Needs Assessment to Identify Barriers to Healthcare Access in the Deaf Community

Sarah Curtright, FNP-Ed, RN, CLNC

Old Dominion University

NURSE 819: DNP Nurse Executive Practicum IV

Dr. Lorri Birkholz, DNP, RN, NE-BC (Faculty Advisor)

May 10, 2019

Honor Code

"I pledge to support the Honor System of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member of the academic community it is responsibility to turn in all suspected violators of the Honor Code. I will report to a hearing if summoned."

SE Curtright (services as electronic signature)

May 10, 2019

Table of Contents

Abstract

Problem: Today in the United States (U.S.) there are an estimated 26.9 million Deaf and Hard of Hearing individuals (Colorado Commission for the Deaf and Hard of Hearing [CCDHH], 2012). What is not known is whether the Deaf population experiences barriers in their ability to access healthcare and what technology Deaf patients utilize when they consider accessing healthcare.

Purpose: The purpose of this research project was to explore the current health status, practices, and healthcare accessibility of the U.S. Deaf population through a needs assessment. Additionally, this study sought to identify relationships between geographic locale and primary care provider preference as well as the age at onset of hearing loss and the Deaf individual's desire to use technology with healthcare visits.

Evidence Based Questions: This descriptive and correlational study addressed the following Research Questions (RQs):

RQ1: Which resources would Deaf patients find helpful in accessing healthcare?

RQ2: Which technology do Deaf patients currently utilize when accessing healthcare (web portal, video remote interpreting, telehealth, or text messaging)?

RQ3: What are identified barriers that challenge Deaf patients in receiving recommended preventative health screenings and immunizations?

RQ4: How do Deaf individuals rate their overall level of health?

RQ5: Is there a relationship between the Deaf patient's geographical location and their preference of a primary care provider?

RQ6: Is there a relationship between age of onset of hearing loss and the participant's desire to use technology for accessing healthcare services?

Methods: An electronic survey was sent to each state's respective Deaf leadership to distribute to their population. To obtain a representative sample of the U.S. Deaf population, both rural and urban populations were surveyed.

Outcomes: The respondents to this survey identified and defined barriers including technology issues and experiences when accessing healthcare. Provided data was analyzed for preventative health screenings and immunization participation rates, along with assessment of the relationship between age of onset of hearing loss and the use of technology modalities to seek care. Provider preference (Doctor of Osteopathic Medicine, Medical Doctor, Nurse Practitioner, and Physician Assistant) and geographical locale were analyzed for correlational relationships (Bush, Alexander, Noblitt, Lester, & Shinn, 2015).

Implications: Current research did not specifically identify barriers to accessing healthcare and how these may be minimized in the Deaf population. This study augmented existing literature by first-hand experiences regarding access, self-reported health status, and what technology(ies) Deaf utilize when accessing healthcare.

Keywords: Healthcare access, Deaf, Telehealth, Barriers, Technology

Needs Assessment to Identify Barriers to Healthcare Access in the Deaf Community

Specific Aims

Problem

Today in the United States there are an estimated 26.9 million Deaf and Hard of Hearing (DHH) individuals (Colorado Commission for the Deaf and Hard of Hearing [CCDHH], 2012). This vulnerable population has been identified as being at risk for marginalization of healthcare due to communication challenges (McKee, Schlehofer, & Thew, 2013). One of the top goals of the U.S. Department of Health and Human Services' (Office of Disease Prevention and Health Promotion [ODPHP], 2010) *Healthy People 2020* initiative has been to eliminate healthcare disparities in vulnerable populations. Deaf patients as a community are a vulnerable population due to their physical handicap. Access to healthcare has been noted to impact not just physical and mental health, but also "quality of life" (Office of Disease Prevention and Health Promotion [ODPHP], 2010, para. i). Specific to the Deaf population, little has been known about their ability or inability to access and receive healthcare services. Current literature does not address what barriers the Deaf population experiences when seeking healthcare, what technology Deaf patients utilize when they consider accessing healthcare, what resources are provided by healthcare facilities to improve Deaf patient access, and what safety concerns the Deaf community has when seeking healthcare.

Purpose

The purpose of this research project was to explore current health practices and healthcare accessibility by performing a needs assessment of the United States Deaf population. This study augments existing literature by exploring whether current standardized services are available and meeting the needs of the Deaf community.

Objectives (Aims)

This study explores current healthcare access practices and describes perceived barriers as identified by the Deaf population. In an attempt to identify practice adaptations to accommodate Deaf into the healthcare environment, this needs assessment focused on several areas. Access to health care was described by the Deaf identifying what electronic resources they find helpful in accessing healthcare (RQ 1). It also described Deaf individuals' identified technology(ies) they currently use (a web portal, video remote interpreting, telehealth, or text messaging) when accessing healthcare (RQ 2). How Deaf individuals rate their overall level of health was explored in the self-described health status section. Barriers that challenge Deaf patients in receiving recommended preventative health screenings and recommended immunizations occurred by analyzing health prevention goal questions (RQ 4). Demographic information reported location of residence which was analyzed to determine whether there was a relationship between locale and preferred provider (RQ 5). Demographic information reported age of onset of Deafness which was analyzed to determine whether there was a relationship between age of onset of hearing loss and the desire to use technology for accessing healthcare services (RQ 6).

Research Questions (RQs)

RQ1: Which resources would Deaf patients find helpful in accessing healthcare?

RQ2: Which technology do Deaf patients currently utilize when accessing healthcare (web portal, video remote interpreting, telehealth, or text messaging)?

RQ3: What are identified barriers that challenge Deaf patients in receiving recommended preventative health screenings and immunizations?

RQ4: How do Deaf individuals rate their overall level of health?

RQ5: Is there a relationship between the Deaf patient's geographical location and their preference of a primary care provider?

RQ6: Is there a relationship between age of onset of hearing loss and the participant's desire to use technology for accessing healthcare services?

Scope and Importance

Healthy People 2020 has recognized the need to better understand patient's self-ranked score of health, how one's education level might impact their health, and how to determine if one's employment influences their health (ODPHP, 2010). Patient disability has been identified by the United States government as a functional limit including loss of vision, mobility, or intellectual disability (ODPHP, 2010). But, because deafness is not a nationally identified disability for *Healthy People 2020* projects, there is concern whether national health promotion and disease prevention strategies are reaching the Deaf population. Using *Healthy People 2020* objectives, geographical and cultural communities can begin to address their own needs for population health (ODPHP, 2010). Deaf individuals are entitled to be "free of preventable disease, premature death, and attain health literacy" (ODPHP, 2010, para. xiii-xiv). In a partnering relationship with Deaf patients, providers can "create policies" and promote the creation of an environment where Deaf individuals are comfortable to receive healthcare (ODPHP, 2010, para. xiii-xiv).

Background

Variables

The variable of communication barriers was chosen for this research project based on the concern the National Association of the Deaf (NAD, 2018a) had related to healthcare practices toward Deaf patients being similar to practices with "other linguistic minority populations" (p.

2). Limited communication has been a documented reason Deaf patients have "fear, mistrust, and frustration" which can lead to limitations in care (Chaveiro, Porto, & Barbosa, 2009, p. 148). Limitations in care impacting overall health include a lack of immunizations, preventative health screenings, treatment adherence, follow-up, and excessive diagnostic testing to determine the cause an illness (NAD, 2018a). Residing in rural areas of the United States has also been shown to change how healthcare is provided since primary care providers in rural areas often provide more specialty care when patients are not able to access or afford travel to appointments with specialists (Bush, Alexander, Noblitt, Lester, & Shinn, 2015). Prior studies have demonstrated how the use of technology can assist with patient education, compliance to treatment, and access to healthcare where in-person providers are limited (Crow, Suni Jani, Sushma Jani, N. Jani, & R. Jani, 2016; Haricharan, Heap, Hacking, & Lau, 2017; Jensen et al., 2013).

Operational definitions used in this study include:

Deaf: Deaf with a capital D refers to those individuals with some hearing loss "who share a language, American Sign Language (ASL) and a culture" (Padden & Humphries, 1988, p. 2).

Urban setting: population > 50,000

Rural setting: population between 2,500 and 49,999

Completely rural setting: population < 2,500 (United States Census Bureau, 2016).

Incidence/Statistics

This research project focus was on the Deaf. Many Deaf believe they belong to a cultural group within a larger population (Pendergrass, Newman, Jones, & Jenkins, 2017; Sheppard, 2014). This vulnerable population has been assumed to be marginalized and struggle with eventful access to healthcare, but there is no specific data to support this in the United States (Crowe et al., 2016).

Deafness is considered a disability by which one can obtain Social Security Disability (SSD). Deaf individuals receiving SSD payments are typically able to enroll in Medicaid coverage for health insurance. Medicaid has a modifier code to reimburse healthcare providers for the costs associated with using sign language interpretation during patient care appointments (Centers for Medicare and Medicaid Services, n.d.). On December 31, 2016, the U.S. District Court for the Northern District of Texas upheld Health and Human Services' Office for Civil Rights (DHHS' OCR) mandate that was established under the Affordable Care Act (Hunt, 2016). This mandate was put in place to ensure patients with disabilities are not discriminated against. Specifically, for Deaf patients, the standard requires that interpreters now be "qualified". As Hunt (2016) noted,

> "By moving the legal standard from 'competent' interpreters to 'qualified' interpreters, DHHS is increasing the standard of care and legal duty owed to…Deaf… patients and requiring organizations that receive federal funds to bear the financial burden of increasing the professionalism of their language access services" (Hunt, 2016, pwara. viii).

Health care providers who interact with Deaf patients may not, "exclude or adversely treat" those patients and the DHHS' OCR has been investigating complaints of this nature since the December 2016 ruling (U.S. Department of Health and Human Services [HHS], 2017).

Prior Research

Prior research on healthcare access among Deaf individuals is limited. A study by McKee, Barnett, Block, and Pearson (2011) surveyed Deaf adults ages 50-75 in the Rochester, New York metropolitan area about the preventative health practices of influenza vaccination, colonoscopy screening, and cholesterol screening. Colon cancer and cholesterol screening rates

were the same between Deaf individuals who felt they were able to communicate effectively with their providers and those who did not feel they were able to communicate well. Of note, Deaf influenza vaccine rates were statistically lower for those who did not feel they had the ability to communicate clearly with their provider (McKee, et al., 2011). Prior research has also included a needs assessment of healthcare workers and their ability to understand Deaf culture and the nuances it might bring to patient interactions (Pendergrass et al., 2017). No validated tools were utilized in either of these research studies.

