 with an average age of 27 years old. Half of participants (n=2) had been in practice for 0-5 years, not in a practice area focused on gerontology (n=2). Demographic data results from the four participants (N=4) are described in Table 3.

### Table 3

Sociodemographic Characteristics of Participants in Study Arm 2

<table>
<thead>
<tr>
<th>Sociodemographic Characteristic</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>Declined to answer</td>
<td>1</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>3</td>
</tr>
<tr>
<td>Declined to answer</td>
<td>1</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Not Hispanic or Latino</td>
<td>3</td>
</tr>
<tr>
<td>Declined to answer</td>
<td>1</td>
</tr>
<tr>
<td>Region where majority of clinical rotation completed</td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>3</td>
</tr>
<tr>
<td>Declined to answer</td>
<td>1</td>
</tr>
<tr>
<td>Years of nursing practice, not including NP clinical rotation</td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>2</td>
</tr>
<tr>
<td>6-10</td>
<td>1</td>
</tr>
<tr>
<td>Declined to Answer</td>
<td>1</td>
</tr>
<tr>
<td>Nursing practice focused on gerontology</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Declined to Answer</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. N=4. Participant ages ranged from 25 to 30 with an average of 27 years old ($SD = 2.65$).
**Study Arm Three**

Initially 106 participants recruited through social media sites and email accessed the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix G) which included demographic questions via the link to Qualtrics. However, 24 participants who started the survey were eliminated because they were not eligible. Additionally, 11 participants did not complete the survey, and the data from another three respondents was deleted as more than 20% of individual responses were missing. Of the remaining 68 respondents, most were female (82.4%), White (70.6%), and of non-Hispanic or Latino origin (83.8%). Participants completed their clinical rotations throughout all regions in the U.S., with the highest concentrations in the South (32.4%) and Northeast (35.3%). Participant ages ranged from 26 to 62, with an average age of 37.2 years old. Most had been in practice for 6-10 years (35.3%) or 0-5 years (29.4%) not in a practice area focused on gerontology (73.5%). Demographic data results from the sixty-eight participants (*N*=68) are described in Table 4.
Table 4

Sociodemographic Characteristics of Participants in Study Arm 3

<table>
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<tr>
<th>Sociodemographic Characteristic</th>
<th>N</th>
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<td></td>
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<tr>
<td>Female</td>
<td>56</td>
<td>82.4</td>
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<tr>
<td>Male</td>
<td>9</td>
<td>13.2</td>
</tr>
<tr>
<td>Genderqueer/ gender nonconforming neither exclusively male nor female</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Declined to answer</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Black or African American</td>
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<td>13.2</td>
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<tr>
<td>White</td>
<td>48</td>
<td>70.6</td>
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<tr>
<td>More than one race</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Unknown or preferred not to answer</td>
<td>3</td>
<td>4.4</td>
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<tr>
<td>Ethnicity</td>
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<td></td>
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<tr>
<td>Hispanic or Latino</td>
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<td>5.9</td>
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<tr>
<td>Not Hispanic or Latino</td>
<td>57</td>
<td>83.8</td>
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<td>Unknown or preferred not to answer</td>
<td>7</td>
<td>10.3</td>
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<tr>
<td>Region where majority of clinical rotation completed</td>
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<td></td>
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<td>Midwest</td>
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<td>Northeast</td>
<td>24</td>
<td>35.3</td>
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<tr>
<td>Pacific</td>
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<td>1.5</td>
</tr>
<tr>
<td>South</td>
<td>22</td>
<td>32.4</td>
</tr>
<tr>
<td>West</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>Declined to Answer</td>
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<td>1.5</td>
</tr>
<tr>
<td>Ontario, Canada&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>1.5</td>
</tr>
<tr>
<td>Years of nursing practice, not including NP clinical rotation</td>
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<td></td>
</tr>
<tr>
<td>0-5</td>
<td>20</td>
<td>29.4</td>
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<tr>
<td>6-10</td>
<td>24</td>
<td>35.3</td>
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<tr>
<td>11-15</td>
<td>11</td>
<td>16.2</td>
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<tr>
<td>16-20</td>
<td>4</td>
<td>5.9</td>
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<tr>
<td>21-25</td>
<td>4</td>
<td>5.9</td>
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<tr>
<td>26-30</td>
<td>2</td>
<td>2.9</td>
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<tr>
<td>31-35</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Declined to Answer</td>
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<td>2.9</td>
</tr>
<tr>
<td>Nursing practice focused on gerontology</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>26.5</td>
</tr>
<tr>
<td>No</td>
<td>50</td>
<td>73.5</td>
</tr>
</tbody>
</table>

*Note.* *N=*68. Ages ranged from 26 to 62 with an average of 37.2 years old (*SD* = 8.97)

<sup>a</sup>Reported by participant though attended educational program in the U.S.
Research Question One

Do NP students identify at least two SDOH associated with geriatric patients during a clinic visit? Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3. Results from each study arm are reported below.

Study Arm One

In Study Arm 1, Research Question One was answered using one item from the NP Social Determinants of Health Plan of Care Survey (Iteration 1) (Appendix E) which asked, what are this patient’s social determinants of health? In this open-ended question without prompts participants (N=31) identified about one SDOH each (M =1.10, Mdn=1.00, SD =1.16) during the first administration of the survey, and they identified two SDOH each (M =2.00, Mdn=2.00, SD=1.57) at the fifth administration of survey, with a range of 0 to 6 SDOH (Figure 7). Table 5 lists SDOH identified by participants following geriatric patient visits in screen-based clinic encounters and additionally demonstrates their understanding of SDOH. The most frequently identified SDOH by participants included health literacy, social support system, and transportation. Some participant responses do not follow the specific examples of social determinants as described by Healthy People 2030, such as age, mental status, or polypharmacy. However, these responses do reflect participants’ unprompted knowledge and understanding of SDOH.

A notable serendipitous finding was the change in number of SDOH identified by NP students between data collection points at the beginning of the study and the end of the study. A paired t test found a significant difference between the number of SDOH identified between survey administrations (MD =0.903, t(30) =2.96, p = 0.006, d=.053,
95% CI [-1.53, -0.28]). A post hoc power analysis was 0.82. A Wilcoxon signed rank test revealed a significant difference in the number of SDOH identified between Survey 1 and Survey 5 \( (N=31, Z=175, p = .008) \). This means that students identified more SDOH after the fifth survey administration \( (M=2) \) than after the first survey administration \( (M=1) \).

**Figure 7**

*Number of Social Determinants of Health for Geriatric Patients Identified by Participants over Five Survey Administrations in Study Arm 1*

*Note.* \( N=68 \). Wilcox Signed Rank Test \( (Z=175, p = .008) \).
Table 5

Social Determinants of Health for Geriatric Patients in Screen-Based Clinic Visits as Identified by Participants in Study Arm 1

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health literacy</td>
<td>28</td>
<td>18.1</td>
</tr>
<tr>
<td>Social support system</td>
<td>25</td>
<td>16.1</td>
</tr>
<tr>
<td>Transportation</td>
<td>20</td>
<td>12.9</td>
</tr>
<tr>
<td>Access to care</td>
<td>17</td>
<td>11.0</td>
</tr>
<tr>
<td>Housing situation</td>
<td>16</td>
<td>10.3</td>
</tr>
<tr>
<td>Age</td>
<td>14</td>
<td>9.0</td>
</tr>
<tr>
<td>Income</td>
<td>13</td>
<td>8.4</td>
</tr>
<tr>
<td>Living situation</td>
<td>13</td>
<td>8.4</td>
</tr>
<tr>
<td>Employment status</td>
<td>9</td>
<td>5.8</td>
</tr>
<tr>
<td>Economic stability</td>
<td>9</td>
<td>5.8</td>
</tr>
<tr>
<td>Insurance</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Lifestyle choices/ behaviors</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Level of education</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Access/medication regimen</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Race</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Ability to care for self</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Discrimination</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Civic participation</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Mental status (confusion, memory)</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Marital status</td>
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<td>1.3</td>
</tr>
<tr>
<td>Crime &amp; violence</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Safety</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Family history</td>
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<td>1.3</td>
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<tr>
<td>Health history</td>
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<td>0.6</td>
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<tr>
<td>Frequency of visits</td>
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<td>0.6</td>
</tr>
<tr>
<td>Polypharmacy</td>
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<tr>
<td>Weight loss</td>
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</tr>
<tr>
<td>Gender</td>
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<td>0.6</td>
</tr>
<tr>
<td>Social history</td>
<td>1</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Note. N=31. Frequency and percentage (%) of the number of times a specific SDOH was identified by participants over five visits (total of 155 patient encounters). Responses may not follow social determinants as described by Healthy People 2030, but they do reflect participants’ unprompted understanding of SDOH.
**Study Arm Two**

In Study Arm 2, Research Question One was answered by using one item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F) which asked, what are this patient’s social determinants of health? The four participants in Study Arm 2 took the survey and answered this question after 12 geriatric patient encounters over five weeks. In this open-ended question without prompts participants (*N*=4) identified between 0 and 4 SDOH each week, although not all participants cared for a geriatric patient each week and therefore did not take the survey. Week 1 participants identified three SDOH (*n*=2, *M*=3.00, *Mdn*=3.00, *SD*=1.41) and Week 5 participants identified two SDOH (*n*=2, *M*=2.00, *Mdn*=2.00, *SD*=1.41). Table 6 lists SDOH identified by participants following geriatric visits clinic encounters. The most frequently identified SDOH by participants was the social support system.
Table 6

Social Determinants of Health for Geriatric Patients in Clinic Visits as Identified by Participants in Study Arm 2

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support system</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Access to care</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Insurance</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Health literacy</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Transportation</td>
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<td>8.3</td>
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<tr>
<td>Housing situation</td>
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<td>8.3</td>
</tr>
<tr>
<td>Age</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Income</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Geographic location</td>
<td>1</td>
<td>8.3</td>
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<tr>
<td>Technology literacy</td>
<td>1</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Note. N=4. Frequency and percentage (%) of the number of times a specific SDOH was identified by participants over 12 visits.

Study Arm Three

In Study Arm 3, Research Question One was answered by using one item in the NP Social Determinants of Health Plan of Care Survey (Iteration 3) (Appendix D) which asked participants to list examples of social determinants of health associated with clients aged 65 years and older. Without any prompts, participants (N=68) identified between zero and eight SDOH, with an average of about three SDOH each (M= 3.31, Mdn=3.00, SD=1.59). The most frequently identified SDOH by participants included socioeconomics, transportation, and insurance and access to health care. Table 7 lists SDOH associated with clients aged 65 years and older which were identified by participants. Some responses, such as polypharmacy, were verbatim, while others were collapsed into similar categories. Like in other study arms, some participant responses do not follow examples of social determinants as described by Healthy People 2030, such as
age, medical diagnoses, or medication adherence. However, these responses do reflect participants’ unprompted knowledge and understanding of SDOH.

Table 7

Social Determinants of Health for Geriatric Patients as Identified by Participants in Study Arm 3

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomics</td>
<td>33</td>
<td>48.5</td>
</tr>
<tr>
<td>Transportation</td>
<td>33</td>
<td>48.5</td>
</tr>
<tr>
<td>Insurance and access to health care</td>
<td>24</td>
<td>35.3</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>22</td>
<td>32.4</td>
</tr>
<tr>
<td>Social support network</td>
<td>22</td>
<td>32.4</td>
</tr>
<tr>
<td>Housing situation</td>
<td>15</td>
<td>22.1</td>
</tr>
<tr>
<td>Income</td>
<td>15</td>
<td>22.1</td>
</tr>
<tr>
<td>Physical or cognitive disabilities</td>
<td>10</td>
<td>14.7</td>
</tr>
<tr>
<td>Level of education</td>
<td>7</td>
<td>10.3</td>
</tr>
<tr>
<td>Medical diagnoses</td>
<td>6</td>
<td>8.8</td>
</tr>
<tr>
<td>Geographic location</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Health literacy</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Lifestyle choices and behaviors</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Living alone</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>Age or ageism</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Culture</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Discrimination</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Neighborhood</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Race</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Emotions and coping</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Language</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Polypharmacy</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Resources</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Safety</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Technology difficulties</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Note. N=68. Frequency and percentage (%) of the number of times a specific SDOH was identified by participants calculated out of 68 participants. Responses may not follow social determinants as described by Healthy People 2030, but they do reflect participants’ unprompted understanding of SDOH.
Research Question Two

What information do NP students seek and consider about SDOH in a clinic visit with geriatric patients? Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3. Results from each study arm are reported below.

Study Arm One

In Study Arm 1, Research Question Two was answered by one item in the NP Social Determinants of Health Plan of Care Survey (Iteration 1) (Appendix E) which asked which of the following [SDOH] did you ask about? In this question, participants were given a dropdown menu of 14 social determinants. After five survey administrations, SDOH most asked about by participants (N=31) during screen-based clinic visits with geriatric patients included access to care, housing situation, and social support network. Table 8 lists the frequency of participant reported inquiries to patients about their SDOH.
### Table 8

Social Determinants of Health Asked During Screen-Based Clinic Visit with Geriatric Patients in Study Arm 1

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to care</td>
<td>76</td>
<td>49.03</td>
</tr>
<tr>
<td>Housing situation</td>
<td>66</td>
<td>42.58</td>
</tr>
<tr>
<td>Social support network</td>
<td>63</td>
<td>40.65</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>32</td>
<td>20.65</td>
</tr>
<tr>
<td>Transportation</td>
<td>32</td>
<td>20.65</td>
</tr>
<tr>
<td>Health literacy</td>
<td>28</td>
<td>18.06</td>
</tr>
<tr>
<td>Income</td>
<td>27</td>
<td>17.42</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>24</td>
<td>15.48</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>19</td>
<td>12.26</td>
</tr>
<tr>
<td>Level of education</td>
<td>15</td>
<td>9.68</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>6</td>
<td>3.87</td>
</tr>
<tr>
<td>Civic participation</td>
<td>4</td>
<td>2.58</td>
</tr>
<tr>
<td>Discrimination</td>
<td>2</td>
<td>1.29</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>1</td>
<td>0.64</td>
</tr>
</tbody>
</table>

*Note.* $N = 31$. Frequencies and percentage (%) of the number of times a specific SDOH was asked over 5 visits and a total of 155 patient encounters out of a list of 14 possible factors.

