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Telehealth Acceptance and Medical Mistrust Among the Elderly of Rural Appalachia: A Correlational Study Using the Medical Mistrust Index and Technology Acceptance Model

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by

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ABSTRACT

Telehealth Acceptance and Medical Mistrust Among the Elderly of Rural Appalachia: A Correlational Study Using the Medical Mistrust Index and Technology Acceptance Model

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Adults aged 65 years and above have grown substantially over with past decade. However, the chance of developing multiple comorbidities only increases with age. Because elderly residents of rural Appalachia often encounter barriers to healthcare, rural nurses, providers, and policy makers must overcome physical and structural barriers, but also gain a more in-depth understanding of the personal and cultural attitudes impacting the use of new and innovative forms of healthcare delivery. With a slow and variable uptake of telehealth adoption in rural Appalachia, and in the presence of well-documented medical mistrust, this study was designed to better understand the degree of medical mistrust existing in the elderly of rural Appalachia and to assess if medical mistrust may be inhibiting efforts related to telehealth acceptance.

A correlational design was utilized administering the Medical Mistrust Index (MMI) and Technology Acceptance Model (TAM) questionnaire via electronic survey to those age 65 years and above living in rural Appalachia. Deemed well-established and validated, the MMI measures medical mistrust from a broader perspective, while TAM assesses telehealth acceptance in terms of perceived usefulness, perceived ease of use, and overall attitude towards telehealth as a technology. Demographics of gender, income, education, and previous telehealth experience were compared to MMI and TAM scores. The study revealed a moderate level of medical mistrust and telehealth acceptance among the elderly of rural Appalachia. A statistically

significant negative relationship was found between MMI and TAM for those reporting previous telehealth experience, and among all demographics, with the strongest correlations found among females and participants of lower education.

Elderly rural Appalachians have a rich social and cultural history, but past experiences and long-held beliefs have resulted in medical mistrust and slow telehealth uptake. Stakeholders have a responsibility to meet individuals where they are understanding that elderly residents of rural Appalachia may not be ready or fully prepared to incorporate telehealth into their management of care. However, quality rural nursing practice and continued research has the ability to evolve to meet the needs that exist among those of advancing age with limited healthcare resources such as those found in rural Appalachia.

DEDICATION

This research is dedicated to my ancestors of rural Appalachia and to those of rural Appalachia past, present, and future. May your health be as strong as your faith and may your story continue to be as rich and unique as your people.

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ability to bring this chapter to a conclusion and to allow our family to explore many more new and exciting professional opportunities. For this, and so very much more, I thank you.

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Chapter 1. Introduction

According to the U.S. Census Bureau (2020), the adult population aged 65 years and older has grown by approximately 34%, or 13,800 people, over the past decade, and by an additional 3% between the years of 2018 and 2019. The prevalence of multiple morbidities only increases with age, "with estimates for those aged 65 and above ranging from 63% to nearly 100%" (Bardach et al., 2011, p. 671). Because elderly residents of rural Appalachia may encounter barriers to healthcare that limit their ability to obtain services needed such as physical isolation and lack of access, it becomes more apparent that innovative ways of managing health and improving patient outcomes must be implemented to address the needs of this population.

Telehealth has the potential to improve access, increase quality of life, and lessen healthcare costs (Larson et al., 2018; Noel et al., 2005). Defined through analysis and synthesis of the literature, telehealth is defined as the exchange of electronic medical information using telecommunication technologies as a means of managing, supporting, and promoting individual and public health. Telehealth can meet an ever-growing need for access to care among various populations and has grown substantially over the past decade (Bernstein et al., 2021; Carolan et al., 2020; Shah et al., 2015), but its use by older adults, and especially those in rural Appalachia, remained variable even during a global pandemic where social distancing and mandated stay-at-home orders impacted in-person provider-patient interaction (Demeke et al., 2020; Demeke et al., 2021). However, research that focuses on reasons for slow or absent adoption among the elderly of rural Appalachia remains finite.

Medical mistrust among rural communities has been well documented among women and minorities living in rural Appalachian communities and has only increased as a result of recent rural hospital closures (Efird et al., 2021; Hall et al., 2018; Statz & Evers, 2020; Williams &

Shang, 2023). The presence of a variable uptake in telehealth acceptance among the elderly of rural Appalachia may be the result of a culture of medical mistrust rather than an issue with spatial or operational challenges associated with telehealth implementation and adoption (Statz & Evers, 2020). Although meaningful, the issue with medical mistrust remains largely unrecognized and can hinder access to care via telehealth resulting in additional negative health outcomes among this already vulnerable population (Williamson & Bigman, 2018)**.** Nursing research on a possible correlation between medical mistrust and telehealth acceptance is critical and should examine potential barriers, patient perceptions, and factors that influence decision-making to gain a better understanding of how to influence and motivate older adults in rural Appalachian communities to obtain much needed healthcare services using modern technology that might not otherwise be available by traditional means.

Background of Medical Mistrust and Telehealth Acceptance

This study focuses on a possible correlation between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia. Medical mistrust can be a barrier to telehealth acceptance, has been listed as a probable social determinant of health, and may contribute to the health disparities found in the elderly of rural Appalachia (Hammond et al., 2013; Reed, 2021; Williamson & Bigman, 2018). According to a systematic review conducted by Williamson & Bigman (2018), medical mistrust has been associated with a reduction in preventive care services obtained, treatment adherence, patient satisfaction, participation in clinical trials or clinical research, and is closely associated with the regression of physical and mental health.

Marginalized groups, such as those found in rural Appalachia, are more likely to experience medical mistrust based on culture, oral histories, historical experiences, and personal

experiences that are closely linked to their individual and group identities (Brandon et al., 2005; Conner, 2017; LaVeist et al., 2009; Long & Weinert, 1989; Williamson & Bigman, 2018). Physical isolation, combined with cultural and personal perspectives among rural residents of Appalachia, has resulted in the development of "mountain resilience" (i.e., the ability the community to successfully adapt, resist, and recover from various stressors) and a high level of distrust for those viewed as outsiders whether government agencies, healthcare organizations, or healthcare providers (Canterbury, 2019; Winters & Lee, 2018). For the elderly of rural Appalachia, social isolation, strong community ties, distrust in outsiders, and the belief in self-reliance is compounded by physical distance to healthcare services resulting in a culture that relies heavily upon informal family support and "fictive kin" such as close friends and neighbors (Pope et al., 2014).

Long plagued by access to healthcare, the acceptance and adoption of telehealth is an approach that may serve to alleviate challenges to access and improve health outcomes for the elderly of rural Appalachia (Holtz et al., 2022), but only if perceived as a trustworthy means of managing healthcare needs. Research studies have shown that telehealth acceptance among older adults, regardless of rural or urban setting, is variable at best with attitude being a major influence in utilization of telehealth services (Carolan et al., 2020; Lindeman & Lindeman, 2011; O'Brien et al., 2014; Resnick et al., 2012; Shah et al., 2013). The state of science looking specifically at a possible correlation between medical mistrust and telehealth acceptance has not been fully explored nor examined through the lens of elderly rural residents of Appalachia. The lack of empirical evidence has a major impact on the nursing profession as nurses strive to make a lasting impact on the health of this population.

Concept of Medical Mistrust in Relation to Telehealth Acceptance

The potential presence of medical mistrust in the elderly of rural Appalachia cannot be underestimated as it can undermine the working relationship between patient and provider leading to poorer health outcomes. Nursing, as a profession, has worked diligently to address relationships in which imbalances of power increase individual or community vulnerability. Nurses working with historically marginalized communities, such as those found in rural Appalachia, will undoubtedly benefit from recognizing and understanding the concept of medical mistrust in order to more adequately assess its presence and break through the barriers that impact health.

Based on personal analysis and synthesis of the literature, the major antecedent of medical mistrust is the propensity to be suspicious of health care professionals or formal systems from which health care services are provided. According to work conducted by Emborg et al. (2020), individuals have specific personality differences that develop the basis for this propensity as a result of psychological development, social development, life experiences, and cultural influences. This propensity, or innate tendency, to either trust or distrust has been studied for decades in the field of psychology (Lewicki & Tomlinson, 2014; Mayer et al., 1995; Rotter, 1967; Rotter, 1971). It is only recently that the notion of medical mistrust has come to the forefront of research endeavors.