Literature Review Gaps

An initial Boolean Google Scholar ™ search using "deaf community" and "healthcare" and "barrier" with a publication date of 2014 or later returned over 12,600 articles. Opting to use CINAHL Complete and the same Boolean search terms, the search returned 184 articles: of which 146 were peer reviewed and available in English. These 146 abstracts were further reviewed and 14 were selected for inclusion based on their relatedness to this Deaf study's terms. An additional four articles with publication dates older than four years were also included since they focused on the Deaf community's relationships with providers, use of videos for health education, and the impact that communications plays when one seeks preventative services. The National Association of the Deaf (2018a) *Position Statement on Health Care Access for Deaf Patients* was also included.

Current literature did not include the Deaf community's voice in addressing barriers to healthcare access, participation in healthcare related technology, identification of limitations specific to internet access, or provide an overall understanding of how technology integration might assist Deaf patients in accessing healthcare (McClintock et al., 2017; McDoom, Koppelman, & Drainoni, 2014).

The National Association for the Deaf (2018b) published a position statement regarding the use of Video Remote Interpreting (VRI) as an "effective communication option in medical settings" as a means to facilitate healthcare access for Deaf populations (p. 2). McKee et al. (2011), noted the use of "telehealth technology would likely improve healthcare services use and health in this underserved [Deaf] language minority population" (p. 78). However, lack of access could impair a Deaf patient's ability to utilize these resources and as the most recent Wireless Broadband Alliance (2017) report found, as many as 28% of the United States population are not able to access or afford internet service in their area of residence.

Sheppard (2014) found the Deaf population desires to utilize an American Sign Language (ASL) interpreter for healthcare. However, previous research has expressed concern that due to the complexity of medical information, ASL can lack signs for medical terms, and a non-medically certified interpreter might not have the skills to correctly translate the healthcare information (Crow et al., 2016; McKee et al., 2011). McKee et al. (2011) also noted, "historically health-related research and education programs have excluded ASL users" (p. 75) which has resulted in Deaf populations being underrepresented in clinical research (Erves, et al., 2017).

Deaf culture has shown interpersonal factors of "shyness, insecurity, and lack of independence" (Kritzinger, Schnieder, Swartz, & Braathen, 2014, p. 381) as well as a "nonquestioning attitude" during healthcare appointments (Kuenburg, P. Fellinger, & J. Fellinger, 2016, p. 2). During healthcare visits, Deaf have reported feelings of fear, mistrust, and frustration (Chaveiro et al., Jensen et al., 2013). Additionally, appointment length has been reported as being insufficient to allow for involvement of interpreters to ensure the Deaf

understand medical terms and their treatment plans, which has resulted in care delays and, for some, self-exclusion from receiving care (Kritzinger, et al., 2004; McKee, et al., 2011).

Text messaging is a communication modality that has been beneficial in providing education and reference material for Deaf patients; specifically, medically complex information and terminology sent via text message is better understood and typically referenced again by the patient (Haricharn et al., 2017). Similarly, the use of videos for providing health screening information has also been effective in educating Deaf patients (Jensen et al., 2013). McClintock et al. (2017) also found that social networks and social media improved Deaf patients' "self-advocacy skills" (p. 2).

Addressing the Gap

Gaps in current literature this research project strove to answer was whether the Deaf are using emerging technologies for healthcare, such as web portals, and whether telehealth and Video Remote Interpreting (VRI) are feasible technology options, especially for Deaf individuals (Antoun, 2016; Crowe et al., 2016; Kuenburg, et al., 2016; Wireless Broadband Alliance, 2017). If services and technology are available, did the Deaf community report having used VRI with their healthcare provider? Further, primary care provider preference (Doctor of Osteopathic Medicine, Medical Doctor, Nurse Practitioner, or Physician Assistant) was examined to identify correlations between urban and rural residing Deaf residents (Bush et al., 2015).

Significance

Like other individuals with a disability, Deaf patients may be marginalized when it comes to accessing healthcare. The number of Deaf patients who identify as having barriers to accessing healthcare is unknown and, specifically, what those barriers are is limited in understanding. Research has also not identified Deaf patients' perspectives about how barriers

can be minimized, what improvement can take place to address safety concerns, and whether the use of technology can help improve their receiving recommended preventative health screenings. This study examined self-reported ratings of Deaf individuals' overall health status. Providers deliver care in rural and urban areas to unknown numbers of Deaf patients, so this current needs assessment described Deaf patients' challenges in accessing care, their desire to obtain recommended preventative healthcare, and their inclination to incorporate emerging technologies for their care needs. These study findings can influence the future state of healthcare delivery to this population.

Theoretical Framework

This research project utilized Flaskerud and Windslow's (1998) Vulnerable Populations Conceptual Model (Appendix A). The model provides a guide on how available and utilized resources impact the risks for a negative health status. This model further recognizes how nursing research, practice, and policy analysis can alter resource availability, relative risk, and health status for communities. By using this model for the Deaf population, nursing research provided further clarification as to how the Deaf access technology, their geographical location of residence, their primary care provider preference, the age of onset of deafness related to accessing healthcare, and barriers perceived for preventative health screenings and immunizations relate to overall self-identified level of health. Ultimately, this research looked to identify possible technological enhancements that could improve access to healthcare for the Deaf.

Research Design

This mixed method descriptive study was conducted electronically as a one-time survey. Using a convenience sample of Deaf adults responding to a survey invitation which was sent out

to members of their respective State Deaf organizations. The consenting participants completed the 28-question anonymous survey which took an average of seven minutes to complete. Survey questions were related to health status, resource availability, and relative risk impact to the current overall health of Deaf individuals living in the United States (Appendix B).

Methods

Study Site

The needs assessment survey was made available electronically via Qualtrics® to members of the Deaf community in each state whose leadership consented to participate. In order to obtain a representative sample of the United States Deaf population, no specific respondent was left out of this survey, as both rural and urban populations were surveyed.

Participants

The population of interest for this research project was the estimated 8.6% of the United States population who have been reported as being Deaf and/or Hard of Hearing (CCDHH, 2012). The accessible population for this study was those Deaf community members who were accessed by their state organization. The needs assessment survey link was sent out via email to the individual state Deaf organizations for distribution to their members using their listserv and social media sites.

An estimated required sample size for participation from all fifty states was 384 participants (Survey System, 2012). However, to not be limited if survey response rate was greater than that, the study's Internal Review Board (IRB) application requested inclusion of up to 1000 participants.

There were no interventions associated with this study; therefore, this research study posed minimal to no risk to participants. Human subjects were protected through solid data management principles, Institutional Review Board (IRB) approval, and informed consent.

There was no state-specific oversight for this study. The Primary Investigator received approval from the Institutional Review Board (IRB) at Old Dominion University (ODU) on August 3, 2018 (Appendix C). This study met the criteria from the Code of Federal Regulations, Title 45, Part 46.101 (b) as Exempt.

Upon opening the survey link, the participant was able to view the consent page (Appendix D) and once consent was given, the electronic survey opened. If consent was declined, participants were directed to the thank you page at the end of the survey. Additionally, the consent contained detailed information on the use and protection of gathered information.

Data was stored in the Qualtrics® application. Only the Principle Investigator (PI) and the Responsible Principle Investigator (RPI) had access to the Qualtrics® application and the SPSS database. Paper documentation was stored in a locked filing cabinet in a locked office to which only the Principle Investigator had access.

Protection of human subjects was maintained through anonymity as no patient identifiers were obtained. All collected data was reported.

Enrollment

Prior to IRB approval, a query email was sent to leadership at each state's Deaf Association, Council, Commission, Center, Service, Office, and Outreach to garner their support to be included in the IRB application. Seventeen states agreed to participate. After IRB support was obtained, each participating state organization was notified via e-mail when the survey was active and they were provided with the survey link to forward to their members for participation.

Two follow-up e-mails were later sent to the Deaf organizations to request the survey link be redistributed during the four months the survey was open. The study was completed in three phases (Table 1).

Table 1
Overview of Study Timetable

Summer 2018	8/1/18-12/1/18	12/2/18-12/12/18
Phase One: IRB Approval	Phase Two: Data Collection	Phase Three: Data Analysis

Inclusionary criteria required the participants to be eighteen years of age or older, able to read and understand English, and self-identify as Deaf. Exclusionary criteria included participants less than eighteen years of age, individuals who could not read and understand English, and/or who did not self-identify as Deaf. Four participants responded from states that did not have state Deaf leadership agreement to participate in the survey: these results were not included in final survey analysis.

The sample for this study included participants who accessed the electronic link sent by their state Deaf association. Since this was a needs assessment it did not have randomization, a control group, or an intervention.

During the time the survey was open, fifty-four participants followed the link to the survey page. Of those, two failed to acknowledge the consent questions, one declined to participate in the survey, and there were four participants who consented to the survey but lived in states from which the Principle Investigator had not obtained state Deaf leadership support for inclusion in the Institutional Review Board application. Nine additional participants agreed to the consent but did not provide answers, resulting in a final number (N) of 38, representing 11

states. Socio-demographic variables collected included age, gender, race, education, geographic locale, distance from healthcare providers, insurance coverage, and deafness history (Table 2).

In examining the aggregate data (N = 38), 100% of the respondents identified as White. More than three-quarters of the respondents were female (76%) and 24% of the respondents were male. The mean age of participants was 53 with a standard deviation (SD) of 11.1 years with a range from 31 to 77 years. Regarding residence, participants from the 11 represented states reported a geographic residence of urban (71%), rural (21%), and completely rural (8%). Respondents to this survey were also asked to identify the distance (in miles) they traveled one-way to obtain healthcare, with responses ranging from 1-45 miles with an average of 9.8 miles. In order to classify the onset of Deafness, respondents were asked to identify whether they became Deaf before or after they started talking: seventy-one percent indicated they became Deaf prior to talking, while 29% became Deaf after they had started talking.

Regarding educational level, no one reported not finishing high school or obtaining a GED. Eight percent identified as having completed high school, 18% identified as having some college, 13% identified as having an Associate Degree, 34% identified as having a Bachelor's Degree, 24% identified as having a Master's Degree, and three percent identified as having a doctoral degree.