Additionally, this research question was answered through content analysis of the transcriptions of screen-based simulation debriefings. During the debriefing sessions, participants were prompted to discuss the screen-based patients’ SDOH by the facilitator. Themes discovered through content analysis that answered this question included (1) assessment of SDOH, (2) specific SDOH of concern for geriatric patients in clinic visits, and, (3) barriers to assessment of SDOH, (4) program training mismatch between priorities. Participants described assessing both protective and concerning SDOH. To discover this information, participants reported asking the patient or patient family member, paying attention to a patient’s social history, or using contextual information like clinic location or population to focus questions.
During the debriefing sessions following screen-based clinic visits, participants most often discussed assessing or asking about a patient’s social support network. One participant stated “even though [the patient] lives alone, she said she had a pretty strong social support system. I think she said she had really good relationships and a lot of help from her children”. Participants were also concerned about income, socioeconomic status, access to healthcare, insurance coverage, and the intertwining concerns about paying for health needs.

Not all participants asked or assessed their patients’ SDOH. Some participants stated they did not think about or ask about SDOH in their patient case until they were cued with questions during the NP Social Determinants Plan of Care Survey at the end. One participant stated that during the case they were so focused on the diagnosis, they didn’t think about social factors. Other didn’t investigate further into patient SDOH if nothing seemed concerning. However, during debriefing multiple participants stated that they would like to work on their practice of assessing SDOH and looking at the whole patient picture when developing a patient management plan.

In debriefing, participants frequently discussed a mismatch or frustration between the priorities of the screen-based simulation product and the SDOH questions they were asked in debrief and in the survey. The screen-based simulation cases were designed by content experts, and participants were allowed to ask 80 questions to train for efficiency and clinical judgement. At the end of each case, they received feedback on what questions were pertinent and what questions were extraneous according to content experts and case authors. While some information was given in the social history and patient’s medical chart about their SDOH, if participants asked more
questions, they stated they were often frustrated that the simulated patient responded ‘why are you asking me that?’ or that case authors rated their questions were extraneous. This caused many participants to stop asking those questions.

**Study Arm Two**

In Study Arm 2, Research Question Two was answered by an item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 2)* (Appendix F) which asked, which of the following [SDOH] did you ask about? In this question, participants were given the options of 14 social determinants. The four participants in Study Arm 2 took the survey and answered this question after 12 geriatric patient encounters over five weeks. SDOH most asked about by participants (N=4) during clinic visits with geriatric patients included social support network, access to care, and transportation. Participants did not ask about issues of discrimination or level of education. Table 9 lists the frequency of participant reported inquiries to patients about their SDOH.

**Study Arm Three**

In Study Arm 3, Research Question Two was answered with one item from the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix G) which asked participants in a typical patient encounter, which of the following do you consistently ask your clients aged 65 years and older about? Participants were given a list of 14 possible SDOH. In this single survey administration, SDOH most frequently asked about by participants (N=68) included social support network, transportation, housing situation, and access to care. SDOH least frequently asked about include level of education, crime and violence, civic participation, and discrimination. Table 10 lists the
frequency of participant-reported inquiries about SDOH in a typical patient encounter
with clients aged 65 years and older.

**Table 9**

*Social Determinants of Health Asked During Screen-Based Clinic Visit with Geriatric Patients Over Five Clinic Visits in Study Arm 2*

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Patient 1 (n=2)</th>
<th>Patient 2 (n=3)</th>
<th>Patient 3 (n=2)</th>
<th>Patient 4 (n=3)</th>
<th>Patient 5 (n=2)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support network</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Access to care</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Transportation</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Housing situation</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Health literacy</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Income</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Civic Participation</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Access to healthy food</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. N = 4. Responses after 5 patient encounters in 12 completed surveys.*
Table 10

Frequency of Social Determinants of Health Asked in Clinic Visits with Geriatric Patients in Study Arm 3

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support network</td>
<td>55</td>
<td>80.9</td>
</tr>
<tr>
<td>Transportation</td>
<td>55</td>
<td>80.9</td>
</tr>
<tr>
<td>Housing situation</td>
<td>54</td>
<td>79.4</td>
</tr>
<tr>
<td>Access to care</td>
<td>53</td>
<td>77.9</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>43</td>
<td>63.2</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>34</td>
<td>50</td>
</tr>
<tr>
<td>Health literacy</td>
<td>33</td>
<td>48.5</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>28</td>
<td>41.2</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>24</td>
<td>35.3</td>
</tr>
<tr>
<td>Income</td>
<td>14</td>
<td>20.6</td>
</tr>
<tr>
<td>Level of education</td>
<td>12</td>
<td>17.6</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>11</td>
<td>16.2</td>
</tr>
<tr>
<td>Civic participation</td>
<td>7</td>
<td>10.3</td>
</tr>
<tr>
<td>Discrimination</td>
<td>7</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Note. N = 68. Frequency and percentage (%) of the number of participants that reported asking about specific SDOH in a typical patient encounter out of a list of 14 possible factors.

Research Question Three

How do NP students describe or demonstrate applying the SDOH into their plan of care for geriatric patients during a clinic visit? Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3. Results from each study are reported below.

Study Arm One

In Study Arm 1, Research Question Three was answered using content analysis of patient management plans, debriefing sessions, and one item in the NP Social Determinants of Health Plan of Care Survey (Iteration 1) (Appendix E) which asked participants to describe how they would incorporate the SDOH into the plan of care.
First, participants documented their management plan for five screen-based geriatric patients in written management plans in the I-Human Patients® program. Written management plans were analyzed in NVIVO, coded according to reoccurring themes, and frequencies of themes were counted. The most frequently and consistently documented were the plans for referral and follow up, medication treatment, patient or family education, and diagnostics. Sometimes participants included family or social support in the plan particularly when the patient was unable to take care of themselves or the participant had concerns for the patient’s safety. Documentation of plans to incorporate or address the patient’s social determinants of health was rare in the written management plan, but sometimes included concern for financial capacity or a need to address social determinants of health by participants. Table 11 illustrates the themes and frequencies for each theme documented by participants in each geriatric patient clinic encounter plan of care.
Table 11

Themes Documented in Written Management Plan After Screen-Based Clinic Visit with Geriatric Patients in Study Arm 1

<table>
<thead>
<tr>
<th>Theme</th>
<th>Patient 1</th>
<th>Patient 2</th>
<th>Patient 3</th>
<th>Patient 4</th>
<th>Patient 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral and follow up</td>
<td>25</td>
<td>26</td>
<td>29</td>
<td>29</td>
<td>20</td>
<td>129</td>
</tr>
<tr>
<td>Medication treatment</td>
<td>26</td>
<td>28</td>
<td>8</td>
<td>29</td>
<td>26</td>
<td>117</td>
</tr>
<tr>
<td>Patient/family education</td>
<td>22</td>
<td>15</td>
<td>24</td>
<td>27</td>
<td>15</td>
<td>103</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>17</td>
<td>13</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Involving family/social support in plan</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Concern for safety</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Other treatments</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Social support assessment</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Financial concerns</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Housing assessment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. N=31. Written theme frequencies from management plan of five patient visits for a total of 155 patient encounters.

Second, one theme that was discovered through content analysis of the debrief sessions that answers this question included specific interventions or actions the participants take or believe they can take to incorporate their knowledge of the patient’s SDOH into their plan of care. Participants reported the following examples:

- Basing the treatment plan on insurance, such as considering whether to start out with more conservative tests and medications, or to try to avoid specialist or more expensive procedures.
- Prescribing inexpensive and generic medications or using medication discount apps like GoodRx.
- Consulting a social worker to help with financial concerns.
- Offering access to free blood pressure checks.
- Providing patient education which considers environmental hazards in home.
• Providing patient education which considers learning style and level of education.

• Providing patient education which considers health literacy, such as being specific about patient symptoms and when to follow up.

Finally, participants described examples of how they would incorporate SDOH into their patients’ plans of care in the one item of the *NP Social Determinants of Health Plan of Care Survey (Iteration 1)*. Participant responses included:

• Ensuring a social support system to assist patient in transportation to appointments, emotional needs, or healthy food preparation.

• Ensuring that the patient has transportation for medical follow up including use of transportation vouchers or using telehealth visits.

• Basing the treatment plan on insurance, such as ensuring procedures and referrals are in-network and discussing out of pocket costs for each treatment.

• Prescribing generic medications or using medication discount apps like GoodRx or Cost Plus.

• Consulting a social worker or case management to help with financial concerns or counseling for emotional support.

• Inquiring about willingness to move to safer housing, assisted living, or home health, for assistance with activities of daily living and shopping for groceries.

• Asking about environmental conditions.

• Providing patient education on available resources and community support networks

• Providing patient education which considers health literacy, such as using appropriate terms and written discharge instructions.
Study Arm Two

In Study Arm 2, Research Question Three was answered by using one item from the NP Social Determinants of Health Plan of Care Survey (Iteration 2) (Appendix F) which asked participants to describe which SDOH they incorporated into their plan of care for their geriatric client and how they did that. After geriatric patient encounters in outpatient clinics over five weeks, participants (N=4) completed 12 surveys. Promoted SDOH with the most frequent responses included social support network and access to care (Table 12).

Participants also responded with specific examples of how they incorporated SDOH into their plan of care. Examples included participant behaviors such as asking questions, understanding, encouraging, and considering patient conversations. Of the 14 SDOH prompts available, participants described ways they incorporate all SDOH except discrimination into the plan of care. Example quotations from participants included:

- Social support: “Understanding how his wife, children, and grandchildren are involved in his care”. “Encouraged support from family”.
- Language and literacy: “Making sure I am speaking with an interpreter”
- Access to care: “Discussed scheduling her next imaging with her appointment to make it easier to come to both”
- Health literacy: “Making sure he understands the state of his health and when to contact if he has symptoms”.
- Housing situation: “What type of home do you live in? Accessibility with home?”
Table 12

*Frequency of Social Determinants of Health Incorporated into the Plan of Care During Clinic Visits with Geriatric Patients in Study Arm 2*

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Patient 1 (n=2)</th>
<th>Patient 2 (n=3)</th>
<th>Patient 3 (n=2)</th>
<th>Patient 4 (n=3)</th>
<th>Patient 5 (n=2)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support network</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Access to care</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Housing situation</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Transportation</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Civic participation</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Income</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Health literacy</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Level of education</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note.* N=4. Responses after 5 patient encounters in 12 completed surveys.

**Study Arm Three**

In Study Arm 3, Research Question Three was answered by using one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix D) which asked, in a typical patient encounter with clients 65 years and older, which of the following do you consistently incorporate into their plan of care? In this single survey administration, SDOH most frequently incorporated into the plan of care by participants (N=68) included access to care, transportation, and social support network. SDOH least frequently included in the plan of care were crime and violence, civic participation, and discrimination. Table 13 lists the frequency of SDOH consistently incorporated into the plan of care in a typical patient encounter with clients aged 65 years and older.
Table 13

Frequency of Social Determinants of Health Incorporated into the Plan of Care During Clinic Visits with Geriatric Patients in Study Arm 3

<table>
<thead>
<tr>
<th>Social Determinant of Health</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to care</td>
<td>61</td>
<td>89.7</td>
</tr>
<tr>
<td>Transportation</td>
<td>53</td>
<td>77.9</td>
</tr>
<tr>
<td>Social support network</td>
<td>45</td>
<td>66.2</td>
</tr>
<tr>
<td>Health literacy</td>
<td>41</td>
<td>60.3</td>
</tr>
<tr>
<td>Housing situation</td>
<td>40</td>
<td>58.8</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>36</td>
<td>52.9</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>35</td>
<td>51.5</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>33</td>
<td>48.5</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>32</td>
<td>47.1</td>
</tr>
<tr>
<td>Income</td>
<td>23</td>
<td>33.8</td>
</tr>
<tr>
<td>Level of education</td>
<td>17</td>
<td>25.0</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>9</td>
<td>13.2</td>
</tr>
<tr>
<td>Civic Participation</td>
<td>5</td>
<td>7.4</td>
</tr>
<tr>
<td>Discrimination</td>
<td>5</td>
<td>7.4</td>
</tr>
</tbody>
</table>

Note. N=68. Frequency and percentage (%) of the number of participants that reported incorporating specific SDOH into the patient plan of care in a typical encounter out of 14 possible factors.

Research Question Four

How do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit? Data to answer this research question comes from Study Arm 1, Study Arm 2, and Study Arm 3. Results from each study are reported below.

Study Arm One

In Study Arm 1, Research Question Four was answered using one item in the NP Social Determinants of Health Plan of Care Survey (Iteration 1) (Appendix E) which asked participants for their comfort level in discussing the SDOH with geriatric patients using a Likert scale. Participants rated themselves on a 4-point Likert scale
from either extremely uncomfortable to extremely comfortable when discussing specific SDOH after a screen-based clinic visit with a geriatric patient. Participants were asked this question during five administrations of the survey. The first-time participants ($N=31$) were asked this question, participants were most comfortable, answering either somewhat or extremely comfortable discussing level of education (83.9%), social support network (83.9%), or access to healthy food (83.9%). Participants were least comfortable, answering either extremely or somewhat uncomfortable, discussing income (45.2%), socioeconomics (29.0%), or civic participation (29.1%). Figure 8 illustrates participant self-rated comfort when discussing specific social determinants of health during their first screen-based geriatric patient clinic visit.