In terms of medical mistrust and its presence within elderly residents of rural Appalachia, little is known. Instead, most research related to medical mistrust has been examined in the context of race, sexual and gender orientation, foreign-born origination, incarceration, or among those populations “labeled as mentally ill or disabled” (Williamson & Bigman, 2018, p.1791). Considering the disparities found within rural Appalachian communities, and amongst the

elderly in general, more attention to the possible presence of medical mistrust in this population is warranted, but can only be achieved by articulating what medical mistrust means and what it represents in terms of individual and community health.

According to a systematic review of medical mistrust conducted by Benkert et al. (2019), medical mistrust is defined as "a tendency to distrust medical systems and personnel believed to represent the dominant culture in a given society" (p.2). However, it is in this author's opinion that the definition lacks clarity and does not take into consideration the psychological, social, and cultural influences that shape an individual's beliefs, nor does it provide the action piece that allows an individual to make judgment based upon these experiences. For the purpose of this study, and from analysis and synthesis of the literature, medical mistrust will be defined as the presence of suspicion or lack of trust directed at healthcare providers or healthcare systems derived from cultural, historical, or personal negative experiences.

Consistent with research conducted by Benkert et al. (2019) and Thompson et al. (2004), it is author's stance that medical mistrust, although seen at an individual level, is more likely to have a predilection for group basis with the highest rates found among marginalized populations and communities viewed to be at a socioeconomical disadvantage. The analysis and synthesis of medical mistrust suggests that its presence does not fall upon a continuum that alternates back and forth between high and low, but rather can produce a situation in which medical trust and medical mistrust can co-exist together with both having distinct relationships between health beliefs and health-seeking behaviors (Benkert et al., 2019; Emborg et al., 2020; Thompson et al., 2004). For example, an elderly resident of rural Appalachia may trust their community physician and the nursing staff within the office, but they still may hold a propensity towards distrust of healthcare systems, certain providers, or mechanisms of healthcare delivery such as telehealth.

This study examines how elderly residents of rural Appalachia view telehealth as a technology for managing health care needs, their willingness to accept and use telehealth to meet those needs, and the potential attitudes towards medical mistrust that impact their decision-making.

Research Problem

The use of telehealth has the ability to bridge the gap between access and care, but its use by older adults in rural Appalachia remains somewhat limited (Demeke et al., 2020; Demeke et al., 2021; Lam et al., 2020). Possible lack of broadband access and physical isolation may not be the only contributing factors inhibiting elderly rural residents of Appalachia from incorporating technology into their management of care. Based on analysis and synthesis of the literature, the attitude, acceptance, and willingness to use telehealth services may be correlated with the existence of medical mistrust brought upon by personal, historical, or cultural experiences. Because existing research is minimal and focuses mainly on very specific urban adult populations rather than the desired population of interest, and because it does not take into context the social and cultural impact of trust, medical mistrust, and technology acceptance, more research is needed to see if a relationship exists between the two concepts and the direction of that possible relationship.

The specific aims of this study were to:

1. Determine the degree of medical mistrust among elderly rural residents of Appalachia.
2. Determine if the elderly of rural Appalachia are acceptant of technology as a means of managing healthcare.
3. Determine if there is a relationship between medical mistrust and technology acceptance among elderly rural residents of Appalachia.

Purpose

The purpose of this study is to better understand the degree of medical mistrust in the elderly of rural Appalachia and if medical mistrust may be inhibiting efforts related to telehealth acceptance among this population. Long-term goals would be to develop nursing interventions that overcome barriers to utilization and to find ways to facilitate telehealth use among the elderly of rural Appalachia.

Research Question

The overarching research question guiding this study is:

Is there a relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia?

Hypothesis

There is a relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia.

Null Hypothesis

There is no relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia.

Sub-Questions

1. To what degree does medical mistrust exist among elderly residents of rural Appalachia?
2. Are elderly residents of rural Appalachia acceptant of technology as a means of managing healthcare needs?
3. Does medical mistrust play a role in telehealth acceptance among elderly residents of rural Appalachia?

Limitations

This study had several limitations including: (1) lack of current research examining medical mistrust and telehealth acceptance in the population of interest; (2) time constraints with an inability to measure results over time; (3) effect estimates based upon a single correlational study; (4) the selection of a single rural community in Appalachia; (5) the selection of a potentially homogenous participant sample; (6) lack of generalizability due to purposive and homogenous sampling; (7) inability to determine cause and effect between variables; (8) no examination of confounding or extraneous variables; and (9) forced responses reliant upon the survey language limiting the range of responses as confined to the text found within the survey.

Delimitations

The delimitations identified within the current study are numerous and reflect the choices made in regard to the overall development. The population of interest is defined as elderly residents of rural Appalachia. The study was limited to this population secondary to a rapidly growing elderly population expanding across the United States and the large population of older adults found within rural Appalachia. As their health care needs increase with age, telehealth acceptance within isolated communities has become of great importance to not only individual health, but also to its impact on an already strained health care system. Elderly urban participants were excluded from this study as they are unlikely to experience the same geographical disparities associated with a lack of health care access and community resources implemented to improve overall health.

Theoretical Framework

Rural Nursing Theory (RNT), as a means of addressing health through a theoretical lens, first emerged from nursing literature in the late 1980s secondary to work conducted by Long and

Weinert (1989) in rural areas of Montana. Since its initial appearance, additional research in other rural areas across the United States and expansion of RNT, through the work of Winters and Lee (2018), has continued to provide a valuable framework from which to understand health and wellness among rural communities; however, it has not been used in the context of elderly residents of rural Appalachia.

Still evolving, Rural Nursing Theory (RNT) places emphasis on the environment and how it shapes health-seeking behaviors and practice in order to help nurses working in this unique setting meet the needs of rural residents (Long & Weinert, 1989; Winters & Lee, 2018) and comprises the theoretical underpinnings of this study. Within the theory, it is suggested that older adults of rural Appalachia define health in terms of functionality and the ability to be productive. Focusing on the need to be self-reliant, elderly rural residents of Appalachia are more likely to seek care through informal systems, unless a self-assessment of the severity of their injury or illness requires accessing care via more formal means, with rural residents often resisting help from those viewed as outsiders or strangers (Long & Weinert, 1989; Winters & Lee, 2018).

Telehealth may be viewed as desirable or undesirable among elderly residents of rural Appalachia. Perceived attributes of telehealth, such as trustworthiness, may impact user adoption even with its apparent advantages. The social system found in rural Appalachia can impact telehealth acceptance as members of the system often evaluate technology based upon norms, opinions, and consequences presented (Rogers, 2003). It is in this author's belief that RNT (Long & Weinert, 1989; Winters & Lee, 2018) is justified as a means of understanding health from the perspective of the elderly in rural Appalachia and provides valuable insight into the culture, beliefs, and social system that impacts their decision-making process to either accept or

reject telehealth and the potential reasons behind that decision. Rogers (2003) suggests that most individuals rely upon a subjective assessment of telehealth rather than a scientific basis which is often cemented upon personal experiences and the viewpoints of others within their social network. It is the degree of homophily in these experiences and viewpoints that has the greatest possible impact to telehealth acceptance amongst elderly residents of rural Appalachia and RNT provides the perfect theoretical framework from which to examine this phenomenon.

For the purpose of this study, the assessment of a possible correlation between telehealth acceptance and medical mistrust among the elderly of rural Appalachia and the RNT theoretical statement centering on self-reliance focusing on the concept of telehealth as a potential outsider will be explored, whereas "rural dwellers are self-reliant and resist accepting health or services from those seen as 'outsiders' or from agencies seen as national or regional 'welfare' programs" (Long & Weinert, 1989, p.120). Antecedents of outsider will include an absence of understanding or knowledge in terms of history within the community, social construct, beliefs, customs, and rituals, whereas consequences of telehealth as an outsider will include one that may not be accepted, be excluded as a viable option for healthcare services, and be distrusted (Long & Weinert, 1989; Winters & Lee, 2018). The concept of distrust as an aspect of medical mistrust has been noted in research as a potential barrier to utilization of healthcare services specifically within rural Appalachia communities (Cohen et al., 2017; Efird et al., 2021; Graf, 2019; McAlearney et al., 2012) and aligns closely with the theoretical statements found within RNT.