Table 2
Demographic Data for all Respondents

Demographic Data (N = 38)	N	Percent
Ethnicity		
American Indian or Alaska Native	0	0%
Asian	0	0%
Black or African American	0	0%
Native Hawaiian or Other Pacific Islander	0	0%
White	38	100%
Sex		

Male	9	24%
Female	29	76%
Transgender	0	0%
Age	Mean:	53.42
	SD:	11.17
	Range:	46
	Minimum:	31
	Maximum	77
Residence		
Alabama	4	10%
Alaska	1	3%
Arizona	1	3%
Delaware	0	0%
Idaho	1	3%
Indiana	6	16%
Maryland	0	0%
Minnesota	2	5%
Nebraska	5	13%
New Mexico	0	0%
Nevada	0	0%
Oklahoma	0	0%
South Carolina	3	8%
Texas	2	5%
Utah	8	21%
Vermont	0	0%
Washington	5	13%
Population		
Mostly urban (>50,000)	27	71%
Mostly rural (2,500-49,999)	8	21%
Completely rural (< 2,500)	3	8%
Miles to travel for healthcare (one way)	Mean:	9.76
	SD:	9.39
	Range:	44
	Minimum:	1
	Maximum	45
Deafness Onset		
Before I could talk	27	71%
After I had started talking	11	29%
Education level		

Did not complete high school	0	0%
GED	0	0%
High school	3	8%
Some college	7	18%
Associate degree	5	13%
Bachelor's degree	13	34%
Master's degree	9	24%
Doctoral degree	1	3%
Insurance		
Medicare	13*	34%
Medicaid	0	0%
Private	28*	74%
None	1	3%
	*4 respondents with dual coverage Medicare and private	

Data Collection Tool

The Qualtrics® platform used a researcher-designed questionnaire that did not have established reliability or validity. Development of the tool was based on previously published Deaf research in conjunction with *National Primary Care Guidelines* (United States Preventive Services Task Force [USPSTF], 2018). Readability of the survey was tested using one Deaf and three hearing medically-focused American Sign Language interpreters, one hearing primary care Nurse Practitioner, one hearing 5th grade student, and a hearing elementary school teacher.

Research Team

The principle investigator (PI) was Sarah Curtright, FNP-ED, RN, an Old Dominion University Doctor of Nursing Practice (DNP) student. She worked for three years as a member of the interdisciplinary managers who established the model for the Veteran's Health Administration to provide interdisciplinary team-based primary care services to rural and frontier veterans via Telehealth. Additionally, she has instructed interdisciplinary residents during their Telehealth rotations through the Boise Veteran's Affairs Center for Excellence in

interdisciplinary education. The responsible principle investigator (RPI) was Dr. Lorri Birkholz, DNP, RN, NE-BC, Old Dominion University faculty for the DNP program. Both investigators completed and possessed current CITI training certification (Appendix E).

Data Analysis and Results

The IBM Statistical Package for Social Sciences (SPSS) version 25.0 was used for data analysis. A total of 38 surveys were available for comparison and were analyzed for this study. The levels of measurement included nominal, ordinal, and interval/ratio data with corresponding statistical analysis. Socio-demographic information was scored using descriptive statistics to determine the mean, median, and mode. Interval data stemming from relational research questions was analyzed using the correlation coefficient.

Demographic Data Analysis

Research Questions and Results

Research Question 1. "Which resources would Deaf patients find helpful in accessing healthcare?" was answered by survey questions 12 and 28. Participants were able to select all that applied for this portion of the survey and the most commonly cited sources for obtaining health information were family (84%) and friends (79%) with the least common methods being Wiki postings (26%) and information shared from schools (18%). Future access for health screenings varied from 0% wanting alcohol misuse education to 55% wanting bone density education.

Table 3
Research Question 1 Results

Current Access	Selections	n (%)
How do you get health information?	-Family -Friends -Health Center -Community Event	32 (84%) 30 (79%) 25 (66%) 19 (50%)

	-Facebook	13 (34%)
	-Text Messages	13 (34%)
	-Wiki	10 (26%)
	-School	7 (18%)
Are you interested in future access for these health screenings?	-Bone density	21 (55%)
	-Healthy diet and physical activity	17 (45%)
	-Vitamin D level	15 (39%)
	-Cancer	13 (34%)
	-Diabetes	12 (32%)
	-Obesity (overweight)	11 (29%)
	-Peripheral artery disease (heart disease screening)	10 (26%)
	-Depression/Mental health	7 (18%)
	-Glaucoma	7 (18%)
	-Chronic kidney disease	4 (11%)
	-Falling	2 (5%)
	-Sexually Transmitted Infections (STDs)	2 (5%)
	-Tobacco use and ways to quit	2 (5%)
	-Hepatitis C virus infection	1 (3%)
	-HIV (human immunodeficiency virus) infection	1 (3%)
	-Intimate Partner Violence/Elder Abuse	1 (3%)
	-Alcohol misuse	0

Research Question 2. "Which technology do Deaf patients currently utilize when accessing healthcare?" was determined by survey question 16. Participants were able to select all that applied for this portion of the survey. When trying to schedule an appointment, Deaf respondents noted using the clinic's website (29%) as one method. Rarely did they use text messages (5%) or have a friend call (5%) in order to schedule an appointment. Most respondents identified "other" as the means they used to schedule an appointment. In their descriptive data, they identified the following methods: use of Video Phone (36%), use of Video Relay Service (40%), and by calling the office themselves (24%).

Table 4
Research Question 2 Results

Current Technology	Selections	n (%)
How do you schedule appointments with your provider?	-Other: captured in descriptive data	22 (58%)
	-Clinic website	11 (29%)
	-Contacting an interpreter to schedule	7 (18%)

	-Having a family member call to schedule -Walking into the office -Text messages -Having a friend call to schedule -Other: no comment	6 (16%) 4 (11%) 2 (5%) 2 (5%) 1 (3%)

Research Question 3. "What are identified barriers that challenge Deaf patients in receiving recommended preventative health screenings and immunizations?" was determined from survey questions 13, 15, 17, and 18. Participants were able to select all that applied for this portion of the survey. The first area of interest in this subsection related to whether the Deaf had a primary care provider. Of the respondents, 87% stated they had a Medical Doctor (MD) available to them for primary care services, and only 18% identified having a Doctor of Osteopathic Medicine (DO) as their primary care provider. Encouragingly, 66% of respondents reported there was nothing holding them back from being able to see their primary care provider and they felt they could be seen any time. Only 5% identified lack of insurance as a reason that would keep them from seeing their provider.

During appointments with providers, Deaf respondents noted a lack of being able to communicate by the method they wanted as their largest worry (53%) closely followed by not being able to communicate and fear of mistreatment or misdiagnosis due to communication problems (47%). Only 24% of respondents were worried about confidentiality during their healthcare appointments.

Table 5
Research Question 3 Results

Current Barriers	Selections	n (%)
Do you have a current primary care provider?	-Medical Doctor (MD) -Nurse Practitioner (NP) -Physician Assistant (PA) -Doctor of Osteopathic Medicine (DO)	33 (87%) 16 (42%) 10 (26%) 7 (18%)

Is there something that keeps you from going to your primary care provider?	-Nothing-I can see my provider any time I need to -Cannot communicate with them -Cost -Travel -Need someone to go with me -No insurance	25 (66%) 7 (18%) 6 (16%) 4 (11%) 2 (5%) 2 (5%)
Do you have these worries during your appointment with your provider?	-Not being able to communicate by the method I want -Fear of mistreatment or misdiagnosis due to communication problems -Not being able to communicate -Testing being done I don't understand -Lack of access for follow up -Confidentiality	20 (53%) 18 (47%) 18 (47%) 16 (42%) 15 (39%) 9 (24%)

This subsection of questioning also addressed whether the Deaf individual had experienced confusion in an appointment from non-verbal aspects of the visit (Table 6). Deaf respondents reported confusion during their visit due to body language (58%), poor eye contact (56%), quality of questions (63%), provider's facial expressions (66%), and technology being used during the visit (66%).

Table 6:
Research Question 3 Results

Current Barriers: Have you experience confusion during a visit from these?	Definitely Yes n (%)	Probably Yes n (%)	Probably Not n (%)	Definitely Not n (%)
Body language (N = 35)	11 (29%)	11 (29%)	7 (18%)	6 (16%)
Eye contact (N = 36)	12 (32%)	9 (24%)	7 (18%)	8 (21%)
Questions asked (N = 36)	13 (34%)	11 (29%)	6 (16%)	6 (16%)
Provider's facial expressions (N = 36)	14 (37%)	11 (29%)	5 (13%)	6 (16%)
Use of technology during the visit (N = 36)	12 (32%)	13 (34%)	6 (16%)	5 (13%)

Research Question 4. "How do Deaf individuals rate their overall level of health?" was determined by answers to questions 10, 11, 21, 22, 23, 24, 25, 26, and 27. A four-point Likert Scale was used for rating their overall health. Of those who responded, 18% felt their overall health was poor, 30% percent thought their health could be better, 39% believed their health to be good, and 13% felt their health was excellent. Data results were slightly different when patients were asked to rate their mental health. Five percent of respondents reported poor mental health, 18% stated their mental health could be better, 47% reported their mental health as good, and 26% identified their mental health as excellent.

Regarding health practices, respondents noted they only saw their primary care provider when they were sick 82% of the time; however, participants were able to select all that applied for this portion of the survey. In their descriptive data, they identified the following reasons for seeking care: "annually [sic] appointment" (3%), "check up [sic]" (3%), "every three months" (3%), "all of the above" (3%), and for "annual physical" (3%). During the 2017-18 flu season, 58% of respondents obtained the flu vaccine with only 3% unable to remember if they had obtained the flu vaccine. Respondents were also asked if they had received a tetanus vaccine in the past seven years, of which 18% could not remember, 11% answered no, and 63% answered yes. Of those respondents who were age eligible for a colonoscopy, 61% said they have had one. However, only 34% of those eligible to be checked for cervical cancer had a PAP in the past three years. Respondents who were age eligible for a mammogram reported having had one previously (60%). No one who responded to the survey noted they had had a mastectomy. The response rate for Deaf men over age fifty who had a PSA was noted to be 21% and none noted they had had a prostatectomy.