In the fifth administration of this survey during week 5 of the study, participants ($N=31$) were still most uncomfortable discussing income (9.7%) and socioeconomics (9.7%). However, reported discomfort decreased in all categories, and discomfort in these two categories decreased by 35.5% and 19.3% respectively. By the fifth administration of the survey, at least 90% of participants reported feeling somewhat or extremely comfortable discussing all categories of the social determinants of health. Figure 9 illustrates participant self-rated comfort when discussing specific social determinants of health after their fifth geriatric patient screen-based clinic visit. Table 14 presents self-rated comfort by participants when discussing specific social determinants of health after their first and fifth screen-based geriatric patient clinic visits.
Figure 8

Self-Rated Level of Comfort in Discussing Specific Social Determinants of Health During Geriatric Patient Clinic Visit #1 in Study Arm 1
Figure 9

Self-Rated Level of Comfort in Discussing Specific Social Determinants of Health During Geriatric Patient Clinic Visit #5 in Study Arm 1
Table 14

Percentage of Participants Reporting Level of Comfort in Discussing the Social Determinants of Health at Survey Administration 1 and Survey Administration 5 in Study Arm 1

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage of Participants Reporting Level of Comfort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>extremely uncomfortable</td>
</tr>
<tr>
<td>Income</td>
<td>12.9 3.2 32.3 6.5 38.7 58.1 12.9 32.3</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>12.9 3.2 16.1 6.5 58.1 58.1 12.9 32.3</td>
</tr>
<tr>
<td>Level of education</td>
<td>9.7 3.2 6.5 3.2 51.6 45.2 32.3 48.4</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>9.7 3.2 9.7 3.2 58.1 58.1 22.6 35.5</td>
</tr>
<tr>
<td>Civic participation</td>
<td>9.7 3.2 19.4 3.2 58.1 61.3 12.9 32.3</td>
</tr>
<tr>
<td>Discrimination</td>
<td>12.9 3.2 12.9 3.2 64.5 67.7 9.7 25.8</td>
</tr>
<tr>
<td>Social support network</td>
<td>12.9 3.2 3.2 3.2 35.5 38.7 48.4 54.8</td>
</tr>
<tr>
<td>Transportation</td>
<td>12.9 3.2 6.5 3.2 32.3 38.7 48.4 54.8</td>
</tr>
<tr>
<td>Access to care</td>
<td>12.9 3.2 6.5 3.2 41.9 41.9 38.7 51.6</td>
</tr>
<tr>
<td>Health literacy</td>
<td>12.9 3.2 6.5 3.2 58.1 54.8 22.6 38.7</td>
</tr>
<tr>
<td>Access to healthy food</td>
<td>9.7 3.2 6.5 3.2 48.4 45.2 35.5 48.4</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>6.5 3.2 19.4 3.2 58.1 61.3 16.1 32.3</td>
</tr>
<tr>
<td>Environment</td>
<td>9.7 3.2 9.7 3.2 48.4 48.4 32.3 45.2</td>
</tr>
<tr>
<td>Housing situation</td>
<td>9.7 3.2 12.9 3.2 41.9 41.9 35.5 51.6</td>
</tr>
</tbody>
</table>

Note. N=31.

Using a paired samples t-test, reported comfort levels significantly increased from Survey 1 to Survey 5 for the factors of income ($MD = 0.65$, $SD = 1.02$, $p = .001$), socioeconomics ($MD = 0.48$, $SD = 1.06$, $p = .016$), civic participation ($MD = 0.48$, $SD = 1.03$, $p = .014$), discrimination ($MD = 0.45$, $SD = 1.09$, $p = .028$), crime and violence ($MD = 0.39$, $SD = 1.02$, $p = .043$), and housing situation ($MD = 0.39$, $SD = 1.05$, $p = .50$) (Table 15). Cohen’s d effect size ranged from 0.218 to 0.634 and a post hoc power analysis confirmed power range from 0.22 to 0.93. Asking about income was the only difference in comfort level that achieved a statistical power greater than 80% ($\beta = 0.93$). Therefore, while NP students described being most comfortable discussing social support
network, transportation, access to care, and housing situation and least comfortable asking about income, socioeconomics, civic participation, and crime and violence, comfort level was improved after multiple administrations of the survey.

**Table 15**

*Paired Samples T-Test Statistics*

<table>
<thead>
<tr>
<th></th>
<th>Survey 1 M</th>
<th>Survey 5 M</th>
<th>MD</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P (2-sided)</th>
<th>Cohens d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>2.55</td>
<td>3.19</td>
<td>0.65</td>
<td>1.06</td>
<td>-3.53</td>
<td>30</td>
<td>.001</td>
<td>0.634</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>2.71</td>
<td>3.19</td>
<td>0.48</td>
<td>1.06</td>
<td>-2.54</td>
<td>30</td>
<td>.016</td>
<td>0.456</td>
</tr>
<tr>
<td>Level of education</td>
<td>3.06</td>
<td>3.39</td>
<td>0.32</td>
<td>1.12</td>
<td>-1.62</td>
<td>30</td>
<td>.115</td>
<td>0.291</td>
</tr>
<tr>
<td>Language and literacy</td>
<td>2.94</td>
<td>3.26</td>
<td>0.32</td>
<td>1.03</td>
<td>-1.62</td>
<td>30</td>
<td>.115</td>
<td>0.291</td>
</tr>
<tr>
<td>Civic participation</td>
<td>2.74</td>
<td>3.23</td>
<td>0.48</td>
<td>1.18</td>
<td>-2.62</td>
<td>30</td>
<td>.014</td>
<td>0.470</td>
</tr>
<tr>
<td>Discrimination</td>
<td>2.71</td>
<td>3.16</td>
<td>0.45</td>
<td>1.09</td>
<td>-2.31</td>
<td>30</td>
<td>.028</td>
<td>0.414</td>
</tr>
<tr>
<td>Social support network</td>
<td>3.19</td>
<td>3.45</td>
<td>0.26</td>
<td>1.18</td>
<td>-1.22</td>
<td>30</td>
<td>.234</td>
<td>0.218</td>
</tr>
<tr>
<td>Transportation</td>
<td>3.16</td>
<td>3.45</td>
<td>0.29</td>
<td>1.16</td>
<td>-1.40</td>
<td>30</td>
<td>.174</td>
<td>0.250</td>
</tr>
<tr>
<td>Access to care</td>
<td>3.06</td>
<td>3.42</td>
<td>0.35</td>
<td>1.20</td>
<td>-1.65</td>
<td>30</td>
<td>.110</td>
<td>0.296</td>
</tr>
<tr>
<td>Health literacy</td>
<td>2.90</td>
<td>3.29</td>
<td>0.39</td>
<td>1.20</td>
<td>-1.80</td>
<td>30</td>
<td>.083</td>
<td>0.322</td>
</tr>
<tr>
<td>Access to healthy foods</td>
<td>3.10</td>
<td>3.39</td>
<td>0.29</td>
<td>1.22</td>
<td>-1.33</td>
<td>30</td>
<td>.194</td>
<td>0.239</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>2.84</td>
<td>3.23</td>
<td>0.39</td>
<td>1.02</td>
<td>-2.11</td>
<td>30</td>
<td>.043</td>
<td>0.379</td>
</tr>
<tr>
<td>Environmental conditions</td>
<td>3.03</td>
<td>3.35</td>
<td>0.32</td>
<td>1.14</td>
<td>-1.58</td>
<td>30</td>
<td>.125</td>
<td>0.284</td>
</tr>
<tr>
<td>Housing situation</td>
<td>3.03</td>
<td>3.42</td>
<td>0.39</td>
<td>1.05</td>
<td>-2.04</td>
<td>30</td>
<td>.050</td>
<td>0.367</td>
</tr>
</tbody>
</table>

This question was further answered using content analysis of the transcriptions of screen-based simulation debriefings. During the debriefing sessions, participants were prompted to discuss the screen-based patients’ SDOH by the facilitator. Two themes that were discovered through content analysis that answer this question include (1) SDOH most comfortable to talk about with patients and (2) influences on comfort level. Some participants stated that in their clinical practicums, they are comfortable and usually ask patients about their medical insurance in order to help them create a treatment plan. However, one participant stated they did not ask about other SDOH
because they were not used to talking about things like transportation or distance to travel to hospital.

Past nursing experience, clinical practicums, and preceptor practice influenced comfort level of participants. Previous experience in certain settings influenced participant perspectives and comfort with assessing SDOH. One participant stated that “a lot of my clinical rotations were in an upper economic class, so people don’t mind paying for extra tests and maybe you don’t ask about those social determinants as much.” However a second participant stated “I feel comfortable because I feel that was kind of normal for me and my rotation just asking everyone do you have insurance?”

A few participants also described their clinical practicum experiences and the role of their preceptors or other providers in showing examples of how to normalize the assessment of SDOH. Some preceptors routinely asked about factors such as insurance, transportation, or ability to afford medications and tests. One preceptor made house calls for patients who could not get to their clinic appointments. Other preceptors used contextual cues like the geographic location of clinic or insurance availability to present diagnostic and treatment plans to the patient and allow the patient to choose what works best within their financial capabilities, transportation, and health beliefs.

**Study Arm Two**

In Study Arm 2, one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration Two)* (Appendix F) asked participants their comfort level in discussing the SDOH with geriatric patients using a Likert scale. The four participants in Study Arm 2 who took the survey, answered this question after 12 geriatric patient
encounters over five weeks. Not all participants cared for a geriatric patient each week and, consequently, did not take the survey every week. Therefore, Likert data from Study Arm 2 was insufficient to meaningfully answer Research Question Four.

**Study Arm Three**

In Study Arm 3, Research Question Four was answered using one item in the *NP Social Determinants of Health Plan of Care Survey (Iteration 3)* (Appendix D) which asked participants their comfort level in discussing the SDOH with geriatric patients using a Likert scale. Participants rated themselves on a 4-point Likert scale from either extremely uncomfortable to extremely comfortable when discussing specific SDOH in patient encounters with clients aged 65 years and older. Participants \((N=68)\) were most comfortable, answering either somewhat or extremely comfortable discussing social support network \((94.1\%)\), transportation \((94.1\%)\), and access to care \((92.6\%)\). Participants were least comfortable, answering either extremely or somewhat uncomfortable, discussing discrimination \((36.7\%)\), civic participation \((32.4\%)\), or crime and violence \((30.9\%)\). Figure 10 illustrates participant self-rated comfort when discussing specific social determinants of health with clients aged 65 years and older.
Summary

Chapter Four discussed the demographic analysis of the samples and the statistical and qualitative analysis that were to answer the four research questions using three studies. Results from the first research question revealed that NP students can identify at least two SDOH of their geriatric patients, and consistency improves over time with prompting. In all studies, access to care is one of the top social determinants identified. Frequencies and content analysis from the second research question revealed that NP students seek and consider the SDOH of social support, access to care, and housing in their outpatient care of geriatric clients. They assess these factors by asking
patients, using social history, or by using contextual clues. Barriers to the assessment of SDOH include not being in the habit of asking or getting discouraged due to negative feedback when asking. Frequencies and content analysis from the third research question revealed that NP students most frequently incorporate the SDOH of social support, access to care, and transportation into their plan of care for geriatric clients. Although they rarely document their efforts in the management plan, they can provide a variety of specific examples they use to address patient needs. Results from the fourth research question revealed that NP students are most comfortable with asking geriatric patients about the SDOH of social support, transportation, and access to care. NP students are least comfortable asking about the SDOH of discrimination, civic participation, and crime and violence. These factors were also rarely assessed or discussed in the patient plan of care. Chapter Five will provide a discussion of the findings, implications for practice, and recommendations for further research.
CHAPTER V
SUMMARY, DISCUSSION, AND CONCLUSIONS

Introduction

This study sought to describe how NP students’ understanding, comfort, and application of the social determinants of health (SDOH) to their care of geriatric patients. Study results provide insight for nursing educators to strengthen NP programs to help NP students in addressing SDOH to improve patient outcomes for the geriatric population.

The previous chapter presented the results of the data analysis of four research questions. Chapter Five is organized into the following sections: (a) summary of the study, (b) discussion of the findings, (c) discussion of the findings, (d) implications for practice, (e) recommendations for further research, and (f) conclusions.

Summary of the Study

The aims of this study were to (1) describe how NP students conceptualize SDOH for geriatric patients, (2) explore NP student comfort in asking about patient SDOH as part of their assessment, and (3) describe how NP students apply their knowledge of SDOH to their assessment and plan of care for geriatric patients. Through a mixed quantitative and qualitative multi-method research study with three arms, data was collected from students in family nurse practitioner (FNP) and adult gerontology primary care nurse practitioner (AGPCNP) programs.

This study included four research questions:

1. Do NP students identify at least two SDOH associated with geriatric patients during a clinic visit?
2. What information do NP students seek and consider about SDOH in a clinic visit with geriatric clients?

3. How do NP students describe or demonstrate applying SDOH into their plan of care for geriatric patients during a clinic visit?

4. How do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit?

Research Question One was answered using quantitative data from the *NP Social Determinants of Health Plan of Care Survey* from each study arm. Research Question Two was answered using quantitative data from the *NP Social Determinants of Health Plan of Care Survey* and qualitative data from debriefing transcriptions following screen-based simulations in Study Arm One. Research Question Three was answered using quantitative data from the *NP Social Determinants of Health Plan of Care Survey*, a written management plan in Study Arm 1, and qualitative data from debriefing transcriptions in Study Arm 1. Research Question Four was answered using quantitative data from the *NP Social Determinants of Health Plan of Care Survey* and qualitative data from debriefing transcriptions in Study Arm 1. Survey responses were grouped, counted, and analyzed using descriptive statistics. Debriefing transcriptions were subjected to content analysis whereby the data was coded and grouped into larger themes.

**Discussion of the Findings**

This section discusses the findings for each of the four research questions. Findings can be evaluated using the New World Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2021). NP student knowledge of SDOH meets Level 2 Learning, while
application of SDOH to the assessment and plan of care of geriatric patients reaches Level 3 Behavior.

**Research Question One**

*Do NP students identify at least two SDOH associated with geriatric patients during a clinic visit?* NP students in Study Arm 1 ($M=1$) and Study Arm 2 ($M=3$) did identify SDOH with the first administration of the survey. After the fifth survey administration, NP students in Study Arm 1 ($M=2$) and Study Arm 2 ($M=2$) had similar findings in the number of SDOH identified. Participants taking a simplified single survey in Study Arm 3 identified an average of just over three SDOH associated with geriatric patients. Overall, this means that NP students can identify at least two SDOH associated with geriatric patients during clinic visits, and therefore the training of NP students meets Level 2 Learning of the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2021).

Notably, participants in Study Arm 1 identified more SDOH after the fifth survey administration ($M=2$) than after the first survey administration ($M=1$). While this was not an intentional part of the research design, the findings are noteworthy because there was a statistically significant difference between the first and fifth survey administrations ($p = .006$). This serendipitous finding is interesting because the instrument appeared to act as an intervention, influencing student awareness and intentional incorporation of SDOH into their patient encounter. Results of Study Arm 1 suggest that continued reminders and focus on inclusion of the SDOH, in this study design as a survey at the end of a clinical case, can improve NP students’ ability to identify SDOH associated with their geriatric patients. Participants in Study Arm 2 identified less SDOH after the fifth survey administration ($M=2$) than after the first survey administration ($M=3$). However,
the number of participants \((N=4)\) were very low, and only two of the total participants completed each survey on the first and fifth administrations, providing inconclusive evidence.