As with any theory, RNT (Long & Weinert, 1989; Winters & Lee, 2018) has its strengths and weaknesses. Upon a personal review of literature, the use of RNT is narrow in scope (i.e., less than 20 articles) with the majority of focus being placed upon the lack of anonymity and role diffusion found among nursing students, nurses, and nurse practitioners in rural communities

outside of the Appalachian region (Ray-Montgomery et al., 2017; Rolland, 2016; Schlairet, 2017; Sharp, 2010; Swan & Hobbs, 2017). RNT has not been used to explore the perspective of health-seeking behaviors and choice among the elderly of rural Appalachia, nor has outsider been viewed in terms of technology (i.e., telehealth) both of which can be viewed as strengths and weakness of the theory selected. However, RNT has powerful social significance that has only been magnified by the COVID-19 pandemic. It is comprised of clear theoretical statements and boundaries specifically related to rural populations and has the ultimate ability to lessen the divide between theory and rural nursing practice once a better understanding of how and why health-promoting behaviors are either selected or rejected among the elderly of rural Appalachia.

Conclusion

Elderly residents of rural Appalachia continue to experience barriers to healthcare including physical isolation and lack of access with telehealth offering the opportunity to improve access to care, lessen healthcare costs, and increase quality of life, but its use remains limited. Medical mistrust as a potential social determinant of health has been shown to negatively impact patient outcomes and has been documented amongst women and minorities living within rural Appalachia, yet its potential presence specifically within in the elderly of rural Appalachia remains unexplored. Currently there is a lack of research specifically exploring a connection between medical mistrust and telehealth acceptance in this population negating a need for further research exploring a possible connection between these variables. Through the lens of Rural Nursing Theory, this study was designed to better understand if medical mistrust exists in the elderly of rural Appalachia and if medical mistrust may be inhibiting efforts related to telehealth acceptance among this population.

Chapter 2. Review of the Literature

This chapter will describe a review of the literature pertaining to the presence of medical mistrust and telehealth acceptance among various populations including those found in rural Appalachia. The purpose of this study is to better understand the degree of medical mistrust existing in the elderly of rural Appalachia and if medical mistrust may be inhibiting efforts related to telehealth acceptance among this population. Long-term goals would be to develop nursing interventions that overcome barriers to utilization and to find ways to facilitate telehealth use among the elderly of rural Appalachia.

Review of Medical Mistrust

More than just the absence of trust, an analysis of the literature indicates that medical mistrust has been viewed in the context of providers, hospitals, healthcare systems, healthcare insurance companies, and pharmaceutical companies that are seen by participants as acting against an individual's best interest (Armstrong et al., 2008; Boulware et al., 2003; Govier, 1994; Jaiswal & Halkitis, 2019). The vast preponderance of literature related to medical mistrust has explored the phenomenon in terms of race, particularly among those that self-identify as Black or African American, and sexual orientation (Brenick et al., 2017; Cahill et al., 2017; Thorburn et al., 2012). As a partial explanation to health disparities found amongst these populations, medical mistrust and lessons learned from the legendary Tuskegee study appear to be catalysts to under-utilization of healthcare services and unwillingness to participate in research studies (Boulware et al., 2003; Gaston & Alleyne-Green, 2013) with Black, non-Hispanic adults and adolescents reporting increased levels of medical mistrust when compared to those who identify as White or Caucasian regardless of gender (Knopf et al., 2021). However, research also suggests that medical mistrust is not isolated to individuals of color.

Recently, Orrange et al. (2021) examined the degree of trust between patient and provider utilizing results from 368 adult participants in urban Los Angeles. Primary comprised of White females with a mean age of 55.8 years, results suggested that there was no significant correlation between medical mistrust and demographics such as age, education level, and current health status. However, there was a significant positive association between medical mistrust and income reporting a Spearman correlation r of 0.51 ($p < ,001$), whereas lower levels of trust are associated with lower income. Although not representative of underserved communities and underrepresented minorities, similar results were found in research conducted by Piette et al. (2005). Primarily comprised of White adult males, age 65 years and above, medication non-adherence was positively associated with high levels of medical mistrust and annual income of less than $25,000. Additional research conducted by Benkert et al. (2019) explored the link between socio-demographics and medical mistrust among community-dwelling adults across the state of Michigan. Of the 611 participants examined, the vast majority reported being Caucasian ($n = 541$) and female (66.3%) with a median age of 57 years. Results from the study suggested that those with lower levels of education and lower incomes levels were more apt to report higher levels of medical mistrust. “The findings suggest that medical mistrust is not limited to racial and ethnic minority populations. Caucasians with a high school education, lower income and lower self-rated health may be distrustful of the healthcare system” (Benkert et al., 2019, p.1). Although vital to the understanding of medical mistrust, exploration through an elderly resident of rural Appalachia remains limited.

Review of Medical Mistrust in Appalachia

Often viewed as a negative trait among Appalachian residents, medical mistrust has been suggested to originate from a long history of exploitation by those viewed as outsiders and by

governmental agencies that has led to a general mistrust of healthcare providers and healthcare services (Arnold, 2022; Barish & Snyder, 2008). Research related to medical mistrust among rural Appalachians remains limited at best and has not focused specifically on elderly adults living in rural Appalachian communities. Instead, the limited available research has been isolated to primarily females of child-bearing age and younger to middle-aged adults (Bachman et al., 2018; Efird et al., 2021; McAlearney et al., 2012; McMillian et al., 2007; Starcher et al., 2017).

In research conducted by Efird et al. (2021), loss of local obstetric services and rural hospital closures was noted to cause frustration among rural Appalachian women in North Carolina increasing their perceived barriers to healthcare access and level of medical mistrust that could result in long-lasting negative effects impacting the health of child-bearing women. Similarly, research conducted by McMillian et al. (2007) found that women in rural Appalachian regions of East Tennessee who were encouraged to participate in a breast health outreach program reported a general mistrust of formal medical systems resulting in reluctance to participate. The impact of medical mistrust and health-seeking behaviors of Appalachian adults has also been noted in the works of Bachman et al. (2018) and McAlearney et al. (2012) whereas adults of both genders reported reluctance in cancer screenings due to a distrust of providers and healthcare systems in general. According to Starcher et al. (2017), the connection to medical mistrust and health-seeking behaviors is also common in undergraduate students across Kentucky with university students from rural Appalachian communities being less likely to seek healthcare services ($p < .05$) as compared to their urban counterparts regardless of financial capability or absence of concrete barriers.

Measurement of Medical Mistrust

Despite the research that has been completed on medical mistrust, many are unaware of the instruments most commonly used to measure the phenomenon, nor which instrument is best to use based upon the research question being presented. Through a systematic review of medical mistrust conducted by Williamson and Bigman (2018), researchers found that the measurement of medical mistrust varied with authors using a single item, multiple items, subscales, or multi-dimension scales with each focusing on different conceptualizations (Williamson & Bigman, 2018). According to Williamson and Bigman (2018), the most common validated instruments used to quantify medical mistrust include the Group-Based Medical Mistrust Scale, Medical Mistrust Index, and Health Care System Distrust Scale, accounting for 49% of the instruments used, with differences among scales being related to the object of mistrust, referent specificity, and group membership. Consistent with works by Hall et al. (2001), Williamson and Bigman (2018) found that potential objects of medical mistrust can exist on multiple levels, either independently or concurrently, including:

1. System-personal (i.e. medical provider, physician, medical researcher, etc.)
2. Individual-institutional (i.e. my medical system, my hospital, my clinic, etc.)
3. Individual-personal (i.e. my physician, my hospital, my clinic, etc.)
4. System-institutional (i.e. physicians in general, medical systems in general, hospitals in general, etc.)

In terms of referent specificity and group membership, some instruments may ask about medical mistrust among like individuals based upon race or ethnicity (Thompson et al., 2004), whereas others are more likely to assess medical mistrust of medical institutions (LaVeist et al., 2009). Understanding how medical mistrust has been quantified, and in which contexts, is imperative to

determining the reasons for medical mistrust and creating interventions that address medical mistrust as a barrier to healthcare.

Medical Mistrust Index

According to the review of literature, the Medical Mistrust Index (MMI) has been predominantly used among those that identify as African American or Black (Williamson & Bigman, 2018). Containing items for both the system-personal and system-institutional objects of medical mistrust, this scale provides a broader perspective of individual beliefs of medical personnel and the larger medical system and would be a good choice for scholars looking to answer medical mistrust via a more general view (Williamson & Bigman, 2018).