Table 7
Research Question 4 Results

Current Health	Selections	n (%)
How would you rate your overall health? (N = 37)	-Good -Could be better -Poor -Excellent	15 (39%) 11 (30%) 6 (18%) 5 (13%)
How would you rate your overall mental health? (N = 37)	-Good -Excellent -Could be better -Poor	18 (47%) 10 (26%) 7 (18%) 2 (5%)
When do you see your primary care provider? (N = 37)	-Only when I'm sick or have a problem -When I'm told to follow up -To get tests for disease prevention -Other: descriptive data -Other: blank	31 (82%) 21 (55%) 10 (26%) 5 (13%) 1 (3%)
Did you get a flu shot between September 2017 and June 2018? (N = 35)	-Yes -No -Can't remember	22 (58%) 12 (32%) 1 (3%)
Have you had a tetanus shot in the past seven years? (N = 35)	-Yes -No -Can't remember	24 (63%) 4 (11%) 7 (18%)
Have you had a colonoscopy? (N = 35)	-Yes -No -I'm too young (less than 50)	23 (61%) 9 (24%) 3 (8%)
Have you been checked for cervical cancer in the past three years? (N = 35)	-Yes -No -I'm not a female between age 21 and 65	13 (34%) 14 (37%) 6 (16%)
Have you had a mammogram (ultrasound to check for breast cancer)? (N = 35)	-Yes -No -I'm not a female older than 40 -I have had a mastectomy	21 (60%) 6 (17%) 8 (23%) 0 (0%)
Have you had a PSA (blood test used to screen for prostate infections and cancer)? (N = 34)	-Yes -No -I'm not a male older than 50 -I have had a prostatectomy	7 (21%) 16 (47%) 11 (32%) 0 (0%)

Research Question 5. "Is there a relationship between the Deaf patient's geographical location and their preference of a primary care provider?" was analyzed using Chi-Square Test of Independence comparing residence to type of primary care provider preferred. A total of 24 patients in the urban and rural settings desire a MD for their PCP. This is 80% of those who

responded in this category. The Chi-Square Statistic is 1.301. This is not statistically significant as the p value of the Pearson Chi Square is .729 which is > .05. There is a positive but weak correlation between urban and rural living and a MD as desired PCP as the Contingency Coefficient is .182. A total of 5 patients in the urban and rural settings desire a NP for their PCP. This is 83% of those who responded in this category. The Chi-Square Statistic is 1.523. This is not statistically significant as the p value of the Pearson Chi Square is .677 which is > .05. There is a positive strong correlation between urban and rural living and a NP as desired PCP as the Contingency Coefficient is .677 (see Table 8).

Table 8
Geographical Location & PCP Provider Preference

	Pearson Chi-Square	Value	df	Asymptotic Significance (2-tailed)
Geography = Urban/Rural PCP = MD/DO		1.301	3	.729
Geography = Urban/Rural PCP = NP/PA		1.523	3	.677

Research Question 6. "Is there a relationship between age of onset of hearing loss and the participant's desire to use technology for accessing healthcare services?" was answered using Chi-Squared comparing pre-/post-lingual hearing loss with the desire to use technology for accessing healthcare services. A total of 22 patients who lost their hearing pre- and post-lingual have used VRI in a healthcare appointment before. This is 61% of those who responded in this category. The Chi-Square Statistic is 6.985. This is statistically significant as the p value of the Pearson Chi Square is .030 which is < .05. This is positive moderate correlation between pre- and post- lingual Deaf patients and a previous use of VRI in a healthcare appointment as the

Contingency Coefficient is .394. A total of six patients who lost their hearing pre- and post-lingual would use VRI again. This is 29% of those who responded in this category. The Chi-Square Statistic is 4.822. This is not statistically significant as the p value of the Pearson Chi Square is .090 which is > .05. There is positive weak correlation between pre- and post- lingual Deaf patients and a desire to use VRI again in a healthcare appointment as the Contingency Coefficient is .090. A total of three patients who lost their hearing pre- and post- lingual have used Telehealth in a healthcare appointment before. This is nine-percent of those who responded in this category. The Chi-Square Statistic is 4.621. This is not statistically significant as the p value of the Pearson Chi Square is .099 which is > .05. There is positive moderate correlation between pre- and post-lingual Deaf patients and a previous use of Telehealth in a healthcare appointment as the Contingency Coefficient is .329. A total of one patient who lost their hearing pre-lingual would use Telehealth in a healthcare appointment again. This is 33% of those who responded in this category. The Chi-Square Statistic is .776. This is not statistically significant as the p value of the Pearson Chi Square is .678 which is > .05. There is positive weak correlation between pre- and post- lingual Deaf patients and a desire to use Telehealth again in a healthcare appointment as the Contingency Coefficient is .141 (see Table 9).

Table 9
Chi-squared Pre-and Post-lingual & Prior VRI Use in Healthcare Appointment

	Pearson Chi-Square	Value	df	Asymptotic Significance (2-tailed)
Pre- and Post-lingual VRI Used Previously		6.985	2	.030*
Pre- and Post-lingual VRI Use Again		4.822	2	.090

Pre- and Post-lingual Telehealth Used Previously		4.621	2	.099
Pre- and Post-lingual Telehealth Use Again		.776	2	.678

*statistically significant

Conclusions

This study demonstrated that Deaf patients use family, friends, health centers, and community events as ways to access health information, indicating that those involved in providing education to Deaf patients might look at ways to expand training beyond text messaging (Haricharan et al., 2017). Desired areas of health screening included bone density testing (55%) and healthy diet and physical activity assessment (45%). The lack of desire for additional USPSTF (2018) recommended health screenings could certainly be further investigated and may indicate the need for educations that is better tailored to Deaf patients.

Study respondents in this survey demonstrated self-sufficiency in obtaining clinic appointments. The critical access point identified by Deaf was their ability to use Video Phone (VP) and Video Relay Service (VRS) in setting up appointments, as more respondents (58%) used these methods than used the clinic website (29%). This study's results support Sheppard's (2014) findings that the Deaf population desires to use an American Sign Language Interpreter for their healthcare appointments. Primary care clinics and health systems can provide benefit to the Deaf in their communities by investing in the equipment needed for Deaf to contact the clinic via these modalities.

Deaf patients identified Nurse Practitioners as providing their primary care services 42% of the time, supporting the findings of Buerhaus, DesRoches, Dittus, and Donelan (2015) that

Nurse Practitioners, "can be expected to expand access to primary care, particularly for vulnerable populations" (p. 145). This study further supports the research done by McKee et al., (2011) indicating that the Deaf worry during appointments about not being able to communicate, being mistreated, or being misdiagnosed due to communication problems. Even with additional individuals being involved to allow for Video Remote Interpreting, Video Phone, and Video Relay Services, only 24% of Deaf patients worried about their confidentiality during healthcare appointments. This study also confirmed the Pendergrass et al. (2017) findings that non-verbal aspects of a visit can create confusion for Deaf patients.

Overall level of health as described by Deaf during this study identified opportunities for improvement with general health since 42% of the respondents reported that their health was poor or could be better. Encouragingly, 73% felt their current mental health was good or excellent. Many respondents were up-to-date on tetanus (63%), were participating in yearly flu immunizations (58%) and had had preventative colon cancer screenings (61%). Respondents in this study reported lower participation in cervical screenings (34%), mammograms (55%) and PSA testing (55%). Prior studies have found that this can be the result of fear, mistrust, and frustration (Chaveiro et al., 2009; Jensen et al., 2013).

This study found mixed results regarding Deaf patients use of emerging technologies, including Telehealth and Video Remote Interpreting, to provide feasible healthcare options for those living in rural and highly rural communities where there may be limited healthcare access options (Antoun, 2016; Crowe et al., 2016; Kuenburg et al., 2016; Wireless Broadband Alliance, 2017). Statistical significance was found between Deaf patients and their use of VRI in previous healthcare appointments. This supports the recommendation by the National Association of the Deaf (2018b) for use of VRI as a means for Deaf to access healthcare. No statistical significance

was found between urban, rural, and highly rural residency locations and a preference for the type of primary care provider Deaf respondents would like to see. Without the desired provider type being present in these communities, Deaf may continue to struggle with eventful access to healthcare (Crowe et al., 2016). Crowe et al. (2016) found that Telehealth could be an option to increase education, treatment and healthcare access for Deaf patients. However, Deaf respondents in this study did not statistically support the desired use of Telehealth in follow-up appointments.

Limitations

The goal of this research was to have Deaf participants in the United States identify and clarify barriers they face in accessing healthcare and provide information on which technologies they find/or would find helpful and would recommend for further integration into healthcare. This study's small sample size limits its applicability to the U.S. Deaf population. Additionally, only 34% of state Deaf associations agreed to participate and only 11 states were represented in these findings. Also, Deaf younger than 30 years of age were not represented in this study's respondents. The electronic format of this survey allowed participants to skip questions, choose multiple answers to some questions, as well as to pause in answering questions and return to finish the survey within a week's timeframe. Specifically, the ability of participants to choose more than one answer led to skewed reporting for PSA testing with twenty-four overall responses when there were only nine reported male respondents. Two participants left the study part-way through and then were timed out at the end of the week so questions related to further primary care education and USPSTF (2018) screenings were not obtained from them. The education level of the participants was higher than the 5th grade reading level of the questions presented which could allow for future research and education being tailored to a higher level of

readability. However, the largest complaint for this study was that the survey did not include American Sign Language (ASL) videoing. The cross-referencing of English questions into ASL and then back into English was not attempted for this research, however, additional research might benefit from providing an ASL signed survey to accompany the print version.

Implications

Research

This study attempted to fill the gaps in literature relating to Deaf patients and their experiences surrounding healthcare access. This research was guided by Flaskerud and Winslow's (1998) Vulnerable Population Model. This model emphasizes vulnerable populations have a high risk for morbidity and mortality. Section 1557 of the Affordable Care Act has been District Court upheld national legislation which requires health care providers to accommodate Deaf patients when they seek healthcare; specifically, to ensure there is sufficient time with qualified interpreters for Deaf patients to understand medical terms and treatment plans (Hunt, 2016). By allowing Deaf to have access to greater resources by means of qualified interpreters, healthcare providers will be able to decrease the relative risk of poor health status for this population. Further research will be beneficial to explore USPSTF (2018) health screenings desired by the Deaf and how those screenings could be individualized with both in-person and Remote Video Interpreting services to meet specific needs of this population.