While this study attempted to evaluate how many SDOH NP students could identify, it is also important to note which SDOH were most frequently identified. In all three study arms, access to care was one of the most frequently and easily identified by participants. Health literacy, social support system, and transportation were also frequently identified by participants in Study Arm 1, while social support system was most frequently identified in Study Arm 2. Participants in Study Arm 3 most frequently identified socioeconomics, and transportation as well. These results suggest that NP students have the most knowledge and understanding of the impact of these social factors on the health of their geriatric patients. These align with the study by Phillips and colleagues (2020) which found that nurses felt most knowledgeable about how access to primary provider care, access to nutritious foods, and access to care impacted health outcomes of patients.

To answer this research question, survey questions asked what the patient social determinants of health were without prompts and using an open response format. Therefore, some responses did not follow examples of social determinants as described by Healthy People 2030, such as age, medical diagnoses, polypharmacy, or medication adherence. These responses demonstrated participants’ unprompted knowledge and understanding of SDOH. While these responses reflect an understanding of the many factors that influence health, they also reveal a gap in the comprehension of the terminology social determinants of health by NP students.
**Research Question Two**

*What information do NP students seek and consider about SDOH in a clinic visit with geriatric clients?* In a similar study, Phillips and colleagues (2020) found that nurses were most likely to ask patients about having access to a primary care provider, transportation, social support network, or housing, while they were least likely to ask about civic participation, income, discrimination, utilities, and access to healthy foods. Results from all three study arms in this study suggest that NP students most often seek and consider the SDOH of social support network, access to care, transportation, and housing situation in their care of geriatric clients during clinic visits. These results are similar to the SDOH most frequently identified in Research Question One. The SDOH least frequently asked about in all study arms included level of education, crime and violence, civic participation, and discrimination. Of note in Study Arm 1 there were participants who did not identify SDOH to answer Research Question One when unprompted, however they reported asking about specific SDOH when given 14 SDOH options.

NP student participants assessed patient SDOH by asking them, looking at the social history in their health record, or by using contextual clues from the patient encounters to ask further questions or to consider in the patient plan of care. For instance, if the clinic was in a rural area, the NP student might ask additional questions about transportation or access to care. In debriefing discussions in Study Arm 1, some participants stated they did not think or ask about SDOH with their screen-based patient until they were cued later. Barriers to the assessment of SDOH included a focus on the
correct medical diagnosis, focus only on SDOH of concern, not being in the habit of asking, or getting discouraged due to negative feedback when asking.

Providers may not be in the habit of asking about SDOH due to their sensitive nature and provider uncertainty on how to address them (Garg et al., 2016; Naz et al., 2016). There have been many screening tools developed to help health workers ask about SDOH, while some are in a single domain of social risk and others approaching multiple domains (Andermann, 2018). The consistent use of these screening tools can help identify patients who need further resources. Healthcare workers that specifically ask about SDOH and social challenges are more likely to report helping their patient address social issues (Naz et al., 2016). Garg and colleagues (2016) warn that social needs screening must be followed up with resource referral to community based or otherwise could result in unintended harm through unmet expectations and frustration.

In Study Arm 1, the screen-based simulation platform I-Human Patients© (IHP) was used. In the interest of efficient healthcare, the platform penalized trainees when they asked questions that do not immediately pertain to the patient’s illness in the case study. While social history and patient background were included for students, the case writers may have determined that social determinant questions were extraneous, providing negative feedback that discouraged trainees from asking these types of questions. In provider training programs such as this, the focus on personal risk behavior may be at odds with considerations for social structures. This finding would reveal a tension between efficient healthcare and personalized healthcare.

In a similar study, practicing nurses noted that barriers to addressing SDOH included time, perceived patient discomfort, personal discomfort, not knowing what to
do, or not having patients with issues (Phillips et al., 2020). In another study, registered nurses in a RN to BSN program found that top barriers to addressing SDOH in practice included perception of patient discomfort, anticipating this as the work of other people in the organization to work, or not knowing how to address the issues (Persaud, 2018). Pediatric medical residents reported not screening for SDOH due to time, lack of knowledge, either provider or patient discomfort, lack of support, or anticipating this as the work of someone else (Klein et al., 2011).

Research Question Three

How do NP students describe or demonstrate applying SDOH into their plan of care for geriatric patients during a clinic visit? NP students most frequently incorporate the SDOH of social support, access to care, and transportation into their plan of care for geriatric clients. Although they rarely documented their efforts in the management plan, they provided a variety of specific examples they use to address patient needs including assessing and addressing patient social support systems, transportation, medication costs, referrals to case management or social work, housing situation and safety, and health literacy through patient education.

Documentation of the SDOH in the patient management plan may not traditionally be taught in NP or medical education. However, Davis and Chapa (2015) recommend writing the new SOAP note to impact health care delivery. In this new format, the provider asks specific questions about income, occupation, transportation, social support, and access to healthy food while using the patient SDOH to formulate interventions and the plan of care. The provider must also be aware of local community resources for patient referral.
Medicare Advantage plans now cover a wider variety of non-medical benefits to better address the social determinants of health (Centers for Medicare and Medicaid Services [CMS], 2023). Medicare Advantage Organizations are required to offer benefits to help with food, transportation, and housing. As NP students transition to their provider role, they may have more options to practically address patient’s social needs through health insurance plans.

**Research Question Four**

*How do NP students describe their comfort with discussing the SDOH with their geriatric patients during a clinic visit?* NP student participants were most comfortable with asking geriatric patients about SDOH of social support, transportation, and access to care. These results are similar to SDOH most and least frequently identified, asked about and considered, and incorporated into the plan of care for geriatric patients during a clinic visit. Similarly, practicing nurses in another survey also reported feeling very or extremely confident in discussing access to care, transportation, health literacy, and social support (Phillips et al., 2020).

NP student participants were least comfortable asking about discrimination, civic participation, and crime and violence. These are highly sensitive topics and providers may have uncertainty on what to do with that information in the health care sector (Garg et al., 2016; Naz et al., 2016). These results align with the survey of nurses, who also reported less confidence in discussing income, civic participation, and crime and violence (Phillips et al., 2020). Additionally, results of this study suggest that knowledge of the SDOH and comfort with the SDOH are related to the likelihood of considering SDOH and incorporating them into the patient plan of care.
In Study Arm 1, participants also discussed the influence of their clinical setting and preceptors on their comfort with assessing the SDOH in debriefing sessions. When clinical preceptors regularly asked patients about SDOH, NP students gained more comfort in asking these questions as well. Clinical preceptors have an important role in demonstrating the assessment and incorporation of SDOH as part of their patient encounter. In the absence of clinical settings that expose NP students to diverse social needs of patients, simulated patients with a variety of social backgrounds could provide standardization of SDOH education within NP programs.

Limitations

While data provided significant findings, there were limitations in this study which included (1) constraints as part of a parent study and (2) participant recruitment. Study Arm 1 of this project was constrained by the parent study methodology, recruitment of participants, and data collection instruments. The parent study used the I-Human Patients© (IHP) platform to determine the value of screen-based clinical patients in the training of NP students. Caution was used when adding research questions and research instruments to avoid impacting it adversely. Recruitment of participants for this study was also dependent on study recruitment for the parent study.

Participant recruitment was a challenge and limitation in all arms of this study. There are a variety of difficulties and barriers to engaging nurses to participate in research (Franks-Meeks, 2020; Luck et al. 2017). NP students are both students and often practicing nurses, and therefore may have compounding barriers. Potential barriers include lack of opportunity due to institutional gatekeepers (Franks-Meeks, 2020), survey
design and complexity (Luck et al., 2017), survey fatigue (Porter et al., 2004), lack of time (Hagan & Walden, 2017), and stress (Maville, 2004).

Franks-Meeks (2020) found that one reason for low participation rates in research by nurses is lack of opportunity. Study Arm 2 and Study Arm 3 required approval by program directors and then forwarding of an email from program leaders to NP students. Like Franks-Meeks (2020) findings, NP students recruited for this study may not have been given the opportunity to participate due to gatekeeping from program leaders.

Survey design and survey fatigue may contribute to poor response rates and reduced participation in survey research (Porter et al, 2004; Luck et al, 2017). Nurse response rates to surveys decrease if the surveys are too long or too complex (Luck et al., 2017). Porter and colleagues (2004) found that the administration of multiple surveys to students eventually resulted in lower response rates. Within this study, the first two arms had multiple surveys points. Additionally, it is possible that students and nurses are getting many requests for feedback, and this could reduce the willingness to participate in a research study. While the NP Social Determinants of Health Plan of Care Survey (Iteration 3) used in Study Arm 3 was specifically designed to for ease to improve recruitment, there were still 14 participants who began the survey but did not complete it, possibly due to its perceived complexity or length. While there is no definitive evidence, it is also possible that participants did not complete the survey due to discomfort with SDOH.

Difficulties in recruitment could also be related to stress load and available time among NP students who are completing a program of study, possibly working as nurses, with family and personal commitments. Hagan & Walden (2017) found that lack of time
was one of the most reported barriers to participation in research by nurses. NP students have reported higher than normal stress or the highest stress level in their last year of an NP program related to time management and expectations of multiple roles (Maville et al., 2004). In one study, almost 40% of graduate nursing students reported academic burnout during the recent COVID-19 pandemic related to perceived stress, perceived support, and mental health (Sveinsdóttir et al., 2021). The COVID-19 pandemic affected family nurse practitioner students by increasing fear and creating a cycle of stress due to competing priorities, uncertainty, and difficulty focusing on academics (Link et al., 2021). Students in NP programs may have been working as nurses during the COVID-19 pandemic, while also completing their studies, and they may still be experiencing similar stress in this post-COVID era.

Implications for Nursing Education and Practice

While the profession of nursing has always been concerned about holistic health and the impacts of social and environmental factors on humans, the World Health Organization (WHO) and the US Department of Health and Human Services have proposed frameworks and initiatives to address health disparities through interventions focused on SDOH (Commission, 2008; Secretary, 2010). Nursing organizations such as the National League for Nursing (NLN) and the American Association of Colleges of Nursing (AACN) urge the integration of SDOH concepts throughout prelicensure and graduate nursing program curricula to improve patient outcomes (AACN, 2021; NLN, 2019). More recently, the Centers for Medicare and Medicaid Services have changed policies to require Medicare Advantage plans to offer more non-medical benefits to address SDOH (CMS, 2023). While this study was focused on NP students, the results of
this study have implications for all nursing students, as well as schools of nursing, and nursing practice.

Nursing programs must ensure that NP students understand the connections between social conditions, structural factors, and patient health. The National Academies of Science, Engineering, and Medicine (NASEM) unifying framework informs educators on essential components in the education of healthcare professionals about SDOH (2016). Components include transformative learning, dynamic partnerships, and lifelong learning. Educational strategies in NP programs include experiential learning such as service-learning (Bryant-Moore et al., 2018) clinical rotations (Coppa & Barcelos Winchester, 2020; Villarruel et al, 2014), and clinical simulations (Sisler et al., 2019). Results from this study demonstrate the importance of having clinical rotations and preceptors that can guide students to assess, consider, and apply SDOH in patient encounters. Such clinical rotations may not be guaranteed for all students, and therefore, clinical simulation with a focus on SDOH could be an alternate strategy to ensure teaching about SDOH in the patient setting.

Across the four research questions, the social determinants of social support, transportation, and access to care were most frequently identified, considered, and asked about, while discrimination, civic participation, and crime and violence were least frequently identified, considered, and asked about when caring for geriatric patients. These most frequent and least frequent SDOH could be considered the easiest and hardest to ask about, and address with patients. While continuing to teach about SDOH in general, nursing faculty need to refocus on these uncommonly used four SDOH so they become easier to talk about. The nursing profession should consider how nursing faculty
can change the conversation, recognize bias, engage in and demonstrate non-judgmental
dialogue, and reduce the stigma of some SDOH.

One literature review found that disease-related healthcare facility stigma was
reduced through use of multiple interventions of education, skill building, active
engagement in an intervention, contact with the stigmatized group to confront
stereotypes, empowerment of client, and policy changes at the facility level (Nyblade et
al., 2019). These interventions should be included in nursing didactic and clinical
education at the prelicensure and graduate level to reduce stigma and bias related to the
social determinants. With additional examples and more opportunities to apply teachings,
it is hoped that students will increase their comfort with these sensitive topics and
normalize their inclusion into everyday practice.

Guilamo-Ramos and colleagues (in press) developed a new framework of SDOH
mechanisms to guide the planning of practical nurse-led interventions to mitigate harmful
SDOH. Using The CLAFH Framework of SDOH Mechanisms, nurses first identify a
specific health inequity in a specific time and place. Then they use the framework to
identify and understand the mechanisms by which harmful SDOH impact health inequity.
Finally, the nurse-leader will design a program to mitigate the harmful SDOH targeting a
specific mechanism or opportunity. This framework describes eight underlying principles
of the mechanisms of SDOH, including how they shape health over the life span, how
they operate intergenerationally, and how SDOH and social injustices interact to cause
compounding health inequities (Guilamo-Ramos et al., in press). Additionally, it
describes how instead of vulnerability, biological and behavioral exposure plus biological
susceptibility contribute to health outcomes but can be mitigated by resilience.
This framework was developed from SDOH literature but presents a new practical tool from a mitigation perspective (Guilamo-Ramos et al., in press). Nursing educators should use this framework to teach these principles of SDOH to nursing students at both the prelicensure and graduate and levels. From this mitigation perspective, it will not be enough for students to only understand the concepts of SDOH but must be empowered with knowledge and guidance on how they can work to reduce the impacts of SDOH on health inequities. More work is needed on defining practical interventions by nurses and nurse practitioners once patient SDOH are identified.