Group-Based Medical Mistrust Scale

The Group-Based Medical Mistrust Scale (GBMMS) has been used mainly among populations that either identify as African American/Black or Hispanic/Latino and focuses primarily on the system-person object of medical mistrust with only one item in the scale being related to system-institutional objects of medical mistrust (Williamson & Bigman, 2018). According to Williamson and Bigman (2018), this instrument would be ideal to assess "whether individuals believe members of their group distrust medical workers" (p.1791). With the focus being primarily directed towards medical personnel, the exploration of medical mistrust of organizations would not be well supported with this instrument (Williamson & Bigman, 2018).

Health Care System Distrust Scale

According to a systematic review, the Health Care System Distrust Scale (HCSDS) has only been used in cases where race was not a consideration and focuses primarily on the system-institutional objects of medical mistrust (Williamson & Bigman, 2018). With the focus being directed towards medical organizations, the HCSDS would be appropriate for researchers

wishing to assess if individual beliefs are consistent with distrust of medical organizations, but not necessarily medical personnel in general (Williamson & Bigman, 2018).

Review of Telehealth Acceptance

This author conducted a scoping review in order to locate, analyze, and describe the literature specific to elderly use of telehealth services. Particularly, the review sought to answer the following questions:

- What factors influence the concept of telehealth and telemedicine in the context of adults aged 65 years and older using it as a means of managing healthcare needs?
- What strategies have been identified that promote the use of telehealth services in the elderly as a means of managing chronic health conditions?

Major Concepts and Themes

Several major concepts and themes arose from the scoping review including community support, infrastructure, buy-in, cost-containment, and education and training.

Community Support

Throughout several of the works reviewed, community support appeared to be a vital component holding a key to elderly client utilization of telehealth. Bernstein et al. (2021) found that clients aged 60 years and above who used telehealth services affiliated with their own provider's health system experienced resolution of acute conditions 84-87% of the time encountered. However, research does suggest that community and provider support does not need to include only health systems from which the elderly client has some familiarity, but could also include medical schools, schools of nursing, private practices, and community-based senior centers. Office et al. (2020) found that outreach programs adopted by schools were well received

by both the student volunteers and by older adults at risk for social isolation during the COVID-19 pandemic.

In research conducted by Norman et al. (2018), community-based providers, some independent while others hospital-affiliated, were used to provide home-based primary care practices designed around telehealth delivery. Although client perceptions, utilization rates, and success of encounters were not discussed, the importance of diverse multi-disciplinary teams needed came to the forefront in this study. The numerous roles needed in a multi-disciplinary team can only be financed through means of community support, eliminating the need for nurses or physicians to assume various responsibilities, and stretching valuable resources thin. Resnick et al. (2012) found that community-based senior centers can serve as an access point for seniors needing telehealth-based management of chronic health conditions as well. Importantly, Satariano et al. (2014) pointed out that technology as a means of improving access and wellness in older populations comes with a price that the elderly, often on a fixed income, may be unable to pay requiring innovative funding mechanisms that include local, state, or federal support.

Infrastructure

Although community support is vital to telehealth implementation and sustainability, the importance of a robust infrastructure cannot be underestimated. In over half of the works examined, the importance of an adequate infrastructure was deemed critical to telehealth success. Gillespie et al. (2019) suggested that the use of such technology requires protocol development designed to best implement telehealth services to optimize efficacy in the elderly population. Noel et al. (2018) took it a step further by mapping out clear timelines and descriptions of workflow necessary for a tele-transitions program in Long Island, New York. Norman et al. (2018) found that telehealth programs require real-time access to electronic medical records

(EMR) and software integration when instituting home-based primary care practice and real-time video conferencing. The authors also stressed the importance of infrastructure that identifies funding for advanced technology solutions that takes into consideration the use of EMRs, patient visit schedules, and care models that have the ability to incorporate interdisciplinary teamwork and coordination of care. The same infrastructure has to support and develop the use of security and privacy methodologies allowing for provider access when outside of the hospital setting (Norman et al., 2018).

Calyam et al. (2016) spoke of the extensive technology needed to provide physical therapy telehealth services including two separate interface variants for provider and client including 3-D Kinect software with voice command capabilities to gauge and evaluate physical therapy performance assessments. The authors suggested that the provider and the client must have access to high-speed broadband capabilities in order for the system to work well for both parties as network quality was found to significantly impact the feasibility of assessing the client in real-time. Similarly, Satariano et al. (2014) suggested that the lack of access in more remote areas and the lack of research on infrastructure necessary for implementation was perceived as a barrier to technology-enabled programs.

Part of creating an adequate infrastructure that supports telehealth utilization includes having a proper alignment between intervention, organizational goals, and the mission. Resnick et al. (2012) found that infrastructure and technology must be consistent with organizational goals and their mission statement for telehealth to be perceived as valuable and viable by stakeholders. According to Lindeman and Lindeman (2011), the Veterans Health Administration (VHA) created a telehealth infrastructure and culture to support telehealth services within the Office of Patient Care Services at the U.S. Department of Veterans Affairs that originated from a

three-year pilot study (2000-2003). The VHA also found that infrastructure must include the development of technology, policy, and procedures that can be implemented in order to increase adoption and facilitation between providers and their elderly clients (Lindeman & Lindeman, 2011).

Buy-In

Attitude, or buy-in, can greatly encourage or hinder efforts to implementation and sustainability of telehealth services necessary to manage elderly client health and wellness. Carolan et al. (2020) found resident reluctance within an independent senior living community located in California. The researchers also found that staff perceived telehealth endeavors as more of a burden than benefit for emergency triage even though emergency room admission rates decreased from 42% to 35% over the study period. Akbar et al. (2020) found that adults aged 55 years and above were less likely to find patient portals or video education from a physician beneficial as compared to their younger counterparts. Researchers suggest that telemedicine is disruptive, and that adoption requires difficult change from both the provider and patient perspective (Shah et al., 2013). Shah et al. (2013) suggests that although senior clients residing in a senior living community in Rochester, New York were highly satisfied with high-intensity telehealth-enhanced acute care, some healthcare staff chose not to engage in telehealth activities without explanation as to why. Consequently, telehealth programs that encounter a lack of buy-in may find implementation and sustainability of telehealth services impossible. For those that are able to implement telehealth services, the ability to maintain stakeholder buy-in may be even more problematic.

Resnick et al. (2012) found initial success using nurse-mediated telehealth kiosks at two senior centers designed to manage hypertension in the elderly. Kiosk use peaked at 80% but

declined over time to a mere 47%. Even though most of the seniors reported great comfort with the technology, ease of use, and provided recommendation to friends, the use of the kiosks as a means of managing hypertension continued to decline. The program was reported as consistent with the senior centers' organizational mission and the board of directors maintained their level of enthusiasm for the program. However, the seniors lacked the same buy-in in terms of longevity (Resnick et al., 2012).

Cost-Containment

In approximately one-third of the works examined, telehealth was viewed in terms of cost-containment in senior living communities. Carolan et al. (2020) found that emergency room admissions at an independent senior living community in California decreased by 7% by using a telehealth triage alternative. Finding similar results, Gillespie et al. (2019) examined data from 731 participants residing in a senior living community in the North Eastern portion of the United States where data revealed a 24% decrease in emergency department visits compared to a 4.5% increase in the control group. Additional research conducted Shah et al. (2015) suggested that the use of telehealth decreased emergency room use seniors living in an independent senior living community by an astonishing 34% in just one year. Therefore, the review of literature suggests that the incorporation of telehealth has the ability to decrease financial burden associated with emergency room costs, ambulation transport, and potential risks associated with hospitalization among the elderly (Carolan et al., 2020; Gillespie et al., 2019; Shah et al., 2015).

Education and Training

Several of the works examined in the scoping review revolved around the theme of education and training. Carolan et al. (2020) reported the need for additional education designed for staff and senior living communities when implementing telehealth due to self-reported

reluctance among seniors and negative staff perception. Research conducted by Akbar et al. (2020) found that adult clients aged 55 years and above in Chicago, Illinois were less likely to find telehealth beneficial and less open to receiving health information via telehealth suggesting a possible lack of knowledge, inadequate health literacy, and a general distrust of online devices by older adults. Future recommendations included the need for research on how to change the perception of telehealth to be regarded more positively among this population (Akbar et al., 2020). Similar results were noted by Satariano et al. (2014) who reported challenges implementing technology while caring for seniors aging in place including educational issues related to unfamiliarity among older adults. The researchers recommended education and training on cellular phone use in addition to basic computer training designed specifically for seniors attempting to manage health via technology (Satariano et al., 2014).