Policy

Healthcare policy at a national level should not be created without remembering the nuances involved in caring for vulnerable populations, including the Deaf. As healthcare policy is expanded, ways of adapting education should also be included. Policy for Deaf patients accessing healthcare needs to include: increased reimbursement to allow for American Sign

Language interpreters to be available for Deaf to make and attend appointments, regulation of interpreters to include medical language training, and ways to ensure Deaf care is as safe and high quality as care provided to non-vulnerable populations (American Association of Colleges of Nursing [AACN], 2006).

Business

Deaf respondents to this survey self-identified as being able to avail themselves of health care at critical times though their use of technology. From a business perspective, primary care offices and healthcare organizations would do well to have strategic management for information technology investments (American Organization of Nurse Executives [AONE], 2015). By having the technology in place for Deaf patients to connect via Video Phone and Video Relay Service, healthcare providers can offer a patient care connection with their provider/clinic in the format most frequently used and desired. This use of additional technology by health care providers may increase the response rate of "I can see my provider anytime I need to" from this study's reported 66%.

Team building/Leadership

Leadership in healthcare currently involves systems thinking (AACN, 2006; AONE, 2015). Nursing can help provide the systems thinking to problem solve and change practice delivery. However, systems thinking should also expand to include the resource of Deaf patients' perspectives in their local health care community. Deaf as a vulnerable population have shown they are willing to participate in conversations on what works and does not work when they access healthcare. The input from the Deaf on what they value should be included by health care organizations as they look to respond to the needs of their communities.

Practice

Organizations have recommended the expansion of state licensing to allow Nurse Practitioners (NPs) to practice to the full extent of their training and education. Full practice authority for NPs could increase primary care providers to the Deaf in both urban and rural communities. Nurse Practitioners providing primary care services would meet the American Association of College of Nursing's (AACN, 2006) *DNP Essentials* related to inter-professional collaboration, improved patient health, improved population outcomes, and improved clinical prevention. State governments should take steps to allow for individual NP practice to align with national standards.

All healthcare practitioners should receive training on how to interact with vulnerable populations, including Deaf patients. Learning ways to minimize distraction and confusion that have been identified in this study could increase the confidence that the Deaf have in their interactions with providers. Providers need to understand when and how to integrate the use of technology and interpreters into a visit; how their facial expressions, body language, and eye contact cause confusion; and how to ask questions and provide clarification to close the loop on communication with Deaf patients.

Community organizations are an aspect by which patient interaction could also increase. Specifically, Deaf access health information at health centers (66%) and community events (50%), suggesting that a partnership between these community organizations and healthcare providers would be a means to enable Deaf to obtain quality health information at venues they frequent.

Technology

Deaf have a willingness to use available technology to establish and maintain a relationship of care. A large percentage of this study's respondents (58%) have used Video Remote Interpreting during a healthcare visit, and 34% of those who have experienced Telehealth during a visit would use it again. The AACN (2006) encourages doctorally prepared nurses to improve and transform healthcare using technology and the Deaf participants in this research have expressed that they are willing to partner with healthcare providers in this specialized area of practice.

References

American Association of Colleges of Nursing (2006). *The essentials of doctoral education for advanced nursing practice*. Retrieved from https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

American Organization of Nurse Executives (2015). *Nurse executive competencies*. Retrieved from http://www.aone.org/resources/nec.pdf

Antoun, J. (2018). Electronic mail communication between physicians and patients: A review of challenges and opportunities. *Family Practice, 33*(2), 121-126. doi:10.1093/fampra/cmv/101

Buerhaus, P., DesRoches, C. M., Dittus, R., & Donelan, K. (2015). Practice characteristics of primary care nurse practitioners and physicians. *Nursing Outlook, 63,* 144-153. doi:10.1016/j.outlook.2014.08.008

Bush, M. L., Alexander, D., Noblitt, B., Lester, C., & Shinn, J. B. (2015). Pediatric hearing healthcare in Kentucky's Appalachian primary care setting. *Journal of Community Health, 40,* 762-768. doi:10.1007/s10900-015-9997-0

Centers for Medicare and Medicaid Services. (n.d.). *Translation & interpretations services*. Retrieved from https://www.medicaid.gov/medicaid/finance/admin-claiming/translation/index.html

Chaveiro, N., Porto, C. C., & Barbosa, M. A. (2009). The relation between deaf patients and the doctor. *Brazilian Journal of Otorhinolaryngology, 75*(1), 147-150.

Colorado Commission for the Deaf and Hard of Hearing. (2012). *The deaf and hard of hearing population in Colorado.* Retrieved from http://www.ccdhh.com/test/wp-content/uploads/2017/06/Demographics-12.pdf

Crowe, T., Jani, S. [Suni], Jani, S. [Sushma], Jani, N., & Jani, R. (2016). A pilot program in rural telepsychiatry for deaf and hard of hearing populations. *Heliyon*. doi:10.1016/j.heliyon.2016.300077

Erves, J. S., Mayo-Gamble, T. L., Malin-Fair, A., Boyer, A., Joosten, Y., Vaugh, Y. C., Sherden, L., … Wilken, S. H. (2017). Needs, priorities, and recommendations for engaging underrepresented populations in clinical research: A community perspective. *Journal of Community Health, 42,* 472-480. doi:10.1007/s10900-016-0279-2

Flaskerud, J. H. & Winslow, B. J. (1998). Conceptualizing vulnerable populations health-related research. *Nursing Research, 47*(2), 69-78.

Haricharan, H. J., Heap, M., Hacking, D., & Lau, Y. K. (2017). Health promotion via SMS improves hypertension knowledge for deaf South Africans. *BMC Public Health, 17*(663). doi:10.1186/s12889-017-4619-7

Hunt, D. B. (2016). New 2016 ACA rules significantly affect the law of language access. Retrieved from http://www.cmelearning.com/new-2016-aca-rules-significantly-affect-the-law-of-language-access/

IBM Knowledge Center. (2017). *IBM SPSS statistics V25.0 documentation.* Retrieved from https://www.ibm.com/support/knowledgecenter/en/SSLVMB_25.0/statistics_kc_ddita/spss_product_landing.html

Jensen, L. G., Nakaji, M., Harry, K. M., Gallegos, N., Malcarne, V. L., & Sadler, G. R. (2013). Ovarian cancer: Deaf and hearing women's knowledge before and after an educational video. *Journal of Cancer Education, 28,* 647-655. doi:10.1007/213187-013-0529-2

Kuenburg, A., Fellinger, P., & Fellinger, J. (2016). Health care access among deaf people. *Journal of Deaf Studies and Deaf Education, 21*(1)*,* 1-10. doi:10.1093/deafed/env042

Kritzinger, J., Schneider, M., Swartz, L., & Braathen, S. H. (2014). "I just answer 'yes' to everything they say": Access to health care for deaf people in Worcester, South Africa and the politics of exclusion. *Patient Education and Counseling, 94*, 379-383. doi:10.1016/j.pec.2013.12.006

McClintock, H. F., Kurichi, J. E., Barg, F. K., Krueger, A., Colletti, P. M., Wearing, K. A., & Bogner, H. R. (2017). Health care access and quality for persons with disability: Patient and provider recommendations. *Disability and Health Journal, 2017,* 1-8. doi:10.1016/j.dhjo.2017.12.010

McDoom, M. M., Koppelman, E., & Drainoni, M-L. (2014). Barriers to accessible health care for Medicaid eligible people with disabilities: A comparative analysis. *Journal of Disability Policy Studies, 25*(3), 154-163. doi:10.1177/1044207312469829

McKee, M., Schlehofer, D., & Thew, D. (2013). Ethical issues in conducting research with deaf populations. *American Journal of Public Health, 103*(12), 2174-2178.

McKee, M. M., Barnett, S. L., Block, R. C., & Person, T. A. (2011). Impact of communication on preventive services among deaf American Sign Language users. *American Journal of Preventive Medicine, 41*(1), 75-79.

National Association of the Deaf. (2018 b). *Minimum standards for video remote interpreting services in medical settings.* Retrieved from https://www.nad.org/about-us/position-statements/minimum-standards-for-video-remote-interpreting-services-in-medical-settings/

National Association of the Deaf. (2018 a). *Position statement on health care access for deaf patients*. Retrieved from https://www.nad.org/about-us/position-statements/position-statement-on-health-care-access-for-deaf-patients/

Office of Disease Prevention and Health Promotion (2010). *Healthy People 2020*. Retrieved from https://www.healthypeople.gov/?_ga=2.17728698.262635261.1553359268-283822430.1553359268

Padden, C. & Humphries, T. (1998). *Deaf in America: Voices from a culture.* Cambridge, MA: Harvard University Press.