Moreover, based on these study findings, additional practical tools to remind clinicians to consider SDOH in the clinical encounter are warranted. When prompted with a list of specific SDOH, some participants in this study identified more social factors than they had identified without prompts. In clinical practice, prompts and screenings for SDOH in the electronic health record could lead to improved assessment and incorporation into the patient plan of care. However, screenings cannot occur independently. Screenings must trigger practical solutions and referrals to established community programs that have capacity to avoid unintended harm (Garg et al., 2016). There is space for future work in this area.

**Recommendations for Further Research**

The purpose of this study was to describe the knowledge, comfort level, and application of the social determinants of health to the plan of care of geriatric patients by nurse practitioner students. Quantitative and qualitative data was collected to answer four research questions. Further research needs to be conducted based on the findings of this study.
Future research could include methodological improvements to the survey tool so that it is easier or shorter to take, while still collecting sufficient data. Larger incentives or reduced number of survey administrations could improve the response rate. Further research could also explore the relationships between NP student knowledge of SDOH, comfort with SDOH, and likelihood of considering SDOH and incorporating them into the patient plan of care.

There is still more research that needs to be done in the areas of nursing education and practice around SDOH and patient outcomes. First, further testing regarding educational interventions on nursing student knowledge and understanding of the impacts of social determinants on the health on patients is required. Second, further testing of patient outcomes from nursing interventions that attempt to address SDOH is necessary. And third, testing of patient outcomes from nursing education interventions that empower students with the knowledge and skills to address SDOH in their care of patients is needed.

To address violence and trauma as a social determinant, trauma-informed care (TIC) should be included in this discussion of SDOH in education. Further exploration is needed on the impact of teaching TIC to NP students and their identification of SDOH. TIC aligned with SDOH content could help NP students more readily identify SDOH or help them identify and intervene with different SDOH than the most common ones.

More work also needs to be done to incorporate concepts of SDOH and diversity, equity, and inclusion (DEI). Discussions of SDOH can be stigmatizing, non-inclusive, and can create separation between groups of people. Therefore, this is another area of research that needs further work to understand our bias in nursing education from a
research perspective. Intervention studies could be conducted to determine how DEI while discussing SDOH in nursing education impacts patient outcomes.

In this program of research, insights from this study could be extended to other participant populations to understand the knowledge, comfort level, and application of SDOH to the plan of care of patients by prelicensure nursing students and nurses in practice. These questions could also be extended to SDOH in other patient populations. This program of research could also investigate practical interventions that nurses and nursing students could implement to mitigate negative SDOH. Policy decisions could naturally follow intervention studies as long as there is the infrastructure in place to support the social needs of patients.

Conclusions

This journey began with my own questions about how to influence health equity through SDOH in geriatric adult patients as a nurse and nurse educator. However, I found my own gaps in understanding about how nurses and nursing students conceptualize the influence of social determinants in the care of their patients. NP students are a unique population, in that they are already nurses, but will now be entering clinical practice as providers who will make clinical treatment decisions with their patients. Geriatric patients have unique health concerns related to aging and the influence of SDOH over their own life course. Therefore, this study sought to describe how NP students conceptualize SDOH for geriatric patients, explore NP student comfort in asking about patient SDOH, and describe how NP students incorporate their knowledge of SDOH to the plan of care for geriatric patients.
The findings of this study revealed that NP students can identify at least two SDOH associated with geriatric patients. They are most comfortable asking about, and most frequently identify, consider, and incorporate SDOH of social support, transportation, and access to care into the plan of care of geriatric patients. NP students are least comfortable asking about, and least frequently identify, consider, and incorporate SDOH of discrimination, civic participation, and crime and violence into the plan of care of geriatric patients. While NP students do consider and incorporate SDOH, identification and interventions are limited to the most common SDOH.

While the results of the study answer the research questions, it also has implications for nursing education and practice. There is a great deal of literature about SDOH, however many questions remain about how to teach and embed SDOH as a common element of nursing and healthcare practice. Ultimately, the goal of education and practice interventions around SDOH are to improve health outcomes and achieve health equity for geriatric patients.
REFERENCES


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https://www.aanpcert.org/certs/agnp


https://doi.org/10.1016/j.nurpra.2020.03.011


# APPENDIX A
## LITERATURE REVIEW TABLE

<table>
<thead>
<tr>
<th>Authors, Year</th>
<th>Purpose</th>
<th>Methods/Design</th>
<th>Sample</th>
<th>Results/Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adams (2021)</td>
<td>To describe teaching strategy to explore SDOH through historical narrative.</td>
<td>Description</td>
<td>N=38 nursing students in 1st semester course</td>
<td>Use of Book <em>The Ghost Map</em> (2007) to inspire discussion-based activities to explore SDOH, health disparities, and stigma</td>
</tr>
<tr>
<td>Allen et al. (2019)</td>
<td>To evaluate a service-learning IPE experience with dental hygiene and undergraduate nursing students</td>
<td>Qualitative thematic analysis from written reflections</td>
<td>N=31 dental hygiene students</td>
<td>Service-learning enhances IPE outcomes in SDOH when working on school-based health screenings with nursing students</td>
</tr>
<tr>
<td>Altman et al. (2021)</td>
<td>To describe process to create inclusive and antiracist environment in nursing education using cases to examine social determinants of health</td>
<td>Description</td>
<td>Not applicable</td>
<td>Proposes use of case studies that focus on systemic racism in SDOH in nursing education</td>
</tr>
<tr>
<td>Amerson (2019)</td>
<td>To describe the development of a global health certificate program (GHCP) for undergraduate students in a school of nursing</td>
<td>Description</td>
<td>Not applicable</td>
<td>Study abroad nursing courses alone can be limited, while GHCP encourages interprofessional experiential learning. Following 3 other global health courses, student complete a study abroad course in Peru.</td>
</tr>
<tr>
<td>Bagdan (2018)</td>
<td>To describe the incorporation of the SDOH into ADN Education</td>
<td>Mixed methods quasi-experimental design</td>
<td>N=32 senior nursing students enrolled in 10 week clinical practicum</td>
<td>Incorporation of patient centered assessment method (PCAM), pre/posttest and focus discussion to assess PCAM. Students identified ways to close gaps in care transitions to teach students about the SDOH in an ADN program. Development of <em>Social Determinants of Health Knowledge Assessment</em> pre/posttest</td>
</tr>
<tr>
<td>Bell &amp; Buelow (2014)</td>
<td>To describe an elective service-learning advocacy course for undergraduate nursing and health professions students</td>
<td>Description</td>
<td>Not applicable</td>
<td>Course includes service-learning at safety net clinic with course assignments including poverty simulation, online lessons, IPE assignments, 1 home visit, weekly clinical reflective journals, and final presentation</td>
</tr>
<tr>
<td>Bishop et al. (2021)</td>
<td>To describe a non-traditional clinical elective for medical students</td>
<td>Description</td>
<td>Not applicable</td>
<td>Course includes 30 hours of online modules plus hands-on clinical learning to working within a mobile outreach team (nurse, physician preceptor, medical students) to understand homelessness and provide care to homeless community</td>
</tr>
<tr>
<td>Study</td>
<td>Objective</td>
<td>Methodology</td>
<td>Participants</td>
<td>Results and Implications</td>
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<tr>
<td>Bower et al. (2021)</td>
<td>To describe critical service learning (CSL) pedagogy in a MSN/PHN program curriculum</td>
<td>Description not applicable</td>
<td>N=18 students across four courses</td>
<td>Applied CSL pedagogy (work for change, distribution of power) across courses in MSN/MPH program to develop structural competency of students</td>
</tr>
<tr>
<td>Brown et al. (2021)</td>
<td>To explore the ratings of undergraduate students on the impact of SDOH on health and wellbeing before and after a course.</td>
<td>Quantitative pre/posttest design, and quant/qual course evaluations</td>
<td>N=18 nontraditional undergraduate allied health students</td>
<td>Course including activities of modified “privilege walk”, online discussion posts, photography essay, case study, and a service-learning project highly effective in teaching SDOH based on student ratings. Likert rating pre/post course on student perceptions of SDOH impact on health, qualitative and qualitative ratings on course feedback. Student rating before and after provides educators opportunity to reorganize content based on feedback.</td>
</tr>
<tr>
<td>Bryant-Moore et al. (2018)</td>
<td>To describe a graduate nursing service-learning project for Master’s level/NP students through the GOOD Scholars Program and the student/community outcomes</td>
<td>Qualitative</td>
<td>N=18 graduate students in various NP specialties and nursing administration</td>
<td>Master’s-level/NP students participated in a service-learning project exposing them to a social/physical issue (long bus rides for students due to school consolidations) SL broadened students’ perspectives on social determinants of health, health disparities.</td>
</tr>
<tr>
<td>Buys &amp; Somerall (2018)</td>
<td>To describe a SDOH project in an FNP program used to increase FNP students’ knowledge of SDOH and improve their integration of screening and referral processes into their clinical care</td>
<td>Qualitative</td>
<td>N=169 family nurse practitioner students</td>
<td>Project includes three phases in clinical program: (1) literature review on SDoH, (2) interview of clinical preceptor and development of screening and referral tools, (3) implementation of screening and referral process. Students improved knowledge and attitudes about SDOH, tools helpful for preceptors as well.</td>
</tr>
<tr>
<td>Cantey et al. (2016)</td>
<td>To describe a teaching strategy using student-developed low-fidelity simulations for undergraduate nursing students to increase their SDOH and cultural awareness</td>
<td>Description with qualitative and quantitative activity evaluations</td>
<td>N=7 Likert N=18 total participants in HEA program</td>
<td>Undergraduate nursing student-developed simulations innovative strategy to facilitate learning about cultural awareness, SDOH, and nursing role.</td>
</tr>
<tr>
<td>Clark (2022)</td>
<td>To evaluate student learning of the SDOH and health inequities as they engaged in caring at a clinical site</td>
<td>Quantitative Survey and Qualitative, Grounded theory</td>
<td>N= 50 surveys N= 4 interviews</td>
<td>Resulting themes: connecting on a human scale, engaging in self-reflection, building relationships with marginalized individuals, and developing skills to make needed change.</td>
</tr>
<tr>
<td>Coppa &amp; Barcelos</td>
<td>To evaluate NP student mastery and application of SDoH and cultural fluency, assess impact of academic</td>
<td>Prospective quasi-</td>
<td>N= 35 FNP and 10 Adult Geriatric Nurse</td>
<td>NP students in both ACPs and non-ACPs in demonstrated improved SDOH and cultural fluency mastery over time using</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Description</td>
<td>Methodology</td>
<td>Sample Size</td>
<td>Findings/Implications</td>
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<tr>
<td>Winchester (2020)</td>
<td>clinical partnerships (ACP) as clinical settings</td>
<td>experimental, pre/post study</td>
<td>Practitioner (AGNP) students</td>
<td>competency-based evaluation tool. Non-ACPs scored higher than ACPs.</td>
</tr>
<tr>
<td>Davis et al. (2021)</td>
<td>To describe the integration of SDOH across a college of nursing curriculum including BSN; APN (adult gerontology acute care NP, FNP, and psychiatric mental health NP); and PhD</td>
<td>Description</td>
<td>Not applicable</td>
<td>College Wide: Diversity, equity, and inclusion initiatives Undergraduate: experiential learning, online modules, unfolding case studies, group discussions, simulations (ex: poverty simulation) Graduate: virtual unfolding case studies, reflection and discussion board assignments, community-focused activity PhD: emancipatory nursing praxis, online cases, face-to-face activities</td>
</tr>
<tr>
<td>Debrow et al. (2020)</td>
<td>To describe the use of a poverty simulation to teach RN-to-BSN students the concepts of poverty, SDOH, and vulnerable populations</td>
<td>Qualitative Survey</td>
<td>Unknown</td>
<td>Students reported an “eye-opening” experience and change in attitude towards people living in poverty, appears beneficial</td>
</tr>
<tr>
<td>Decker et al. (2017)</td>
<td>To describe how nursing faculty incorporated concepts of social determinants of health throughout a prelicensure nursing program</td>
<td>Qualitative and quantitative evaluation</td>
<td>Unknown</td>
<td>Revision of a prelicensure nursing community concept-based curriculum. Learning activities included Unnatural Causes, poverty simulation (with Attitude Toward Poverty Scale), Bystander Intervention Project, after school program. 2 community clinical experiences included junior year at a homeless shelter and senior year at specialized sites. Didactic focus on SDOH. Tiered approach reduced judgmental attitudes towards people living in poverty, and feeling of empowerment</td>
</tr>
<tr>
<td>Dimaano &amp; Spigner (2017)</td>
<td>To explore whether an educational strategy utilizing a biography would influence Master’s of Public Health (MPH) students’ beliefs about health care, medical ethics, and SDOH</td>
<td>Qualitative thematic analysis of pre/posttest</td>
<td>N=17 MPH students</td>
<td>Student awareness improved on complex issues in SDOH when using the book Immortal Life of Henrietta Lacks as a teaching strategy to discuss health disparities and SDOH</td>
</tr>
<tr>
<td>Doobay-Persaud et al. (2019)</td>
<td>To describe characteristics from publications about teaching SDOH to students in undergraduate medical education (UME).</td>
<td>Scoping review</td>
<td>22 articles in final review</td>
<td>There is a growing interest in teaching the SDOH in medical education, though insufficient detail. There is a lack of objective assessment tools to describe learner development and impact.</td>
</tr>
<tr>
<td>Ea et al. (2023)</td>
<td>To describe the integration of SDOH, social justice, and health equity throughout a baccalaureate nursing program using the Design Thinking Framework</td>
<td>Description</td>
<td>Not applicable</td>
<td>Design Thinking incorporated into four courses in curriculum.</td>
</tr>
<tr>
<td>Ezeonwu (2019)</td>
<td>To describe a the Making a Difference Project in a 1st year general Master of</td>
<td>Description</td>
<td>Not applicable</td>
<td>Students explore SDOH, privilege, oppression, stigma, identity, and positionality, developing project goals, and advocating for issues with local legislators. Outcomes include articulation of</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
<td>Qualitative/Quantitative</td>
<td>Sample Size</td>
<td>Learning Outcomes</td>
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</tr>
<tr>
<td>Nursing program to teach about SDOH</td>
<td>inequities in health outcomes, analyzing social justice issues through literature review and advocacy.</td>
<td>Qualitative</td>
<td>N=24</td>
<td>Nursing students worked with substance abuse treatment groups, veterans, and GED completion programs within a correctional facility as a component of public health education. Students reflected on institutionalized racism, causes of SDOH, implicit bias, and experiences.</td>
</tr>
<tr>
<td>Gorman (2018)</td>
<td>To describe an experiential learning activity in public health nursing education focused on the SDOH through a collaboration with a correctional facility.</td>
<td>Qualitative</td>
<td>N=24</td>
<td>Following completion of selected readings, and the Social Responsibility Inventory, students completed a community assessment by walking through a neighborhood and exploring case study questions. Students self-reported learning about the SDOH.</td>
</tr>
<tr>
<td>Granger (2014)</td>
<td>To describe an active learning community assessment exercise in a junior level nursing course.</td>
<td>Description</td>
<td>Not applicable</td>
<td>Students worked with substance abuse treatment groups, veterans, and GED completion programs within a correctional facility as a component of public health education. Students reflected on institutionalized racism, causes of SDOH, implicit bias, and experiences.</td>
</tr>
<tr>
<td>Hager et al. (2019)</td>
<td>To describe an interprofessional case-based activity between pharmacy and medical students exploring SDOH and opioid misuse</td>
<td>Qualitative and quantitative post activity survey</td>
<td>N= 12</td>
<td>Interprofessional case study activity enhanced understanding of the role of SDOH in opioid misuse. Promoted collaboration in problem-solving around a contemporary issue.</td>
</tr>
</tbody>
</table>
| Hekel et al. (2023)        | To describe the development of an unfolding case study to teach the SDOH in a prelicensure nursing educational setting | Description              | Not applicable | Description of case study development steps  
Case study replaced two lectures and one assignment, allowing for active engagement by students |
| Janeway et al. (2020)      | To describe the effect of a service-learning project (SLP) addressing SDOH on medical students | Longitudinal Quantitative Pretest-posttest | N=35 1st year medical students | Using SLP model in medical education, students screened surgical patients for social needs. The SLP model improved medical students’ self-perceived skills and confidence working with patients and addressing SDH. 100% of students continued to assess for SDH on clerkships.  
Survey instrument developed to quantify self-assessment knowledge and attitudes |
<p>| Jenerette et al. (2021)    | To describe the Simulation in PhD Program (SiPP) approach to teach social justice advocacy concepts to PhD nursing students through experiential learning | Description              | Not applicable | Nursing PhD students delivered positive feedback following online asynchronous coursework and three leveled SiPP activities using simulation and debriefing to address the SDOH |
| Lebo (2023)                | To describe the development, content, and learning outcomes of telemedicine simulations addressing the SDOH | Description              | Not applicable | Describes the contents of five telemedicine clinical simulations. Students reflected on implicit bias, patient struggles with the SDOH, professional resources, and care planning. |</p>
<table>
<thead>
<tr>
<th>Authors</th>
<th>Description</th>
<th>Methodology</th>
<th>Sample Size</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesselroth et al. (2021)</td>
<td>To describe the development of a Design Thinking (DT) workshop to teach social and structural determinants of health (SSDOH) to medical and physician assistant (PA) students</td>
<td>Quantitative post workshop Likert survey</td>
<td>N=37 2nd year PA and 3rd year medical students</td>
<td>Design Thinking (DT) is a problem finding/solving process using empathy and person-centered design. Virtual workshop integrating didactic lectures and small group activities taught SSDOH and systems level solutions. Content valuable to most students, though 50% did not think they would use DT in their own practice.</td>
</tr>
<tr>
<td>McKinley Yoder &amp; Pesch (2020)</td>
<td>To describe an innovative partnership between a school of nursing with and a fire department (FD) to address clients SDOH</td>
<td>Description</td>
<td>Not applicable</td>
<td>BSN clinicals in which students and faculty follow up on referrals by FD, focused on non-emergent EMS calls and identifying sustainable solutions for clients</td>
</tr>
<tr>
<td>Myers et al. (2018)</td>
<td>To discuss the integration of population health into FNP curriculum, rationale, and takeaway lessons</td>
<td>Description and qualitative feedback on simulation experiences</td>
<td>Not applicable</td>
<td>Through a grant, added didactic and clinical population health content throughout FNP program across three courses. Didactic content includes population health definitions/ concepts, health disparities, social determinants, outcome, basic epidemiology, evidence-based practice (EBP), quality improvement, &amp; role. Clinical activities include simulations (with one-minute evaluations), skill development, integration and synthesis.</td>
</tr>
<tr>
<td>Pollio et al. (2023)</td>
<td>To describe a gamification strategy to improve SDOH, levels of prevention, and resiliency in an elective BSN course</td>
<td>Description, qualitative and quantitative feedback</td>
<td>N= 41 students</td>
<td>Students increased confidence in understanding of the nurse’s role in primary prevention, secondary prevention and the SDOH.</td>
</tr>
<tr>
<td>Porter et al. (2020)</td>
<td>To describe the threading of concept based curriculum (SDOH) throughout a BSN program</td>
<td>Description</td>
<td>Not applicable</td>
<td>Exemplars of concepts and activities demonstrating how SDOH have been applied to courses including nutritional assessment, genogram, cases study, group discussions and presentations, windshield survey, interactive modules and reflection</td>
</tr>
<tr>
<td>Pullium (2020)</td>
<td>To describe a clinical practicum at a local free clinic for undergraduate students to assess SDOH</td>
<td>Description</td>
<td>N=4 nursing students</td>
<td>Undergraduate nursing students asked patients questions about safe housing, food security, and medication affordability during a preexisting walking program at a free clinic.</td>
</tr>
<tr>
<td>Quinn, et. al. (2019)</td>
<td>To describe the approach of one nursing program to community health through a SDOH framework in through two courses senior year</td>
<td>Description</td>
<td>Not applicable</td>
<td>Community Health and Policy course includes lectures, classroom discussion, community assessment, service-learning, and reflection. The Community Health Project is a clinical practicum. Through these courses, SON have established partnerships with communities and community engagement.</td>
</tr>
<tr>
<td>Reid &amp; Evanson (2016)</td>
<td>To discuss available poverty-related simulation tools and their integration into nursing education</td>
<td>Review of Literature</td>
<td>Not applicable</td>
<td>Review of available poverty simulation tools including costs and brief descriptions. Students feel experience realistically demonstrated poverty and stress, and knowledge of resources improved. Simulations do not adequately address health disparities nor move students to act. Caution should be used not to perpetuate stereotypes,</td>
</tr>
<tr>
<td>Study</td>
<td>Description</td>
<td>N=</td>
<td>Recommendations</td>
<td></td>
</tr>
<tr>
<td>-------</td>
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<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Riley et al. (2020)</td>
<td>To discuss the curricular framework, Continuous Improvement Process (CIP), that can be implemented in nursing and healthcare curricula to plan training for food insecurity assessment, care, and patient education.</td>
<td>36 junior or senior BSN students</td>
<td>• Commit to the integration of SDOH throughout curricula. • Expand clinical education experiences. • Develop interprofessional education initiatives. • Focus on skills such as motivational interviewing and empathic inquiry. • Increase content related to social justice and advocacy. • Create programs of service learning. • Require faculty education related to SDOH</td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td>Abstract</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-----------</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Villarruel et al. (2014)</td>
<td>To describe barriers and facilitators to addressing the 3Ds (diversity, disparities, and social determinants), and to present exemplars in nursing education, practice, and research.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voss (2018)</td>
<td>To understand how emancipatory knowing is expressed by nursing students in written reflections following service-learning experiences.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whisenant et al. (2020)</td>
<td>To describe a curricular innovation in medical education through a Community Engaged Physician (CEP) course series and interprofessional service-learning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woolsey &amp; Narruhn (2018)</td>
<td>To describe a graduate social justice ethics class for advanced practice nurses (APRN) and public health nurses (PHN) framed by bio-power and structural competency.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woolsey &amp; Narruhn (2020)</td>
<td>To examines the impact of a structural competency (SC) module on DNP students’ perspectives on structural health determinants.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zappas et al. (2021)</td>
<td>To recommend strategies for faculty and academia on how to decolonize nursing education.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Work on improving diversity in workforce, student, and faculty.