Review of Telehealth Acceptance in Appalachia

Although the availability of telehealth services has grown substantially over the past decade and as a result of the COVID-19 pandemic, its use by adults in rural Appalachia, especially those of advanced age, remains limited and largely unexplored. According to the literature, telehealth acceptance in rural Appalachia appears predominantly isolated to those who identify as Caucasian with rates ranging from 78%-98% (Haggerty et al., 2022; Strowd et al., 2021; Vanderpool et al., 2021). In terms of gender, telehealth acceptance in rural Appalachia appears varied with the majority of researchers citing higher rates in females (Strowd et al., 2021; Vanderpool et al., 2021; Walker et al., 2021) as compared to males (Haggerty et al., 2022). However, the main themes that emerged upon a review of the literature related to telehealth acceptance in Appalachia included: need versus preference, decreased access to technology, and technological illiteracy.

Need Versus Preference

The literature has suggested that telehealth acceptance among individuals residing in rural Appalachia is often based upon either perceived need or personal preference. In research conducted by Haggerty et al. (2022), older adults were less likely to agree to use telehealth for primary care as compared to in-person visits with telehealth completion rates reported as higher among working-age adults and lower for adults age 65 years and above. However, circumstances do appear to change in regard to telehealth acceptance once significant perceived illness occurs or if multiple comorbidities are present. Walker et al. (2021) found that rural Appalachian adults age 85 years and above with a self-report of two or more chronic conditions were more likely to be acceptant of telehealth telephone services ($p < 0.001$) as compared to their younger counterparts which is similar to results reported by Haggerty et al. (2022) who suggested that older, more ill rural Appalachian adults were more likely to be acceptant of telehealth services than those seeking only routine care.

Decreased Access to Technology

Historically, adults living in rural Appalachia have experienced barriers to telehealth services including decreased access to technology secondary to physical isolation that still appears to be a factor in today's environment. Strowd et al. (2021) examined outpatient teleneurology appointments in rural Appalachia comparing video to phone-only visits among the population. According to the results of the study, the most common self-reported barrier to telehealth acceptance, at 44%, included absence of Internet, no camera for video calling, and issues with smartphone or computer access. O'Brien et al. (2014) found that the greatest barrier to telehealth use among residents of rural North Carolina was poor cell phone signal and access to the Internet. Similar results were cited in additional works by Falah et al. (2022) and

Vanderpool et al. (2021) whereas rural Appalachians reported barriers to telehealth use including lack of access to broadband and lower device ownership rates among rural Appalachians as compared to the general U.S. population. Satariano et al. (2014) suggests that the lack of access in more remote areas and the lack of research on infrastructure necessary to support telehealth has a profound impact on telehealth implementation and sustainability of technology-enabled programs.

Technological Illiteracy

Access to technology is vital, but the ability to use the technology is key and was evident in the review of the literature. Multiple works cited issues with limited computer and technology literacy among older adults and geriatric patients residing in rural Appalachia (Falah et al., 2022; O'Brien et al., 2014; Vanderpool et al., 2021). Research conducted by O'Brien et al. (2014) found lack of knowledge on how to use technology to manage healthcare needs was initially reported in over half of senior adult participants in rural North Carolina with a significant percentage of seniors reporting no knowledge of how to email or explore the Internet, 65% never sending a text message, and only one participant with experience downloading or using a cellular application. When researchers inquired about additional training on cell phones or computers, in order to manage their health more effectively, 35% of participants changed their response denying lack of knowledge, while 37% chose not to answer the question (O'Brien et al., 2014).

Measurement of Telehealth Acceptance

Much like medical mistrust, and despite the research completed on telehealth acceptance to date, many researchers are unaware of the instruments most commonly used to measure the phenomenon, nor which instrument is best to use based upon the research question being presented. For this reason, Hajesmaeel-Gohari and Bahaadinbeigy (2021) conducted a systematic

review to determine which questionnaires are most commonly used when evaluating telehealth services. Fifty-three articles were explored, and instruments were divided based upon purpose including evaluation of patient or physician satisfaction (n = 26), system usability (n = 18), acceptance (n = 6), and implementation process (n = 1) (Hajesmaeel-Gohari & Bahaadinbeigy, 2021). Two additional articles (i.e., 3.5%) selected evaluated both usability and individual acceptance/satisfaction. The most commonly used questionnaires included the Telehealth Usability Questionnaire (TUQ), Telehealth Satisfaction Questionnaire (TSQ), and Service User Technology Acceptability Questionnaire (SUTAQ) accounting for 37.5% of the instruments currently used in research (Hajesmaeel-Gohari & Bahaadinbeigy, 2021). However, their use in this study was not deemed appropriate for the research question presented and the overall goal of the study.

Problems Associated with Most Commonly Used Telehealth Questionnaires

Originally introduced by Parmanto et al. (2016), TUQ evaluates the overall usability of telehealth including interface quality. Although beneficial for evaluating various types of telehealth services and comprehensive in nature (Hajemaeel-Gohari & Bahaadinbeigy, 2021), the TUQ, as a survey instrument, assumes that the elderly of rural Appalachia have been exposed to and utilized telehealth services which has already been identified as limited in scope in this population (Demeke et al., 2020; Demeke et al., 2021; Lam et al., 2020). Similarly, Yip et al. (2003) developed the TSQ in an aim to evaluate telehealth satisfaction from a patient perspective in terms of quality of care, interpersonal aspects of virtual interaction, and quality of virtual visits irrelevant of attitude towards such services prior to actual use making the tool inappropriate for the purpose of this investigation. Consistent with the theme of acceptability after use, the SUTAQ was presented as a tool for evaluating the acceptability of telehealth (Hirani et al., 2017)

and is the only one of the three tools "specifically designed to gather patients' opinions about the acceptability of the telehealth systems" (Hajesmaeel-Gohari & Bahaadinbeigy, 2021, p.7-8). Yet its relevance and applicability to the study presented limits it use in this case where general attitudes are wanting to be explored regardless of previous experience with telehealth services.

Technology Acceptance Model

According to the systematic review conducted by Hajesmaeel-Gohari and Bahaadinbeigy (2021), Technology Acceptance Model "shows how users use and accept a technology" (p.7) and accounted for only 3.5% (n = 2) of the questionnaires used across the literature. Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989) was selected in order to explore how elderly residents of rural Appalachia make the decision to either accept or reject telehealth, regardless of prior use, as well as to determine if this decision is influenced by attitude. The model asserts that perceived ease of use and perceived usefulness have the ability to predict an individual's intent and attitude toward using technology (see Figure 1) (Davis, 1989; Davis et al., 1989). In this study, perceived ease of use is defined as the perception of how easy telehealth is to use as a system, whereas perceived usefulness is the degree in which elderly residents of rural Appalachia believe telehealth enhances their ability to meet healthcare needs. The higher the perceived ease of use and perceived usefulness (i.e. overall score), the more predictive of positive attitudes and acceptance towards telehealth (Davis, 1989; Davis et al., 1989). Widely accepted as reliable and valid throughout the decades, recent research on TAM reveals, through factor analysis of 215 results, that all indicators on the instrument are valid and representative of the TAM dimensions with a full-scale reliability coefficient of 0.885 (Napitupulu et al., 2017) concurring with similar results found by Shahrabi et al. (2013) where perceived usefulness had a reliability coefficient of 0.89 and perceived ease of use 0.87.

Conclusion

This chapter described the review of literature related to medical mistrust and telehealth acceptance among various populations including those found in rural Appalachia. Often described in terms of race and sexual orientation, the presence of medical mistrust has been linked to age, gender, income, and lower levels of education (Benkert et al., 2019; Orrange et al., 2021) with little focus placed on elderly populations or those of advanced age living in rural Appalachian communities. Through a scoping review of the literature, telehealth acceptance requires community support, appropriate infrastructure, stakeholder, and patient buy-in, education, and training with little emphasis placed upon elderly residents of rural Appalachia. Used to provide a more general view of medical mistrust and telehealth acceptance, the Medical Mistrust Index and Technology Acceptance Model hold the potential to shed light on a correlation between the two concepts and through the lens of elderly residents of rural Appalachia.