Pendergrass, K. M., Newman, S. D., Jones, E., & Jenkins, S. H. (2017). Deaf: A concept analysis from a cultural perspective using the Wilson Method of concept analysis development. *Clinical Nursing Research, 28*(1)*,* 1-15. doi:10.1177/1054773817719821

Sheppard, K. (2014). Deaf adults and health care: Giving voice to their stories. *Journal of the American Association of Nurse Practitioners, 26*, 504-510. doi:10.1002/2327-6924.12087

Social Security Administration. (2018). *Benefits for children with disabilities*. Retrieved from https://www.ssa.gov/pubs/EN-05-10026.pdf

Survey System. (2012). *Sample size calculator*. Retrieved from https://www.surveysystem.com/sscalc.htm

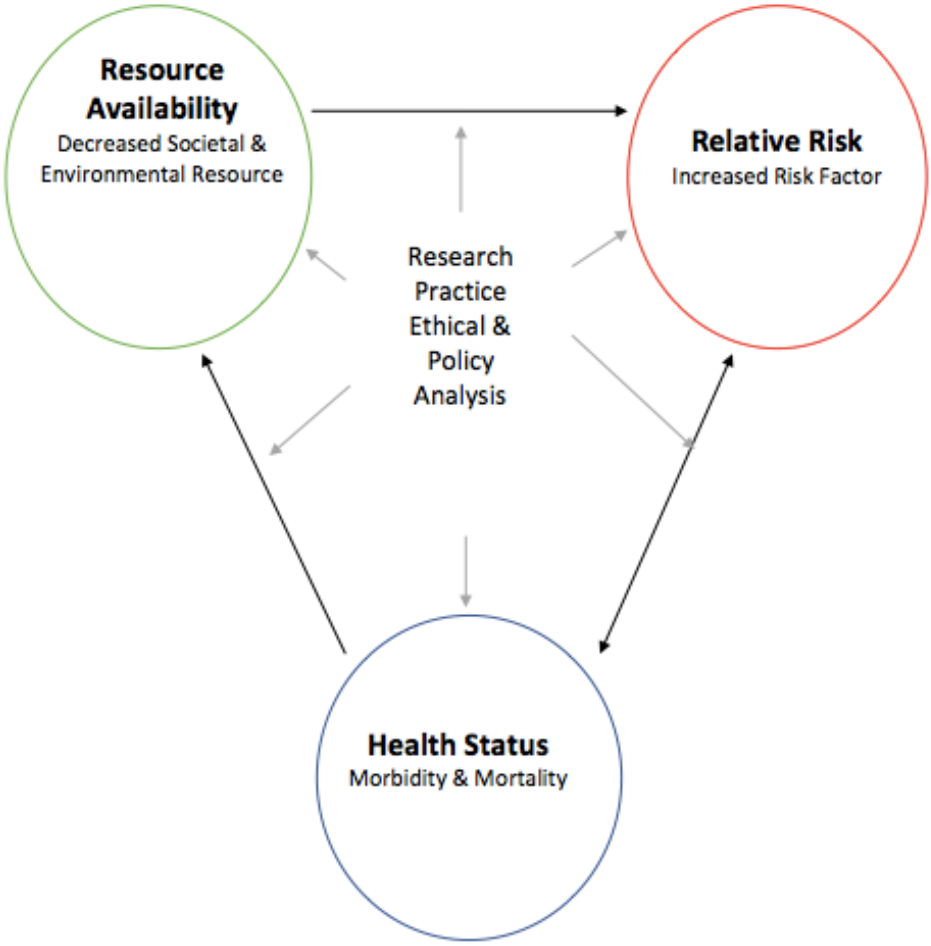
U.S. Census Bureau. (2016). *Rurality matters*. Retrieved from https://www.census.gov/newsroom/blogs/random-samplings/2016/12/rurality_matters.html

U.S. Department of Health and Human Services Office of the Secretary (2017). *Section 1557: Frequently asked questions*. Retrieved from https://www.hhs.gov/civil-rights/for-individuals/section-1557/1557faqs/index.html

U.S. Preventative Services Taskforce. (2018). *USPSTF A and B recommendations.* Retrieved from https://www.uspreventiveservicetaskforce.org/Page/Name/uspstf-a-and-b-recommendations/

Wireless Broadband Alliance. (2017). *Connected city blueprint*. Retrieved from https://www.wballiance.com/resources/wba-white-papers/2017/

Appendix A: Vulnerable Populations Model



Appendix B: Survey

Deaf Barriers

Start of Block: Default Question Block

Page 2 of 17

Q1 Race (select the one that best describes your race) oAmerican Indian or Alaska Native (1)

oAsian (2) oBlack or African American (3) oNative Hawaiian or Other Pacific Islander (4) oWhite (5)

Q2 Sex (to which gender identity do you most identify) oMale (1)

oFemale (2) oTransgender (3)

. Q3 Age _____

. Q4 Please pick the state were you currently live

▼ AK (1) ... WY (50)

Page 3 of 17

Q5 How would you describe the city or town where you live? oMostly Urban (more than 50,000 people) (1)

oMostly Rural (2500 to 49,999 people) (2) oCompletely Rural (less than 2500 people) (3)

Q6 What is the distance in miles you travel one way for an appointment with your primary care provider?

_____

Q7 When did your deafness start? oBefore I could talk (1) oAfter I had started talking (2)

Page 4 of 17

Q8 Choose your highest completed education level oDid not complete High School (1)

oGED (2) oHigh School (3) oSome College (4) oAssociate Degree (5) oBachelor's Degree (6) oMaster's Degree (7) oDoctoral Degree (8)

Q9 Do you currently have health insurance (click all that apply) ▫Medicare (1)

▫Medicaid (2) ▫Private (3) ▫None (4)

Page Break

Page 5 of 17

Q10 How would you rate your overall health

Click to choose ()

Q11 How would you rate your overall mental health

Click to choose ()

Poor

Could be better

Good Excellent

Poor

Could be better

Good Excellent

Q12 How do you get health information

Click to choose

Yes (1)

No (2)

Page 6 of 17

Wiki (1) Facebook (2) Family (3) Friends (4) School (5) Health Center (6) Community Events (7) Text Messages (8)

Page Break

oo oo oo oo oo oo oo oo

Page 7 of 17

Page Break

Page 8 of 17

Q13 Do you have a current primary care provider

Click to choose

Yes (1)

No (2)

Doctor of Osteopathic Medicine (DO) (1)

Medical Doctor (MD) (2) Nurse Practitioner (NP) (3) Physician Assistant (PA) (4)

oo oo oo oo

Q14 Do you have a preference for your primary care provider oYes (1)

oNo (2)

Q14b Who would be your preferred primary care provider oDoctor of Osteopathic Medicine (DO) (1)

oMedical Doctor (MD) (2) oNurse Practitioner (NP) (3) oPhysician Assistant (PA) (4)

Page 9 of 17

Q15 Is there something that keeps you from going to your primary care provider (click all that apply)

▢Travel (1) ▢Cost (2) ▢No insurance (3) ▢Cannot communicate with them (4) ▢Need someone to go with me (5) ▢Nothing--I can see my provider any time I need to (6)

Q16 How do you schedule appointments with your provider (click all that apply)

▢Text messages (1) ▢Clinic website (2) ▢Having a friend call to schedule (3) ▢Having a family member call to schedule (4) ▢Contacting an interpreter to schedule (5) ▢Walking into the office (6) ▢Other (7) _____

Q17 Do you have these worries during your appointment with your provider Click to choose

Yes (1)

No (2)

Page 10 of 17

Not being able to communicate (1)

Fear of mistreatment or misdiagnosis due to communication problems (2)

Testing being done I don't understand (3)

Not being able to communicate by the method I want (4)

Lack of access for follow up (5)

Confidentiality (6)

oo

oo

oo

oo

oo oo

Q18 Have you experienced confusion during a visit from these Definitely yes (1) Probably yes (2) Probably not (3) Definitely not (4)

Body language (1)

Eye contact (2)

Questions asked (3)

Provider's facial expressions (4)

Use of technology during the visit (5)

oooo oooo oooo oooo

oooo

Page 11 of 17

Q19 During a healthcare appointment have you ever used Video Remote Interpreting (the interpreter being available on a computer with a webcam)

oYes (1) oNo (2)

Q19b Would you use Video Remote Interpreting again oYes (1)

oNo (2)

Q19c If no, why not (select all that apply) ▢The internet connection was poor (1)

▢The interpreter didn't help me understand the medical language (2) ▢The provider didn't know how to include the interpreter in our conversation (3) ▢It was awkward (4) ▢I don't have that access anymore (5)

Page 12 of 17

Q20 Have you every had a Telehealth appointment (the provider is not in the room with you but is over a computer with a webcam)

oYes (1) oNo (2)

Q20b If yes, would you use Telehealth again oYes (1)

oNo (2)

Q20c If no, why not (select all that apply) ▢The internet connection was poor (1)

▢An interpreter wasn't part of the visit (2) ▢It was awkward (3) ▢I don't have that access anymore (4)

Page 13 of 17

Q21 When do you see your primary care provider (select all that apply)

□To get tests for disease prevention (1) □Only when I'm sick or have a problem (2) □When I'm told to follow up (3) □Other (4) _____

Page Break

Page 14 of 17

Q22 Did you get a flu shot between September, 2017 and June, 2018 oYes (1)

oNo (2) oCan't remember (3)

Q23 Have you had a tetanus shot in the past 7 years oYes (1)

oNo (2) oCan't remember (3)

Q24 Have you had a colonoscopy oYes (1)

oNo (2) oI'm too young (less than 50) (3)

Q25 Have you been checked for cervical cancer in the past three years oYes (1)

oNo (2) oI'm not a female between age 21 and 65 (3)

Page 15 of 17

Q26 Have you had a mammogram (ultrasound to check for breast cancer) oYes (1)

oNo (2) oI'm not a female older than 40 (3) oI have had a mastectomy (4)

Q27 Have you had a PSA (blood test used to screen for prostate infections and cancer)

oYes (1) oNo (2) oI'm not a male older than 50 (3) oI have had a prostatectomy (4)

Page 16 of 17

Q28 Are you interested in future access for these health screenings

▢Alcohol misuse (1) ▢Bone density (2) ▢Cancer (3) ▢Chronic kidney disease (4) ▢Depression/Mental Health (5) ▢Diabetes (6)

▢Falling (7) ▢Glaucoma (8) ▢Healthy diet and physical activity (9) ▢Hepatitis C virus infection (10) ▢HIV (human immunodeficiency virus) infection (11) ▢Intimate Partner Violence/Elder Abuse (12) ▢Obesity (overweight) (13) ▢Peripheral artery disease (heart disease screening) (14) ▢Sexually Transmitted Infections (STDs) (15) ▢Tobacco use and ways to quit (16) ▢Vitamin D level (17)

End of Block: Default Question Block

Page 17 of 17

Appendix C: Institutional Review Board Approval

OLD DOMINION UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

Physical Address
4111 Monarch Way, Suite 203
Norfolk, Virginia 23508
Mailing Address
Office of Research
1 Old Dominion University
Norfolk, Virginia 23529
Phone(757) 683-3460
Fax(757) 683-5902

DATE:	August 3, 2018
TO:	Sarah Curtright, MSN
FROM:	Old Dominion University Health Sciences Human Subjects Review Committee
PROJECT TITLE:	[1297159-1] Revised Deaf Barriers
REFERENCE #:	
SUBMISSION TYPE:	Amendment/Modification
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	
REVIEW CATEGORY:	Exemption category # *6.2*

Thank you for your submission of Amendment/Modification materials for this project. The Old Dominion University Health Sciences Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Harry Zhang at 757-683-6870 or qzhang@odu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Health Sciences Human Subjects Review Committee's records.