Societal impact and outcomes:
- Exemplars: increase diversity in nursing school applicants and accepted students, reduce negative effects of education and social disparities in nursing school, clinical placements of NP students with preceptor at homeless shelter and clinical community settings across nursing levels.
- Students demonstrated expressions of emancipatory knowing, or the ability to recognize how social and political injustices could be changed to improve lives, after service-learning experiences.
- Community Engaged Physician (CEP) course series-curricular medication: 4 courses over 4 years, blended format; SL component with interprofessional (IP) team.
- Students perceived that course prepared them to identify SDOH and collaborate in IP team.
- Course assignments included papers, reflecting on social location, positionality, biases.
- Course framework:
  - Bio-power explains the power dynamics in society that create systems that marginalize some groups.
  - Structural competency is the ability to incorporate bio-power to understand the systemic factors of the SDOH when assessing and diagnosing a patient.
- DNP students demonstrated ability to identify structural effects on patient health, knowledge of structural terms after 3-hour structural competency module (SCM). Initial empowerment to create change on individual and organizational levels decreased after 3 months.

- Strategies: Weave SDOH throughout curriculum; use critical anti-discriminatory pedagogy; do not use race/ethnicity unless necessary in social history of cases (like screening and treatment variations or discussion of genomics); work with...
| Zomorodi et al. (2018) | To describe an interprofessional service-learning pilot activity for graduate nursing, pharmacy, and occupational therapy (OT) students to address SDOH through home visits | Quantitative and qualitative | N=11 (5 OT, 2 nursing, 4 pharmacy) | Through collaboration with community partner (home care agency), interprofessional health students participated in hotpotting to identify issues that may lead to rehospitalizations. Interprofessional Socialization and Valuing Scale to assess change in student understanding Qualitative 1-minute reflections demonstrated increased respect for chronic disease management |
APPENDIX B
IRB

IRB Submission for HR-4173 has been approved

no-reply@kuai.cc@mx3.kuali.co <no-reply@kuai.cc@mx3.kuali.co>
on behalf of
Kuali Notifications <no-reply@kuai.cc>
Tue 6/7/2022 11:11 AM
To:Schnable, Theresa <theresa.gruenke@marquette.edu>

HR- 4173

PI: Thomas Drellbaehr, Kristina

Title: Application of the Social Determinants of Health to Geriatric Patients by Family Nurse Practitioner Students

marquette.kuali.co/protocols/protocols/622dac66917ba3b00356a12a1a

Your initial protocol for HR-4173 received Exempt review and was approved on Tuesday, June 7th 2022.

Please review the reminders below for your review type:

For Initial review of Exempt, Expedited or Full Board studies:

- To access your approval letter, open your study in Kuali and click on the Admin Attachments indicator on the right side of the protocol. The approval letter will be listed as a document.

For Expedited or Full Board studies - any submission type:

- Approval letter will be in the Admin Attachments indicator on the right side of the protocol.
- Stamped and approved consent and recruitment materials will be in the Attachments section at the bottom of the approved version of the protocol. Use of these stamped documents is required.
- For legacy (pre-Kuali) studies, the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use this for future amendment submissions on legacy protocols.

For Exempt Amendment submissions:

- This email will serve as your approval documentation. It can also be found in the Action Log tab on your Kuali protocol. For legacy studies the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use this for future amendment submissions.
From: no-reply@kuali.co on behalf of Kuali Notifications <no-reply@kuali.co>
Sent: Monday, December 19, 2022 10:27 AM
To: Schnable, Theresa
Subject: IRB Submission for HR-4173 has been approved

HR-4173

PI: Thomas Dreifuerst, Kristina

Title: Application of the Social Determinants of Health to Geriatric Patients by Family Nurse Practitioner Students

marquette.kuali.co/protocols/protocols/63968766ab1201003c68f30

Your Amendment protocol for HR-4173 received Exempt review and was approved on Monday, December 19th 2022.

Please review the reminders below for your review type:

For Initial review of Exempt, Expedited or Full Board studies:

- To access your approval letter, open your study in Kuali and click on the Admin Attachments indicator on the right side of the protocol. The approval letter will be listed as a document.

For Expedited or Full Board studies: any submission type:

- Approval letter will be in the Admin Attachments indicator on the right side of the protocol.
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For Exempt Amendment submissions:

- This email will serve as your approval documentation. It can also be found in the Action Log tab on your Kuali protocol. For legacy studies the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use this for future amendment submissions.
HR-4173

Pf. Thomas Dreifuerst, Kristina

Title: Application of the Social Determinants of Health to Geriatric Patients by Family Nurse Practitioner Students

marquette.kuali.co/protocols/protocols/63dbd9662982a10034cbebf4b

Your Amendment protocol for HR-4173 received Exempt review and was approved on Thursday, February 2nd 2023.

Please review the reminders below for your review type:

For Initial review of Exempt, Expedited or Full Board studies:

- To access your approval letter, open your study in Kuali and click on the Admin Attachments indicator on the right side of the protocol. The approval letter will be listed as a document.

For Expedited or Full Board studies- any submission type:

- Approval letter will be in the Admin Attachments indicator on the right side of the protocol.
- Stamped and approved consent and recruitment materials will be in the Attachments section at the bottom of the approved version of the protocol. Use of these stamped documents is required.
- For legacy (pre-Kuali) studies, the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use this for future amendment submissions on legacy protocols.

For Exempt Amendment submissions:

- This email will serve as your approval documentation. It can also be found in the Action Log tab on your Kuali protocol. For legacy studies the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use
IRB Submission for HR-4173 has been approved

no-reply@kuail.co@m3.kuail.co <no-reply@kuail.co@m3.kuail.co>
on behalf of
Kuali Notifications <no-reply@kuail.co>
Fri 3/24/2023 1:07 PM
To: Schnable, Theresa <theresa.grueneke@marquette.edu>

HR- 4173

PI: Thomas DeFuerst, Kristina

Title: Application of the Social Determinants of Health to Geriatric Patients by Family Nurse Practitioner Students

marquette.kuali.co/protocol/protocols/640640ef0d6e6c70034ae614c

Your Amendment protocol for HR-4173 received Exempt review and was approved on Friday, March 24th 2023.

Please review the reminders below for your review type:

**For Initial review of Exempt, Expedited or Full Board studies:**

- To access your approval letter, open your study in Kuali and click on the Admin Attachments indicator on the right side of the protocol. The approval letter will be listed as a document.