Chapter 3. Methodology

This chapter will describe associated terms, the research design, target population, sampling strategy, protection of human subjects, data collection method, philosophical and epistemological underpinnings, and data analysis plan for this study. A detailed description of the instruments selected and reliability and validity is also provided. The purpose of this study is to better understand the degree of medical mistrust existing in the elderly of rural Appalachia and if medical mistrust may be inhibiting efforts related to telehealth acceptance among this population. Long-term goals would be to develop nursing interventions that overcome barriers to utilization and to find ways to facilitate telehealth use among the elderly of rural Appalachia.

Conceptual and Operational Definition of Terms

Based on analysis and synthesis of the literature, the following key conceptual definitions are derived and operationalized definitions provided (see Table 1).

Table 1

Definition & Measurement Table

Construct	Conceptual Definition	Operational Definition	Construct Relationship to Rural Nursing Theory
Medical Mistrust	The presence of suspicion or lack of trust directed at healthcare providers or healthcare systems derived from cultural, historical, or personal negative experiences.	Measured by the *Medical Mistrust Index* (LaVeist et al., 2009).	Antecedent to telehealth. The propensity, or innate tendency, of rural residents to be suspicious of unfamiliar providers and systems of health care delivery.
Telehealth	The exchange of electronic medical information using telecommunication technologies as a means of managing, supporting, and promoting individual and public health.	N/A	Potential "outsider". An individual, object, system, or agency that is distrusted by rural residents and viewed as incongruent with personal beliefs and cultural norms.

Table 1 (continued).

Telehealth Acceptance	The degree of compatibility to which telehealth is perceived by elderly residents of rural Appalachia as congruent with past experiences, culture, historical perspectives, and existing values.	Measured by the *Technology Acceptance Model Questionnaire* (Davis et al., 1989; Holtz et al., 2022).	A consequence of medical mistrust and telehealth in which rural residents either decide to accept or reject telehealth services based upon social construct, customs, and personal/historical beliefs.

Assumptions

The assumptions of this study were as follows:

1. The participants in the study will freely provide the researcher with honest ratings regarding medical mistrust and telehealth acceptance.
2. The participants will base their ratings based upon personal knowledge and understanding of the survey questions.
3. The survey instruments selected to assess medical mistrust and telehealth acceptance will provide reliable responses.
4. Data collection will be conducted in a consistent manner from participant to participant.
5. Participants may or may not have previous telehealth experience.

Research Design

For the purpose of this study, a quantitative approach was employed. Quantitative research, symbolized in numbers and graphs, is used to confirm or test assumptions, hypotheses, or theories (Streefkerk, 2022). Because the research question presented revolves around the testing of a hypothesis, a quantitative methodology is most appropriate. Quantitative data collection methods are often experimental or, in this case, survey-driven using a list of multiple-

choice questions derived from the survey instruments selected. Although future research should assess the topic qualitatively examining concepts, thoughts, and experiences with medical mistrust and telehealth acceptance among the elderly of rural Appalachia, a correlational study (i.e., quantitative design) provides a basis from which to begin.

Correlational Study

Due to a lack of current research exploring the connection between medical mistrust and technology acceptance in this population, a correlational study is warranted. Correlational studies allow for a better understanding of the presence, direction, and strength of a relationship between variables (Curtis et al., 2016). A correlational study aligns with the research question presented and provides a lens for analyzing the telehealth utilization and potential barriers across different rural communities including those found throughout Appalachia. As a result of using correlational research to address gaps in nursing knowledge, this phenomenon can be better understood in the context of potential variables impacting final telehealth adoption in the elderly residents of rural Appalachia. As such, the research questions presented below are closely tied to not only the research design, but also the theoretical framework of Rural Nursing Theory.

Benefits of Correlational Research

Although using correlational research cannot determine causation, it can provide valuable insight as a preceding inquiry to future research endeavors. According to Bhandari (2022), the benefits of correlational research include:

- Rapid data collection from natural sources.
- Valuable insight and prediction into complicated real-world relationships.
- Basis for additional experimental research to determine cause-and-effect.

- Basis for regression analyses to determine which variables have the greatest impact.

Due to a lack of current research exploring the connection between medical mistrust and technology acceptance among the elderly of rural Appalachia, a correlational study is warranted to identify whether a relationship even exists, the direction and strength of the possible relationship, and whether this relationship might be impacting overall utilization of telehealth services.

Research Questions

Research was conducted to better understand the degree of medical mistrust existing in elderly rural residents of Appalachia and if medical mistrust may inhibit efforts related to telehealth acceptance among this population. The overarching research question guiding this study is:

Is there a relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia?

Sub-Questions

1. To what degree does medical mistrust exist among elderly residents of rural Appalachia?
2. Are elderly residents of rural Appalachia acceptant of technology as a means of managing healthcare needs?
3. Does medical mistrust play a role in telehealth acceptance among elderly residents of rural Appalachia?

Hypotheses

The following research hypotheses were tested:

1. H_1 (research hypothesis): There is a relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia. H_0 (null hypothesis): There is no relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia.
2. H_2: Medical mistrust does exist among elderly residents of rural Appalachia. H_0: Medical mistrust does not exist among elderly residents of rural Appalachia.
3. H_3: Elderly residents of rural Appalachia are acceptant of technology as a means of managing healthcare needs. H_0: Elderly residents of rural Appalachia are not acceptant of technology as a means of managing healthcare needs.
4. H_4: Medical mistrust does play a role in telehealth acceptance among elderly residents of rural Appalachia. H_0: Medical mistrust does not play a role in telehealth acceptance among elderly residents of rural Appalachia.

Target Population

The target population includes adults age 65 years and above residing within 15 miles of Jellico, Tennessee. The goal is to obtain a varied sample of elderly residents living in rural Appalachia. Rural communities, as defined by the United States Department of Agriculture (2019), are comprised of less than 2,500 residents. Jellico, Tennessee has a current population of 2,105 residents and is situated in the Appalachian Mountain chain on the border of Tennessee and Kentucky (World Population Review, 2022) making it ideal for this study. Approximately 27% of Jellico's population is comprised of those 65 years of age and above (United States Census Bureau, 2020) with power analysis revealing a need of 340 participants for a two-tail test with a medium effect size of 0.30.

Sampling Eligibility Criteria

The inclusion criteria for this study included:

1. Adults age 65 years and above.
2. Rural Appalachia residency (i.e., within 15 miles of Jellico, Tennessee).
3. Ability to speak and read English.
4. Must be physically present in the United States.
5. Have not been diagnosed with a cognitive impairment such as advanced dementia or Alzheimer's disease.

The exclusion criteria for this study included:

1. Adults less than 65 years old.
2. Residency outside of rural Appalachia (i.e., not within 15 miles of Jellico, Tennessee).
3. Inability to speak and read English.
4. Not physically present in the United States.
5. Self-reported cognitive impairment such as advanced dementia, Alzheimer's, etc.

Sampling Strategy

A convenience sample was obtained for this study, is generally considered bias, and not representative of the entire population limiting generalizability, but it does provide a means by which further research can be explored in a cost-effective manner (Polit & Beck, 2021). However, Jager et al. (2017) assert that homogeneous convenience samples can build upon the current state of science as it holds the ability to offer clearer generalizability due to a more representative sample being used.

Power Analysis

Cohen (1992) suggests that significance criterion ultimately establishes the probability of researchers committing either a Type I or a Type II error. Rejecting the null hypothesis (H_0) when it is true is referred to as a Type I error, whereas failure to reject the null hypothesis (H_0) when it is false is referred to as a Type II error (Cohen, 1992).

This study's power and effect size was based upon a two-tail t-test and correlation point biserial model. A sample size of n = 85 would provide at least 80% power to detect a medium effect size with a Pearson correlation coefficient of $\rho = 0.0$ (compared to a null hypothesis of $\rho = 0.0$) using a two-sided $\alpha = 0.05$ level of significance and a Fisher's z test. Given the interest in subgroup analysis for gender, annual income, education, and previous telehealth experience versus no previous telehealth experience, it is assumed that at least one-quarter of respondents will fall into a given category. With this assumption, the sample size is inflated to N = 340 to allow for a minimum of n = 85 (1/4 of 340) for a specific group of interest, allowing for sufficient power (80%+) to determine a Pearson correlation coefficient of at least $\rho = 0.30$, with a two-sided $\alpha = 0.05$ level of significance (Cohen, 1992). Sample size calculations were confirmed using *G*Power3.1 Software*© due to its utility and reliability among various behavioral, biomedical, and social sciences (Erdfelder et al., 1996; Kang, 2021).