Appendix D: Consent

Page 1 of 17 QConsent

Deaf Community Member, My name is Sarah Curtright. I am a Family Nurse Practitioner practicing in Idaho and a Doctor of Nursing (DNP) student at Old Dominion University in Norfolk, Virginia. The focus of my DNP research study is to understand and describe the needs of the Deaf by identifying your ability to access healthcare, while understanding barriers you may

face. You have been invited by your state's Deaf Leadership to take part in this research study. Before you decide to participate in this

study, it is important that you understand what it will involve. Please take the time to read the following information carefully. Please email me at scurt003@odu.edu if there is anything that is not clear or if you need more information. Study Procedure: Your expected time to answer the 28 questions of this survey is approximately 20 minutes. Risks: If you decide to participate in this study, you may face minimal risks. These risks are similar to those you experience when disclosing work-related information to

others. The topics in the survey may be upsetting to some of you due to their personal nature. You may decline to answer any or all

questions and you may stop the survey at any time you choose by closing the survey. Benefits: There will no direct benefit to you for your participation in this study. However, I hope that the information obtained from this study may allow for greater understanding of healthcare providers and institutions as to your desired health goals and ways in which we might meet those needs. Confidentiality: Every effort will be made by me to preserve your confidentiality including ensuring the data collected is in a password protected database that is not available to anyone other than myself and my advisor, Dr. Lorri Birkholz, RN, DNP, the Responsible Primary Investigator of this study. The results of your answers may be used in reports, presentations, and publications; but you will not be individually identified. Voluntary Consent: By clicking yes below, you are saying several things. You are saying you have read this form and have had the opportunity to

have any questions or concerns you might have answered. Your participation is voluntary and you are free to stop the survey at any time without it affecting your relationship with me or Old Dominion University. And, importantly, by clicking Yes below, you are telling me: you are age 18 or older, you identify as d/Deaf, and you agree to participate in this study. If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. Tracy Vandicar-Burdin, the current IRB chair, at 757-683-3802, or the Old Dominion University Office of Research, at 757- 683- 3460. Thank you in advance for considering to answer the questions in this survey.

oYes, I want to participate (1) oNo, I decline at this time (2)

Appendix E: CITI Trainings

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Lorri Birkholz (ID: 5582269)
- **Institution Affiliation:** Old Dominion University (ID: 1771)
- **Institution Email:** lbirk002@odu.edu
- **Institution Unit:** Nursing

- **Curriculum Group:** Social & Behavioral Research - Basic/Refresher
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 2 - SBR 101 refresher
- **Description:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.

- **Record ID:** 22466769
- **Completion Date:** 05-Sep-2017
- **Expiration Date:** 05-Sep-2018
- **Minimum Passing:** 80
- **Reported Score*:** 95

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
SBE Refresher 1 – Instructions (ID: 943)	05-Sep-2017	No Quiz
SBE Refresher 1 – History and Ethical Principles (ID: 936)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects (ID: 937)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Informed Consent (ID: 938)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Defining Research with Human Subjects (ID: 15029)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Privacy and Confidentiality (ID: 15035)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Assessing Risk (ID: 15034)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Research with Prisoners (ID: 939)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Research with Children (ID: 15036)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – Research in Educational Settings (ID: 940)	05-Sep-2017	2/2 (100%)
SBE Refresher 1 – International Research (ID: 15028)	05-Sep-2017	1/2 (50%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?kb416dafe-8de4-4495-9b5a-58e9194c18cb-22466769

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Sarah Curtright (ID: 6032822)
- **Institution Affiliation:** Old Dominion University (ID: 1771)
- **Institution Email:** scurt003@odu.edu
- **Institution Unit:** Nursing

- **Curriculum Group:** Social & Behavioral Research - Basic/Refresher
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course
- **Description:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.

- **Record ID:** 27237423
- **Completion Date:** 27-May-2018
- **Expiration Date:** 27-May-2019
- **Minimum Passing:** 80
- **Reported Score*:** 90

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Belmont Report and Its Principles (ID: 1127)	26-May-2018	3/3 (100%)
History and Ethical Principles - SBE (ID: 490)	26-May-2018	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	26-May-2018	5/5 (100%)
The Federal Regulations - SBE (ID: 502)	26-May-2018	5/5 (100%)
Assessing Risk - SBE (ID: 503)	27-May-2018	5/5 (100%)
Informed Consent - SBE (ID: 504)	27-May-2018	4/5 (80%)
Privacy and Confidentiality - SBE (ID: 505)	27-May-2018	5/5 (100%)
Research with Prisoners - SBE (ID: 506)	27-May-2018	5/5 (100%)
Research with Children - SBE (ID: 507)	27-May-2018	4/5 (80%)
Research in Public Elementary and Secondary Schools - SBE (ID: 508)	27-May-2018	4/5 (80%)
International Research - SBE (ID: 509)	27-May-2018	5/5 (100%)
Students in Research (ID: 1321)	27-May-2018	4/5 (80%)
Internet-Based Research - SBE (ID: 510)	27-May-2018	5/5 (100%)
Research and HIPAA Privacy Protections (ID: 14)	27-May-2018	4/5 (80%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	27-May-2018	3/5 (60%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?kddb05bc7-817c-4018-a6c4-89360e0fe62f-27237423

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Sarah Curtright (ID: 6032822)
- **Institution Affiliation:** Old Dominion University (ID: 1771)
- **Institution Email:** scurt003@odu.edu
- **Institution Unit:** Nursing

- **Curriculum Group:** Physical Science Responsible Conduct of Research
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - RCR
- **Description:** This course is for investigators, staff and students with an interest or focus in **Physical Science** research. This course contains text, embedded case studies AND quizzes.

- **Record ID:** 27343193
- **Completion Date:** 13-Feb-2018
- **Expiration Date:** N/A
- **Minimum Passing:** 80
- **Reported Score*:** 91

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Research Misconduct (RCR-Basic) (ID: 16604)	13-Feb-2018	4/5 (80%)
Data Management (RCR-Basic) (ID: 16600)	13-Feb-2018	4/5 (80%)
Authorship (RCR-Basic) (ID: 16597)	13-Feb-2018	4/5 (80%)
Peer Review (RCR-Basic) (ID: 16603)	13-Feb-2018	5/5 (100%)
Mentoring (RCR-Basic) (ID: 16602)	13-Feb-2018	5/5 (100%)
Conflicts of Interest (RCR-Basic) (ID: 16599)	13-Feb-2018	5/5 (100%)
Collaborative Research (RCR-Basic) (ID: 16598)	13-Feb-2018	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?k1643053c-a532-4093-9e5d-3ca33308917f-27343193

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix F: Data Dictionary

Socio-Demographic Data with SPSS label	How Recorded	Level of Measurement with SPSS Designation	Analytical Tests
1. Race SPSS: Race	1 = American Indian or Alaska Native 2 = Asian 3 = Black or African American 4 = Native Hawaiian or other Pacific Islander 5 = White	Nominal	Percentage, sum, frequency
2. Sex SPSS: Sex	1 = Male 2 = Female 3 = Transgender	Nominal	Percentage, sum, frequency
3. Age SPSS: Age	Actual age (limit 3 digits)	Ratio	Range, mean, median, mode, SD, variance, minimum/maximum
4. Residence SPSS: Residence	1 = AK 2 = AL 3 = AR 4 = AZ 5 = CA 6 = CO 7 = CT 8 = DE 9 = FL 10 = GA 11 = HI 12 = IA 13 = ID 14 = IL 15 = IN 16 = KS 17 = KY 18 = LA 19 = MA 20 = MD 21 = ME	Nominal	Percentage, sum, frequency

	22 = MI 23 = MN 24 = MO 25 = MS 26 = MT 27 = NC 28 = ND 29 = NE 30 = NH 31 = NJ 32 = NM 33 = NV 34 = NY 35 = OH 36 = OK 37 = OR 38 = PA 39 = RI 40 = SC 41 = SD 42 = TN 43 = TX 44 = UT 45 = VA 46 = VT 47 = WA 48 = WI 49 = WV 50 = WY		
5. Population SPSS: Population	1 = Mostly urban 2 = Mostly rural 3 = Completely rural	Nominal	Percentage, sum, frequency Coefficient of Contingency
6. Miles to travel for healthcare (1 way) SPSS: Mi2hc1way	Actual distance (limit to three digits)	Ordinal	Range, mean, median, mode, SD, variance, minimum/maximum
7. Deafness onset SPSS: Deafnessonset	1 = Before I could talk 2 = After I had started talking	Nominal	Percentage, sum, frequency Coefficient of Contingency
8. Education level SPSS: Edlevel	1 = Did not complete high school	Ordinal	Frequency, percentage, mode,

	2 = GED 3 = High school 4 = Some college 5 = Associate degree 6 = Bachelor's degree 7 = Master's degree 8 = Doctoral degree		median, range, minimum/maximum
9. Insurance SPSS: Q9AMcare Q9BMcaid Q9CPrivate Q9DNone	1 = Medicare 2 = Medicaid 3 = Private 4 = None	Nominal	Range, mean, median, mode, SD, variance, minimum/maximum
10. Overall health SPSS: Overallhealth	1 = Poor 2 = Could be better 3 = Good 4 = Excellent	Ordinal	Mode, median, mean, range, SD, variance, minimum/maximum Independent t-test, Paired t-test, Pearson r
11. Mental health SPSS: Mentalhealth	1 = Poor 2 = Could be better 3 = Good 4 = Excellent	Ordinal	Mode, median, mean, range, SD, variance, minimum/maximum Independent t-test, Paired t-test, Pearson r
12. How get health information SPSS: Q12AWiki Q12BFB Q12CFamily Q12DFriend Q12ESchool Q12FHealthCtr Q12GCmteEvent Q12HTextmsg	1 = Wiki 2 = Facebook 3 = Family 4 = Friends 5 = School 6 = Health Center 7 = Community Events 8 = Text Messages	SPSS: 1 = Yes 2 = No Nominal	Mode, median, mean, range, SD, variance, minimum/maximum
13. Current PCP SPSS: Q13ADO Q13BMD	1 = DO 2 = MD 3 = NP 4 = PA	SPSS: 1 = Yes 2 = No	Mode, median, mean, range, SD, variance, minimum/maximum