**For Expedited or Full Board studies - any submission type:**

- Approval letter will be in the Admin Attachments indicator on the right side of the protocol.
- Stamped and approved consent and recruitment materials will be in the Attachments section at the bottom of the approved version of the protocol. Use of these stamped documents is required.
- For legacy (pre-Kuali) studies, the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use this for future amendment submissions on legacy protocols.

**For Exempt Amendment submissions:**

- This email will serve as your approval documentation. It can also be found in the Action Log tab on your Kuali protocol. For legacy studies the final approved version of your protocol form can be found in the attachments section of the Kuali protocol. Please use this for future amendment submissions.

https://outlook.office.com/mail/dAAQaLdAxmOIQy7jB7L7SjWfQ0NQzGI34MZLWLW7bH7N2bN3bQzY2NYlQXQQBlDUEWvJf23MHpk2BeQy0MB6315D
APPENDIX C
DEMOGRAPHIC SURVEYS

Consent and Demographics Survey: Iteration 1 used in Study Arm One

Intro and Consent

Study Information Sheet

You are invited to participate in a research study on Using Screen-Based Virtual Simulation in Family Nurse Practitioner Education under the direction of Dr. Angela McEachin of the School of Nursing, George Washington University, Dr. Kristin Thomas Dillahunty from Marzano University, and Dr. Carol Brazeau of the School of Nursing, George Washington University. Taking part in this research is entirely voluntary and your academic standing will not, in any way, be affected should you choose not to participate or if you decide to withdraw from the study at any time.

The purpose of this study is to develop evidence demonstrating the use of screen-based virtual simulation in attaining mastery of concepts in the domains of assessment, diagnosis, treatment, and evaluation, and across the populations of pediatrics, adults, and geriatrics.

Those who agree to participate in the study intervention will complete 70 hours of clinical experiences using screen-based virtual clinical simulation and virtual debriefing (Experimental group). Those who agree to participate and complete their hours as usual in traditional precepted clinical experiences will be in the control group. Participants in the experimental group agree to allow the virtual debriefing to be recorded and used for study data. Participants in both groups (experimental and control) will agree to allow the information from your student electronic tracking systems (EOXIT and CORE) and test results of the Diagnostic Readiness Test to be used for the research study. Additionally, participants in both groups will complete a survey on what you have done in your FNP clinicals and how these experiences have prepared you for practice. Answering these questions will take you about 20 minutes.

What are the reasons you might choose to volunteer for this study? The COVID-19 pandemic caused disruption and/or cessation of many clinical rotations, and prior to the pandemic, there was significant growth and shrinking availability of quality clinical sites for NP clinical training. You may have encountered these problems and struggled to complete your clinical hours or had the breadth and depth of experiences you desired. Students volunteering for this study will have 70 hours of their clinical training provided using simulation, including weekly debriefing sessions with trained faculty. These sessions will be video recorded for quality assurance and not used outside the research team. Students in both groups may benefit directly from this study as taking the Diagnostic Reasoning Test may provide additional preparation for the NP Certification test.

What are the reasons you might not choose to volunteer for this study? If participating in the experimental group, the final 70 hours of your clinical will not be in traditional precepted clinical experiences.

Possible risks or discomforts you could experience during this study include stress from completing clinical experiences and debriefing in a virtual format. Research demonstrates that virtual simulations are effective educational approaches. However, rigorous evaluation in-comparing this to traditional clinical experiences has not occurred.

You will not benefit directly from your participation in the study. The benefits to science and humankind that might result from this study are developing evidence for virtual simulation to substitute for traditional precepted clinical experiences. Given the current pandemic and shrinking availability of quality clinical sites and preceptors, alternative methods must be developed to ensure graduates of nurse practitioner programs are prepared for practice.
Every effort will be made to keep your information confidential; however, this cannot be guaranteed. All data will be collected via online formats, will be deidentified for data analyses, and results will be reported in aggregate. If results of this research study are reported in journals or at scientific meetings, the location of the school, name of the program or people who participated in this study will not be named or identified.

Further information regarding this study may be obtained by contacting Dr. Michellei, Principal Investigator of the study, at telephone number (202) 394-2998, Dr. Kristi Thomas Drummond, Co-Principal Investigator at telephone number (618) 281-3817 or Dr. Carol Braungart at telephone number (202) 964.4241.

Please create and type your unique 13-digit study identification code that you will use on all study materials and interactions.

For those starting in March 2023, your code will be: 038131 followed by your first and last initial and the last five digits of your GWID. Example: 038131AM50000

Contact Information (This information will be removed and deidentified for data analysis):

First Name
Last Name
GWID Number

To consent to the study and start the survey, select START below and then the NEXT button at the bottom right of your screen.

☐ Start

For verification purposes.

☐ I read a robot

Demographics

What is your age?
With which gender do you most closely identify?

- Male
- Female
- Transgender Male
- Transgender Female
- Not Listed
- Prefer not to answer

Race [Select ALL of those with which you identify):

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- More than one race
- Unknown or not reported

Ethnicity [Select ONLY one with which you MOST CLOSELY identify):

- Hispanic or Latino
- Not Hispanic or Latino
- Unknown or not reported

In which state did you complete the majority of your clinical rotations?

What is the highest nursing degree you have earned?

- Diploma in Nursing
- Associates Degree
- Bachelor’s Degree
- Master’s Degree
- DNP
- PhD/DrSc
Please indicate the number of years of nursing practice experience, not including your NP clinical rotations, you have in each of the practice areas listed below. If none, you may leave this question blank.

<table>
<thead>
<tr>
<th>Practice Area</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic setting</td>
<td>0</td>
</tr>
<tr>
<td>Ambulatory care setting</td>
<td>0</td>
</tr>
<tr>
<td>Community health</td>
<td>0</td>
</tr>
<tr>
<td>Correctional facility</td>
<td>0</td>
</tr>
<tr>
<td>Home health</td>
<td>0</td>
</tr>
<tr>
<td>Hospital</td>
<td>0</td>
</tr>
<tr>
<td>Insurance claims/benefits</td>
<td>0</td>
</tr>
<tr>
<td>Nursing Home/extended care/assisted living facility</td>
<td>0</td>
</tr>
<tr>
<td>Occupational health</td>
<td>0</td>
</tr>
<tr>
<td>Policy/planning/regulatory/licensing agency</td>
<td>0</td>
</tr>
<tr>
<td>Public health</td>
<td>0</td>
</tr>
<tr>
<td>School health service</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
</tr>
</tbody>
</table>

Please indicate the number of years of nursing practice experience, not including your NP clinical rotations, you have in each specialty areas listed below.

<table>
<thead>
<tr>
<th>Specialty Area</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatology/Pediatrics (The majority of patients are under the age of 18)</td>
<td>0</td>
</tr>
<tr>
<td>Outpatient - Primary Care</td>
<td></td>
</tr>
<tr>
<td>Outpatient - Subspecialty care, if so what subspecialty</td>
<td></td>
</tr>
<tr>
<td>Inpatient - Medical/Surgical, Acute Care</td>
<td></td>
</tr>
<tr>
<td>Inpatient - ICU/Critical Care</td>
<td></td>
</tr>
<tr>
<td>Inpatient - Subspecialty Care, if so what subspecialty</td>
<td></td>
</tr>
<tr>
<td>Emergency/Urgent Care</td>
<td></td>
</tr>
<tr>
<td>Long Term Care/Home Care</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialty Area</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult (The majority of patients are aged 19-64)</td>
<td>0</td>
</tr>
<tr>
<td>Outpatient - Primary Care</td>
<td></td>
</tr>
<tr>
<td>Outpatient - Subspecialty care, if so what subspecialty</td>
<td></td>
</tr>
<tr>
<td>Inpatient - Medical/Surgical, Acute Care</td>
<td></td>
</tr>
<tr>
<td>Inpatient - ICU/Critical Care</td>
<td></td>
</tr>
<tr>
<td>Inpatient - Subspecialty Care, if so what subspecialty</td>
<td></td>
</tr>
<tr>
<td>Emergency/Urgent Care</td>
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<tr>
<td>Long Term Care/Home Care</td>
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</tr>
<tr>
<td>Other</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Specialty Area</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geriatric (The majority of patients are aged 65 and older)</td>
<td>0</td>
</tr>
<tr>
<td>Outpatient - Primary Care</td>
<td></td>
</tr>
<tr>
<td>Outpatient - Subspecialty care, if so what subspecialty</td>
<td></td>
</tr>
<tr>
<td>Inpatient - Medical/Surgical, Acute Care</td>
<td></td>
</tr>
<tr>
<td>Inpatient - ICU/Critical Care</td>
<td></td>
</tr>
<tr>
<td>Inpatient - Subspecialty Care, if so what subspecialty</td>
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</tr>
<tr>
<td>Emergency/Urgent Care</td>
<td></td>
</tr>
<tr>
<td>Long Term Care/Home Care</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Total: 0
Consent and Demographics Survey: Iteration 2 used in Study Arm Two

1. Please create and type your unique study identification code that you will use on all study materials and interactions.

For those starting in March 2023, your code will be: 030123 followed by your **first and last initial** and the **last five digits of your student ID #**. Example 030123AM00000

Student Email Address

To agree to participate to the study and start the survey, select START below and the arrow button at the bottom of your screen

2. What is your age?

3. Which gender do you think of yourself as?
   - Male
   - Female
   - Transgender Man/trans man
   - Transgender Woman/trans woman
   - Genderqueer/gender nonconforming neither exclusively male or female
   - Additional gender category (or other); please specify:_______
   - Decline to answer

4. Race (Select ALL of those with which you identify)
   - Asian
   - Black or African American
   - Native Hawaiian or Other Pacific Islander
   - White
   - More than one race
   - Unknown or not reported

5. Ethnicity (select ONLY one with which you MOST CLOSELY identify)
   - Hispanic or Latino
   - Not Hispanic or Latino
   - Unknown or not reported

6. In which state did you complete the majority of your clinical rotations?

7. How many years of nursing practice experience do you have, not including your NP clinical rotations?

8. Has your nursing practice been focused in gerontology?
9. Would you be willing to participate in a 30-minute, anonymous focus group?

Consent and Demographics: Iteration 2 in Qualtrics

Please create and type your unique study identification code that you will use on all study materials and interactions.

For those starting in March 2023, your code will be: 000123 followed by your first and last initial and the last five digits of your student ID #: Example: 000123AM00000

Student Email Address

To agree to participate in the study and start the survey, select START below and the arrow button at the bottom of your screen.

START

What is your age?

Which gender do you think of yourself as?

- Male
- Female
- Transgender man/ trans man
- Transgender woman/ trans woman
- Genderqueer/ gender nonconforming neither exclusively male nor female
- Additional gender category (or other); please specify:

Decline to answer
Race (Select ALL of those with which you identify)

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- More than one race
- Unknown or not reported

Ethnicity (select ONLY one with which you MOST CLOSELY identify)

- Hispanic or Latino
- Not Hispanic or Latino

In which state did you complete the majority of your clinical rotations?

[ ]

How many years of nursing practice experience do you have, not including your NP clinical rotations?

[ ]

Has your nursing practice been focused in gerontology?

- Yes
- No
Has your nursing practice been focused in gerontology?

- Yes
- No

Would you be willing to participate in a 30-minute, anonymous focus group?

- Yes
- No

We thank you for your time spent taking this survey. Your response has been recorded.
Recruitment Email: Study Arm Two

You are invited to participate in a research study on Application of Classroom Content to the Care of Geriatric Patients by Nurse Practitioner (NP) Students under the direction of Dr. Kristina Thomas Dreifuerst and doctoral student Theresa Schnable from Marquette University College of Nursing. Taking part in this research is entirely voluntary and your academic standing will not, in any way, be affected should you choose not to participate or if you decide to withdraw from the study at any time.

The purpose of this study is to explore the application of classroom content to the NP clinical care of geriatric patients. If you agree to participate in the study, you will continue your regularly scheduled final clinical practicum. When you are in outpatient clinic settings, you will be asked to complete a short online survey related to a single geriatric patient encounter per week for 5 weeks using your cellphone, a tablet or computer. The survey questions will be accessed by a link to Qualtrics where you will use a confidential study participant number, not your name. You will not be asked any identifying patient information and answering the survey will not violate HIPAA guidelines. Answering these questions will take less than 10 minutes each week of the study (5 weeks) and the survey should be completed within two hours after seeing your last patient for the clinical day, so you remember the details. The survey can be completed at the clinical site, in the parking lot, or when you return home. If you do not care for a patient who is 65 years or older that week, you will start the survey but indicate no patients meet this criterion. The final question on the demographics form will ask you if you are willing to participate in a short 30-minute focus group via Zoom, which is not required to participate in the study. You will be offered an Amazon gift card worth $20 if you complete all 5 surveys, and an additional $10 Amazon gift card if you participate in the focus group.

Further information about this study can be found in [this video](https://marquette.az1.qualtrics.com/jfe/form/SV_0UNVm3I5ndOwvB4). If you are interested in participating in this study, please click on this survey link to create a unique ID number, enter your email address, and answer a few demographic questions: [https://marquette.az1.qualtrics.com/jfe/form/SV_0UNVm3I5ndOwvB4](https://marquette.az1.qualtrics.com/jfe/form/SV_0UNVm3I5ndOwvB4)

Further information regarding this study may be obtained by contacting Kristina Thomas Dreifuerst, Principal Investigator of the study at kristina.thomasdreifuerst@marquette.edu or doctoral student Theresa Schnable at theresa.gruenke@marquette.edu. If you have questions or concerns about your rights as a research participant, you can contact Marquette University’s Office of Research Compliance at (414) 288-7570. Thank you for your consideration.
Recruitment Email and Flyer Study Arm Three

As an NP student in your final clinical practicum in a family nurse practitioner or adult-gerontology primary care nurse practitioner program in the United States, you are invited to participate in a short survey about NP education. This anonymous 14-item survey explores the application of classroom content to the clinical care of geriatric patients by NP students. You will be asked to answer questions about your typical experiences in the care of geriatric patients in outpatient clinic settings. This survey should take less than 5 minutes to complete.

This study was determined as exempt by the Marquette University IRB. The risks associated with this project are minimal and there are no direct benefits to you. No identifying information will be collected, and your responses will be kept completely anonymous. You may end the survey at any time. Click here to continue.