Research Instruments

There are numerous instruments available to measure medical mistrust and telehealth acceptance among the elderly of rural Appalachia. However, the following instruments used in this study were selected based upon their ability to appropriately measure medical mistrust and telehealth acceptance in various populations, their psychometric properties, and the anticipated

length of time needed for completion which was a researcher concern when thinking of study attrition and particularly attrition among those of advanced age living in rural Appalachia.

Medical Mistrust Index

The *Medical Mistrust Index* (MMI) is a validated psychometric tool that includes 17 self-reported questions measuring items that are healthcare system-institutional and system-personal in order to understand participant beliefs from a broader perspective (see Appendix B) (LaVeist et al., 2003). Participants in this study responded to item questions using a Likert scale of one (strongly disagree) to four (strongly agree). Seven of the 17 items are reverse coded so that, when summarized, higher scores indicate greater levels of medical mistrust and lower scores indicate low levels of mistrust (LaVeist et al., 2009). Used to measure a single factor (i.e. medical mistrust), and developed from a series of focus groups, the original intent was to understand utilization of cardiovascular procedures in terms of race (LaVeist et al., 2003). As mistrust continued to reappear as an emerging theme and obstacle to the receiving of medical care, the MMI was created.

Psychometrical properties of the MMI were evaluated using 401 participants living in Baltimore, Maryland (LaVeist et al., 2009). Internal consistency and test-retest reliability were assessed and factor analysis conducted with items having a factor of 0.5 or higher being dropped from the assessment. Out of the 17 items measured, seven met criteria for factor loading and accounted for 40.97% of the variance. The full 17-item scale had a test-retest reliability of 0.687, whereas the seven-item resulted in a Cronbach alpha of 0.76 with all correlations being significant at $p < 0.0001$. Correlations between item-to-item ranged from 0.346-0.567. Validity was significantly correlated with a $p < 0.0001$ and $p = 0.006$ when compared to similar scales (LaVeist et al., 2009). More recently, the MMI has demonstrated strong reliability and validity

among various minority ethnic groups (α = 0.85-0.87) (Minaya et al., 2022). However, upon reviewing the literature, there is no evidence of scale use among those residing in rural Appalachia or with those specifically of advanced age (Pullyblank, 2022; Williamson & Bigman, 2018).

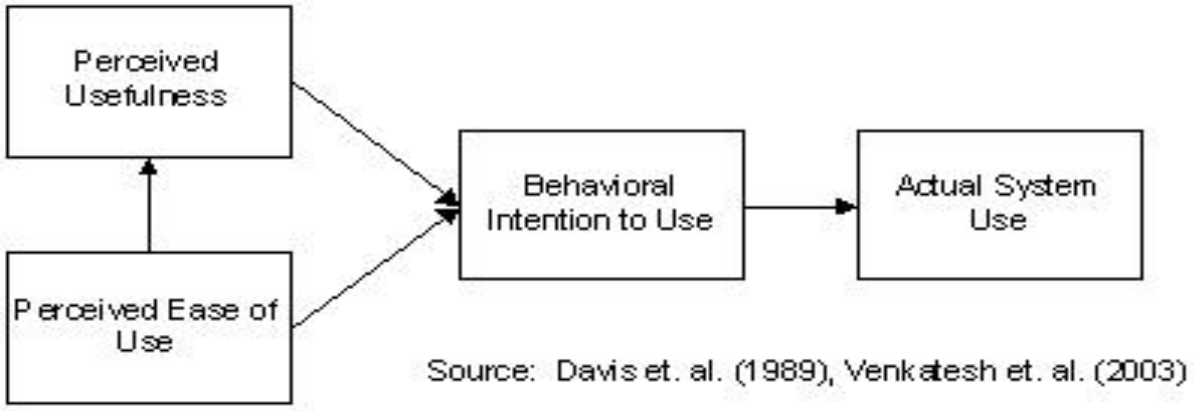
Technology Acceptance Model Questionnaire

Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989) was selected in order to explore how elderly residents of rural Appalachia make the decision to either accept or reject telehealth, as well as determine if this decision is influenced by attitude. Based on the assessment of two factors, the model asserts that perceived ease of use (α = 0.91) and perceived usefulness (α = 0.97) have the ability to predict an individual's intent and attitude toward using technology (see Figure 1) (Davis, 1989; Davis et al., 1989). Collectively, TAM has the ability to predict behavioral intent and attitude (α = > 0.90) with higher summative scores indicating a higher level of telehealth acceptance and vice versa (Davis, 1989; Davis et al., 1989). In this study, perceived ease of use is defined as the perception of how easy telehealth is to use as a system, whereas perceived usefulness is the degree in which elderly residents of rural Appalachia believe telehealth enhances their ability to meet healthcare needs. The higher the perceived ease of use and perceived usefulness (i.e., overall score), the more predictive of positive attitudes and acceptance towards telehealth (Davis, 1989; Davis et al., 1989). Widely accepted as reliable and valid throughout the decades, recent research on TAM reveals, through factor analysis of 215 results, that all indicators on the instrument are valid and representative of the TAM dimensions with a full-scale reliability coefficient of 0.885 (Napitupulu et al., 2017) concurring with similar results found by Shahrabi et al. (2013) where perceived usefulness had a reliability coefficient of 0.89 and perceived ease of use 0.87.

For the purposes of this study, a modified version of the original TAM, with established positive psychometric properties, was adopted for use (see Appendix B) (Holtz et al., 2022). Depending on an answer to previous telehealth experience versus no previous telehealth experience, participants are taken to either a 31-item questionnaire or a 17-item questionnaire, respectively, to assess the level of telehealth acceptance. According to Holtz et al. (2022), the reliabilities of the self-reported items including the three variables of perceived usefulness, perceived ease of use, and attitude toward telehealth all displayed a strong level of internal consistency with Cronbach alphas ranging from 0.73-0.93. This version of TAM, used in rural Michigan to explore telehealth acceptance among adults age 18 years and older (Holtz et al., 2022), was selected due to its applicability, accessibility, flexibility, and the inclusion of various demographic data from which to explore. Within this survey instrument, respondents are asked to rate their previous experience and perceptions of telehealth using a five-point Likert scale, whereas one indicates strongly agree and five indicates strongly disagree. Adoption of this survey instrument also allowed for perceived usefulness, ease of use, and attitude towards telehealth to be examined through the use of subjective statements that may be used for a secondary analysis at a later date. The final benefit of this instrument was that data could be extracted so that intentions to use telehealth could be divided and analyzed as either a nonuser or previous user of telehealth.

Figure 1

Technology Acceptance Model



Protection of Human Subjects

This section will discuss the ethical concerns and processes related to human subject protection identified within the study.

IRB Process

According to East Tennessee State University (ETSU) Institutional Review Board policy (IRB, n.d.), Form 129 was submitted to assess whether IRB approval was required to make a formal decision in terms of human subject involvement, policy, and regulation of the study. Once notification was received back from the IRB, it was determined that a New Exempt Submission xForm would be required for this study indicating that the research qualified as no risk or minimal risk to participants and exempt from Federal Policy for the Protection of Human Subjects requirements. All necessary documentation and a copy of the research proposal were submitted as directed and final IRB exemption was granted in early October 2023. Research ethics and compliance training was completed and valid through Fall 2026. A senior nursing faculty member was selected as Dissertation Committee Chair and was familiar with human subjects research, IRB submission, and IRB policies to serve as a mentor and to provide

oversight as needed. A Potential Conflict of Interest for Study Staff Form was completed by the author, as well as the faculty advisor, and submitted to the ETSU IRB. Access to IRBManager/OneAegis was requested, associated training was completed, and an online xForm using the original proposal details submitted. The research proposal, protocols, informed consent, survey instrument, and recruitment flyer were submitted to the IRB for approval. The informed consent letter provided primary investigator contact information, as well as contact information for the dissertation chair and university IRB representative if questions or concerns regarding the study arose.