Q13CNP Q13DPA		Nominal	
14. Preference for PCP SPSS: PreferPCP	1 = Yes 2 = No	Nominal	Percentage, sum, frequency Coefficient of Contingency
14 b. Preferred PCP SPSS: Preferred PCP	1 = DO 2 = MD 3 = NP 4 = PA	Nominal	Percentage, sum, frequency Coefficient of Contingency
15. Prevents healthcare visit SPSS: Q15ATravel Q15BCost Q15CNoInsurance Q15DCommun Q15ESome1GoWith Q15FNothing	1 = Yes 2 = No 9999 = missing data	Nominal	Percentage, sum, frequency
16. How schedule appointments SPSS: Q16ATextMsg Q16BWebsite Q16CFriend Q16DFamily Q16EInterpreter Q16FWalkin Q16GOther	1 = Yes 2 = No	Nominal	Percentage, sum, frequency Coefficient of Contingency
17. Worries during appointments SPSS: Q17ACommun Q17BMistxdx Q17CTesting Q17DWantedmethod Q17EFollowup Q17FConfiden	1 = Not being able to communicate 2 = Fear of mistreatment or misdiagnosis due to communication problems	Ratio SPSS: 1 = Yes 2 = No	Range, mean, median, mode, SD, variance, minimum/maximum

	3 = Testing being done I don't understand 4 = Not being able to communicate by the method I want 5 = Lack of access for follow up 6 = Confidentiality		
18. Confusion from these SPSS: Q18ABodyLang Q18BEyecon Q18CQuestions Q18DProvider Q18ETech	1 = Body language 2 = Eye contact 3 = Questions asked 4 = Provider's facial expressions 5 = Use of technology during the visit	Ratio SPSS: 1 = Definitely yes 2 = Probably yes 3 = Probably not 4 = Definitely not	Range, mean, median, mode, SD, variance, minimum/maximum
19. Used VRI SPSS: VRI	1 = Yes 2 = No	Nominal	Percentage, sum, frequency
19 b. Use VRI again SPSS: VRIAgain	1 = Yes 2 = No	Nominal	Percentage, sum, frequency
19 c. Why not use VRI again SPSS: Q19CInternet Q19CInterpreter Q19CProvider Q19CAwkward Q19CAccess	1 = Internet connection was poor 2 = The interpreter didn't help me understand the medical language 3 = The provider didn't know how to	Ratio	Range, mean, median, mode, SD, variance, minimum/maximum

	include the interpreter in our conversation 4 = It was awkward 5 = I don't have that access anymore		
20. Had Telehealth appointment SPSS: TH	1 = Yes 2 = No	Nominal	Percentage, sum, frequency
20 b. Use again SPSS: THAgain	1 = Yes 2 = No	Nominal	Percentage, sum, frequency
20 c. If not, why SPSS: Q20CInternet Q20CInterpreter Q20CAwkward Q20CAccess	1 = The internet connection was poor 2 = An interpreter wasn't part of the visit 3 = It was awkward 4 = I don't have that access any more	Ratio	Range, mean, median, mode, SD, variance, minimum/maximum
21. When see PCP SPSS: Q21ADsPrevent Q21BSick Q21CToldFu Q21DOther	1 = To get tests for disease prevention 2 = Only when I'm sick or have a problem 3 = When I'm told to follow up 4 = Other (long answer available)	Ratio	Range, mean, median, mode, SD, variance, minimum/maximum
22. Flu shot last year SPSS: FluShotlastyear	1 = Yes 2 = No 3 = Can't remember	Nominal	Percentage, sum, frequency
23. Tetanus past 7 years SPSS: Tetanuslast7	1 = Yes 2 = No 3 = Can't remember	Nominal	Percentage, sum, frequency
24. Had colonoscopy SPSS: Colonoscopy	1 = Yes 2 = No 3 = I'm too young (less than 50)	Nominal	Percentage, sum, frequency

25. Checked for cervical cancer past 3 years SPSS: HadPAP	1 = Yes 2 = No 3 = I'm not a female between age 21 and 65	Nominal	Percentage, sum, frequency
26. Had mammogram SPSS: HadMammo	1 = Yes 2 = No 3 = I'm not a female older than 40 4 = I have had a mastectomy	Nominal	Percentage, sum, frequency
27. Had a PSA SPSS: HadPSA	1 = Yes 2 = No 3 = I'm not a male older than 50 4 = I have had a prostatectomy	Nominal	Percentage, sum, frequency
28. Future Access interests SPSS: Q28Aetoh Q28Bbonedensity Q28CCancer Q28DCKD Q28EBehavH Q28FDM Q28GFalls Q28HGlaucoma Q28IDietactiv Q28JHepC Q28KHIV Q28LAbuse Q28MObesity Q28NPAD Q28OSTD Q28PTobacco Q28QVitD	1 = Alcohol misuse 2 = Bone density 3 = Cancer 4 = Chronic kidney disease 5 = Depression/Mental Health 6 = Diabetes 7 = Falling 8 = Glaucoma 9 = Health diet and physical activity 10 = Hepatitis C virus infection 11 = HIV (human immunodeficiency virus) infection 12 = Intimate partner violence/elder abuse 13 = Obesity (overweight) 14 = Peripheral artery disease (heart disease screening)	Interval	Range, mean, median, mode, SD, variance, minimum/maximum

	15 = Sexually transmitted infections (STDs) 16 = Tobacco use and ways to quit 17 = Vitamin D level		

Appendix G: CV

Name: Sarah E Curtright, FNP-Ed, RN

Current Date: April 17, 2019

Address: 4365 West Cherry Lane
Meridian, ID 83642

Telephone: 208-484-9468

Email: scurt003@odu.edu

EDUCATION	**Institution**	**Month & Year**	**Degree**
Graduate Degree	Old Dominion University	Anticipated Graduation May 2019	DNP Nurse Executive Leadership
	Saint Louis University	December 2013	MSN FNP
	Saint Louis University Nurse Educator	December 2013	Post-masters Certificate
Undergraduate	Drexel University	September 2007	BSN
	Boise State University	December 2005	ADN

Licensure:

RN # 34959 Idaho	Expires 08-31-19
NP-C # 1407A Idaho	Expires 08-31-19
RN #201143356 Oregon	Expires 04-27-2020

Certificates:

Basic Life Support	Expires 06-2020
Legal Nurse Consultant	Expires 04-2020
American Association of Nurse Practitioners	Expires 01-2024

Professional and Hospital Positions

Rank	**Institution**	**Month & Year**
RN Center of Excellence for Quality and Patient Safety	Saint Luke's Health System Boise, Idaho	May 2018- present

Family Nurse Practitioner	Unity Health Center Meridian, Idaho	May 2018- present
Primary Care Manager Surrogate Manager for Behavioral Health and Pharmacy Service Lines SME V-IMPACT national rollout	Veteran's Health Administration VAMC VIMPACT Boise, Idaho	May 2015- Apr 2018
Credentialed Medical Staff Member	Boise VAMC, White City VAMC, Alaska VAMC, Roseburg VAMC, Houston VAMC	May 2015- Apr 2018
Family Nurse Practitioner Saltzer Urgent Cares	Saint Luke's Health System Boise, Idaho	Oct 2014- Jul 2015
Family Nurse Practitioner First Choice Urgent Care and Medical	Bingham Memorial Hospital Blackfoot, Idaho	Feb 2014- Oct 2014
Staff Nurse Eagle Urgent Care McCall ED and Hospital	Saint Luke's Health System Boise, Idaho	Jun 2012- Feb 2014
Minimum Data Set Coordinator Admissions Coordinator	Community Living Center Boise VAMC Boise, Idaho	Feb 2010- Jun 2012
Staff Nurse Community Living Center	Boise VAMC Boise, Idaho	Sep 2008- Feb 2010
Staff Nurse Boise ED MV ED Staff Educational Competencies	Saint Luke's Health System Boise, Idaho	Jan 2006- Jul 2009

Teaching

Rank	**Institution**	**Years**
Clinical Faculty NSG6440	South University	2018-present

Guest Lecturer STAR Nurse Residency New Grad Clinical Orientation	Saint Luke's Health System	2018-present
Adjunct Faculty Interdisciplinary Post-Doc Residency Training for Primary Care via Telehealth	Boise VAMC Center of Excellence	2015-2018
Instructor Heartsaver CPR AED Heartsaver First Aid BLS for Healthcare Professionals ACLS PALS	American Heart Association	2005-2006

Research Projects (Doctor of Nursing Practice-In Progress)

Sarah Curtright & Birkholz, L. (Faculty Advisor) "Needs Assessment to Identify Barriers to Healthcare Access in the Deaf Community" 2019

Manuscript Under Review

Gray, D., Rogers, S., **Curtright, S.** "Reducing Hypertension in the CARICOM Region: Research, Policy and Intervention Programs" Global Public Health

Book Chapters

Curtright, S. (2006). "Care of Post Partum Women." In Ramont, R, Niedringhaus, D. Towle, M. (Eds). Comprehensive Nursing Care. Pearson Prentice Hall, Upper Saddle River, NJ.

Presentations

Curtright, S. & Birkholz, L. "Needs Assessment for Access to Healthcare in the Deaf Community" NW Regional Telehealth Resource Center Annual Conference. Poster Presentation. Salt Lake City, UT, October 1-3, 2018

Curtright, S. "V-IMPACT" Nurse Practitioners of Idaho Fall Conference. Poster Presentation. Boise, ID, October 3-4, 2016

Membership in Professional Societies:

American Organization of Nurse Executives

Member 2017-Present

Golden Key International
Member 2017-Present

Sigma Theta Tau International Honor Society
Member 2017-Present

Professional Service:

Nurse Practitioners of Idaho Legislative Committee Member 2018-present

Idaho Time Sensitive Emergencies Council Ad hoc Member 2018-present

Disaster Emergency Medical Personnel System 2008-2012

Community Engagement:

United Way Treasure Valley 2006-present

Boise's Got Faith 2012-present

Leukemia and Lymphoma Society 2012-present

Wish Granters 2012-present

Meridian Foodbank 2013-present

All Veteran's Welcome Home 2008-2018

Main Street Mile 2015-2016