Please share widely with your student nurse colleagues in their final clinical practicums in FNP and AGPCNP programs.

Thank you for your time!
Participate in a Research Study on NP Education

We are looking for nurse practitioner students in family or adult-gerontology primary care programs who take care of adults 65 years and older. The purpose of this study is to explore the application of classroom content to the clinical care of geriatric patients by NP students. To participate in a short survey, follow the link or scan the QR code below.

**Inclusion Criteria:**
- NP student in an FNP or AGPCNP program in the US
- In final clinical practicum in an outpatient setting
- Cares for adults 65 years and older

https://marquette.az1.qualtrics.com/jfe/form/SV_cCRdub0L5EOjWy

**Questions?** Contact Theresa Schnable, MS, RN, CNE @ theresa.gruenke@marquette.edu or (414)288-3833
1. What is your unique 13-digit study identification code?

Reminder: For those starting in July 2022, your code will be: 070122 followed by your first and last initial and the last five digits of your student ID (GWID). Example: 070122AM00000

2. What are the patient's social determinants of health?
   (Fill-in-the-blank)

3. Which of the following did you ask about?
   a. Income Y/N
   b. Socioeconomics Y/N
   c. Level of education Y/N
   d. Language and Literacy Y/N
   e. Civic Participation Y/N
   f. Discrimination Y/N
   g. Social support network Y/N
   h. Transportation Y/N
   i. Access to Care Y/N
   j. Health Literacy Y/N
   k. Access to Healthy Foods Y/N
   l. Crime and Violence Y/N
   m. Environmental Conditions Y/N
   n. Housing Situation Y/N

4. Pick 2 of the most relevant social determinants of health for this patient and describe how you would incorporate them into the plan of care. (Click with Text Box)
   a. Income
   b. Socioeconomics
   c. Level of education
   d. Language and Literacy
   e. Civic Participation
   f. Discrimination
   g. Social support network
   h. Transportation
   i. Access to Care
   j. Health Literacy
   k. Access to Healthy Foods
   l. Crime and Violence
   m. Environmental Conditions
   n. Housing Situation
5. To what degree are you comfortable with discussing the following with your patient. (4 Pt Likert: Extremely uncomfortable- somewhat uncomfortable- somewhat comfortable- extremely comfortable).
   a. Income
   b. Socioeconomics
   c. Level of education
   d. Language and Literacy
   e. Civic Participation
   f. Discrimination
   g. Social support network
   h. Transportation
   i. Access to Care
   j. Health Literacy
   k. Access to Healthy Foods
   l. Crime and Violence
   m. Environmental Conditions
   n. Housing Situation
1. What is your unique 10-digit study identification code?

Reminder: Current year (####) followed by your 2-digit month of birth (##) and the last four digits of your phone number (####). Example: 2023039999

2. Did you take care of a patient who was 65 years or older this week? Y/N
(If yes, survey will continue) (If no, survey will end with message “Thank you for your time in taking this survey. Please access this survey again next week.”)

3. Please think about the patient that you just saw who was 65 years or older. Please fill in the following non-identifiable information about the patient.
   a. Symptoms
   b. Diagnosis
   c. Age
   d. Gender

4. What did you learn from this patient’s story that impacts their current and future health? (Fill-in-the-blank)

5. What are this patient’s social determinants of health? (Fill-in-the-blank)

6. Which of the following did you ask about?
   a. Income Y/N
   b. Socioeconomics Y/N
   c. Level of education Y/N
   d. Language and Literacy Y/N
   e. Civic Participation Y/N
   f. Discrimination Y/N
   g. Social support network Y/N
   h. Transportation Y/N
   i. Access to Care Y/N
   j. Health Literacy Y/N
   k. Access to Healthy Foods Y/N
   l. Crime and Violence Y/N
   m. Environmental Conditions Y/N
   n. Housing Situation Y/N

7. Which of the following did you incorporate into your assessment or plan of care of this patient? And how? (If none put an X in ‘none’).
a. Income
b. Socioeconomics
c. Level of education
d. Language and Literacy
e. Civic Participation
f. Discrimination
g. Social support network
h. Transportation
i. Access to Care
j. Health Literacy
k. Access to Healthy Foods
l. Crime and Violence
m. Environmental Conditions
n. Housing Situation
o. None (If selected, survey skips to 7b)

7b. If you had another opportunity, which 2 of the following factors would be relevant for this patient, and how would you incorporate them into your assessment or plan of care?
   a. Income
   b. Socioeconomics
   c. Level of education
d. Language and Literacy
e. Civic Participation
f. Discrimination
g. Social support network
h. Transportation
i. Access to Care
j. Health Literacy
k. Access to Healthy Foods
l. Crime and Violence
m. Environmental Conditions
n. Housing Situation

8. Did your electronic medical record prompt you to consider the social determinants in your assessment or plan of care? y/n (if y, also given 8b)

8b. Which electronic medical record are you using? (Fill-In-The-Blank)

9. To what degree are you comfortable with discussing the following with your patient. (4 Pt Likert: Extremely uncomfortable- somewhat uncomfortable- somewhat comfortable- extremely comfortable).
   a. Income
   b. Socioeconomics
c. Level of education
d. Language and Literacy
e. Civic Participation
f. Discrimination
g. Social support network
h. Transportation
i. Access to Care
j. Health Literacy
k. Access to Healthy Foods
l. Crime and Violence
m. Environmental Conditions
n. Housing Situation

NP Social Determinants of Health Plan of Care Survey: Iteration 2 in Qualtrics

What is your unique 10-digit study identification code?
Reminder: Current year (###) followed by your 2-digit month of birth (###) and the last four digits of your phone number (###). Example: 2023039999

What is your unique 10-digit study identification code?
Reminder: Current year (###) followed by your 2-digit month of birth (###) and the last four digits of your phone number (###). Example: 2023039999

Powered by Qualtrics
Did you take care of a patient who was 65 years or older this week?

Yes

No

If ‘no’ answered, skip logic to end of survey.

Please think about the patient that you just saw who was 65 years or older. Please fill in the following non-identifiable information about the patient.

Symptoms
Diagnosis
Age
Gender
What did you learn from this patient's story that impacts their current and future health?

What are this patient's social determinants of health?
If ‘none’ answered, display logic to following question:
If you had another opportunity, which 2 of the following factors would be relevant for this patient, and how would you incorporate them into your assessment or plan of care?

- Income
- Socioeconomics
- Level of education
- Language and literacy
- Civic participation
- Discrimination
- Social support network
- Transportation
- Access to care
- Health literacy
- Access to healthy foods
- Crime and violence
- Environmental conditions
- Housing situation

Did your electronic medical record prompt you to consider the social determinants in your assessment or plan of care?

- Yes
- No

If ‘yes’ answered, display logic to following question:
Which electronic medical record are you using?

To what degree are you comfortable with discussing the following with your patient:

<table>
<thead>
<tr>
<th></th>
<th>Extremely uncomfortable</th>
<th>Somewhat uncomfortable</th>
<th>Somewhat comfortable</th>
<th>Extremely comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
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<td>Socioeconomics</td>
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<td>Level of education</td>
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<td>Language and literacy</td>
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<td>Discrimination</td>
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<td>Health literacy</td>
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<td>Access to healthy foods</td>
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<td>Crime and violence</td>
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<tr>
<td>Environmental conditions</td>
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<tr>
<td>Housing situation</td>
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</tr>
</tbody>
</table>
Thank you for your time in taking this survey. Please access this survey again next week.
1. Are you in your final clinical course practicum experience in a family nurse practitioner or adult-geriatric primary care nurse practitioner program in the United States? (If yes, survey will continue) (If no, survey will end with message “Thank you for your time in taking this survey.”)

2. Do you take care of patients who are 65 years or older during your clinical course rotations/practicum experiences? Y/N (If yes, survey will continue) (If no, survey will end with message “Thank you for your time in taking this survey.”)

3. List examples of social determinants of health associated with clients aged 65 years and older? (Fill-in-the-blank)

4. In a typical patient encounter, which of the following do you consistently ask your clients aged 65 years and older about? (Select if Yes)
   a. Income
   b. Socioeconomics
   c. Level of education
   d. Language and Literacy
   e. Civic Participation
   f. Discrimination
   g. Social support network
   h. Transportation
   i. Access to Care
   j. Health Literacy
   k. Access to Healthy Foods
   l. Crime and Violence
   m. Environmental Conditions
   n. Housing Situation

5. In a typical patient encounter with clients 65 years and older, which of the following do you consistently incorporate into their plan of care? (Select if Yes)
   a. Income
   b. Socioeconomics
   c. Level of education
   d. Language and Literacy
   e. Civic Participation
   f. Discrimination
   g. Social support network
   h. Transportation
6. At your clinical practicum site, does your electronic medical record prompt you to consider the social determinants in your assessment or plan of care? Y/N (Display Logic- if yes, 6b)

6b. Which electronic medical record are you using (Fill-In-The-Blank)

7. How comfortable are you discussing the following with your clients 65 years and older? (4 Pt Likert: Extremely uncomfortable- somewhat uncomfortable- somewhat comfortable- extremely comfortable).
   a. Income
   b. Socioeconomics
   c. Level of education
   d. Language and Literacy
   e. Civic Participation
   f. Discrimination
   g. Social support network
   h. Transportation
   i. Access to Care
   j. Health Literacy
   k. Access to Healthy Foods
   l. Crime and Violence
   m. Environmental Conditions
   n. Housing Situation

8. What is your age?

9. What gender do you think of yourself as?
   - Male
   - Female
   - Transgender Man/trans man
   - Transgender Woman/trans woman
   - Genderqueer/gender nonconforming neither exclusively male or female
   - Additional gender category (or other); please specify:_______
   - Decline to answer

10. Race (Select ALL of those with which you identify)
    - Asian
    - Black or African American
11. Ethnicity (select ONLY one with which you MOST CLOSELY identify)
   - Native Hawaiian or Other Pacific Islander
   - White
   - More than one race
   - Unknown or prefer not to answer

12. In which state did you complete the majority of your clinical rotations?

13. How many years of nursing practice experience do you have, not including your NP clinical rotations?

14. Has your nursing practice been focused in gerontology?

NP Social Determinants of Health Plan of Care Survey: Iteration 3 in Qualtrics
about your typical experiences in the care of geriatric patients in outpatient clinic settings. Your name and other identifying information, including IP address, will not be collected. Your responses will be anonymous. The risks associated with this project are minimal and there are no direct benefits to you. Collection of data and survey responses using the internet involves the same risks that a person would encounter in everyday use of the internet, such as hacking or information unintentionally being seen by others. Your participation is completely voluntary and you may withdraw from the study at any time. You can skip any questions you do not wish to answer.

If you have any questions about this study, you can contact Kristina Thomas Drefluernst, Principal Investigator of the study at kristina.thomas@marquette.edu or doctoral student Theresa Schnabl at theresa.gruenew@marquette.edu or 414-288-3833. If you have questions or concerns about your rights as a research participant, you can contact Marquette University’s Office of Research Compliance at (414) 288-7570.

Thank you for your participation.

START SURVEY

Click this box:

- [ ] I am not a robot

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<table>
<thead>
<tr>
<th>Are you in your final clinical course practicum experience in a family nurse practitioner or primary care adult-gerontology nurse practitioner program in the United States?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

| Are you in your final clinical course practicum experience in a family nurse practitioner or primary care adult-gerontology nurse practitioner program in the United States?<br>Yes | No |

<table>
<thead>
<tr>
<th>Do you take care of patients who are 65 years or older during your clinical rotation/practicum experiences?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
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<tr>
<td>No</td>
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</tbody>
</table>

| Do you take care of patients who are 65 years or older during your clinical rotation/practicum experiences<br>Yes | No |
List examples of social determinants of health associated with clients aged 65 years and older:

In a typical patient encounter, which of the following do you consistently ask your clients aged 65 years and older about?

<table>
<thead>
<tr>
<th>Social Determinant</th>
<th>Select if Yes</th>
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<tbody>
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<td>Income</td>
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<td>Socioeconomics</td>
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<td>Education</td>
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<td>Language and literacy</td>
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<td>Civic participation</td>
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<td>Discrimination</td>
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<td>Social support network</td>
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<td>Transportation</td>
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<td>Access to care</td>
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<td>Health literacy</td>
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<td>Access to healthy foods</td>
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<tr>
<td>Crime and violence</td>
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</tbody>
</table>

In a typical patient encounter, which of the following do you consistently ask your clients aged 65 years and older about?

<table>
<thead>
<tr>
<th>Social Determinant</th>
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<tbody>
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<td>Income</td>
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<td>Access to healthy foods</td>
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<td>Crime and violence</td>
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</tbody>
</table>
In a typical patient encounter with clients 65 years and older, which of the following do you consistently incorporate into their plan of care?

<table>
<thead>
<tr>
<th>Select if Yes</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Income</td>
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<td>Socioeconomics</td>
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<td>Fitness reward</td>
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At your clinical practicum site, does your electronic medical record prompt you to consider the social determinants in your assessment or plan of care?

| Yes |
| No  |

At your clinical practicum site, does your electronic medical record prompt you to consider the social determinants in your assessment or plan of care?

| Yes |
| No  |
To what degree are you comfortable with discussing the following with your patient:

<table>
<thead>
<tr>
<th>Factor</th>
<th>Extremely Uncomfortable</th>
<th>Somewhat Uncomfortable</th>
<th>Somewhat Comfortable</th>
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<tr>
<td>Environmental conditions</td>
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What is your age?

Which gender do you think of yourself as?

- Male
- Female
- Transgender man/ trans man
- Transgender woman/ trans woman
- Genderqueer/ gender nonconforming neither exclusively male nor female

Additional gender category (or other); please specify:

Decline to answer
### Race (Select ALL of those with which you identify)
- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- More than one race
- Unknown or not reported

### Ethnicity (select ONLY one with which you MOST CLOSELY identify)
- Hispanic or Latino
- Not Hispanic or Latino
- Unknown or not reported

In which state did you complete the majority of your clinical rotations?

How many years of nursing practice experience do you have, not including your NP clinical rotations?

Has your nursing practice been focused in gerontology?
We thank you for your time spent taking this survey. Your response has been recorded.