Informed Consent

As stated above, IRB approval was obtained from East Tennessee State University. Informed consent was provided to participants on the first page of the REDCap electronic questionnaire. A selection of "I AGREE" indicated acceptance to participate in the study. Participants could omit any portion of the survey and or could forfeit the survey responses at any time by selecting to exit the screen, withdrawing from the study without penalty.

Participant Risk Versus Benefit

There were no expected risks for research participation. In this self-administered questionnaire, the participant had the option to opt out of any question response and had the option to revoke survey responses at any time. Participants who participated in the survey benefitted from allowing their voices and opinions to be heard in a safe environment and indirectly benefitted from increased awareness related to medical mistrust and telehealth acceptance.

Confidentiality

After all data was collected, several physical, administrative, technical, and research design safeguards were implemented to ensure confidentiality. Data obtained from the physical questionnaires was transcribed within 72 hours of survey window completion onto a Microsoft Excel spreadsheet replacing all identifying information with codes. All survey responses and electronic data is accessible to only the primary investigator (PI) and faculty advisors. De-identified data is stored separately from the coding list. Original electronic data from the original survey is stored safely through the REDCap system that is both password-protected and bound by organizational firewalls. The backup data is stored in an encrypted flash drive and stored in a locked file drawer in the PI's office. Data was analyzed using Statistical Package for the Social Sciences (SPSS) software version 29.0 which is only accessible to the PI, faculty advisor, and IRB as needed. All analyses from SPSS is stored on the same encrypted flash drive and subject to the same safeguards. Data will be stored safely for a minimum of six years. At six years, the primary investigator will delete the original REDCap survey and erase the files from the encrypted flash drive.

Data Collection Methods

Using REDCap electronic survey instrumentation, the data collection method was exclusively social media-based and conducted using a Facebook Community group page entitled "Jellico Area Announcements" with a following of more than 6,800 individuals to achieve a more well-rounded understanding of the possible relationship between telehealth acceptance and medical mistrust and in order to get a representative sample. No in-person data collection was utilized. This approach was necessary to meet the goals of the study, which are interpretivist and

constructivist in nature, in order to piece together the reality and truth present in the population of interest collectively.

Recruiting

Participants were notified of the research study electronically via a flyer posting on Facebook's Jellico Area Announcements! Community group page (see Appendix C). The recruitment flyer and link to the electronic REDCap survey was posted with a survey window of six weeks, from October 9, 2023 through November 20, 2023, to allow for ample exposure time and participation. Additionally, recruitment flyers were posted to additional community group pages specific to Jellico, Tennessee on Facebook including "Jellico Current Events" and "Jellico Public Library" with combined followers totaling more than five thousand. It was the hope that additional participants would be obtained via snowball sampling. As an incentive, participants could elect to participate in a raffle for one of five $50.00 Walmart electronic gift cards. Participants who elected to participate in the raffle were taken to a different REDCap link in which an email address was provided by the participant to allow for distribution of prizes if won. The secondary REDCap survey was not tied to the original survey as to not compromise confidentiality of the data gathered. Five winners were randomly selected using REDCap and notified via email with electronic gift cards distributed via email the week of December 14, 2023.

Data Collection

The researcher obtained the participants' data utilizing REDCap. REDCap allowed for the online development of a web-based survey and a link from which the participants could review the details of the study deciding whether to participate or not participate depending on individual factors. The ETSU academic membership to REDCap allowed for surveys of any size,

unlimited responses, and data exports of an advanced nature. REDCap also guaranteed participant data using password protection and advanced firewalls. Internet protocol (IP) addresses were not restricted so that participants could take the survey in any location and environment desired.

Initially, data collection was to be in-person in order to capture those participants without the technology needed to complete an online survey. However, the original sight for data collection, in which elderly rural residents could gather easily and in greater numbers (i.e. Jellico United Methodist Church), closed due to the long-term financial effects of COVID-19. This placed significant time constraints on the researcher that could only be overcome utilizing an online format. Consequently, no in-person data collection was utilized and participants were notified of the study and recruited utilizing a flyer posted to social media restricted to rural Appalachian community pages (i.e., Facebook). The recruitment flyer and link to the electronic REDCap survey was posted with a survey window of six weeks.

Inclusion criteria included: (1) Adults age 65 years and above, (2) Rural Appalachia residency (i.e., within 15 miles of Jellico, Tennessee), (3) Ability to speak and read English, (4) Must be physically present in the United States, and (5) Have not been diagnosed with a cognitive impairment such as advanced dementia or Alzheimer's disease. A selection of "I AGREE" indicated acceptance to participate in the study, but also indicated that all inclusion criteria were met. Whereas, a selection of "I DO NOT AGREE" either indicated that the participant did not meet inclusion criteria or was not interested in completing the survey. Once in the survey, participants only answered basic demographic questions including gender, annual income, and educational level prior to answering questions related to medical mistrust and telehealth acceptance.

Data Analysis Method

The data analysis method used for this study was as follows:

Data Preparation

Participants' questionnaires were reviewed for completion. All inclusion and exclusion criteria were assessed, and ineligible participants were removed from analysis by either agreeing or disagreeing with statements during the informed consent process. Participants who did not meet inclusion criteria via self-report were immediately directed to end the survey eliminating them from participation and data preparation. Partially completed surveys were included in the analysis to be respectful of all participant contributions, to achieve sample size needed according to power analysis, and to reduce bias (Lundquist & Henning, 2020).

Data Analysis

For the purpose of this study and the research questions presented, the relationship between medical mistrust and technology acceptance was performed using Pearson correlation coefficients via *IBM Statistical Package for the Social Science Statistics*© (SPSS) Grad Pack Standard V29.0 for Windows. "The Pearson product-moment correlation coefficient assesses the degree that quantitative variables are linearly related in a sample. Each individual or case must have scores on two quantitative variables" (Green & Salkind, 2011, p.257). In the case of this study, the two quantitative variables measured were medical mistrust and telehealth acceptance scores obtained from the two selected survey instruments. A bivariate Pearson's correlation test was implemented to assess the magnitude of association and the direction of the relationship between these two variables. Based upon best practices when using Pearson correlation coefficients (Green & Salkind, 2011), the following two assumptions were utilized in this study including:

1. The variables are bivariately normally distributed.

- Nonlinearity will be assessed for visually using a scatterplot of data points.

2. The cases obtained represent a random sample of the population and variable scores from each of the survey instruments are independent of one another and independent of scores between individual cases.

In addition to the above-mentioned analysis, simple descriptive statistics via SPSS V29.0 were performed including frequencies, percentages, means, and standard deviations (SDs) for all variables of interest including gender, annual income, education, and previous telehealth experience.

Validity

It is often anticipated that correlational research will have low internal validity rates due to the lack of experimental controls (Price et al., 2017). However, due to lack of manipulation or control, higher external validity rates can be expected and "are more likely to reflect relationships that exist in the real world" (Price et al., 2017., para. 4).

Internal Validity

Several strategies were employed in attempts to increase internal validity including:

1. Random selection of participants where elderly rural residents of Appalachia utilizing the social media community page had equal opportunity to complete the survey as directed and were able to be identified as a subset of the larger population according to self-report. .
2. Encouragement of honest answering of questions by the participant.
3. Ensuring that survey instruments were not too lengthy as to cause attrition.

4. Adherence to consistent data collection methods utilizing a single online modality.

External Validity

Several strategies were employed in attempts to increase external validity including:

- Detailed inclusion and exclusion criteria within the informed consent. Inclusion criteria being met and acceptance into the survey was dependent upon a participant selection to "I AGREE". By selecting "I DISAGREE", participants were either electing not to participate in the study or were acknowledging that the inclusion criteria were not met resulting in immediate exclusion from the study.
- Minimizing situational factors such as time of day, noise levels, temperature of the location, etc. It is assumed that participants will complete the survey when most convenient for them and in the most convenient environment of their own determination.

Reliability

Because test-retest and interrater reliability was not possible, internal reliability was assessed using within-test consistency via the Cronbach alpha which has been cited as a "conservative estimate of reliability" (Trivedi, 2020, para. 15). "The basic premise behind this type of reliability assessment is that the test would be reliable and accurate if the scores from individual items are consistent across the test for an individual" (Trivedi, 2020, para. 13). Although often criticized, the Cronbach alpha remains the gold standard for reliability analysis (Tavakol & Dennick, 2011) and is one of very few methods that allow for continuous variable examination, such as those found on the survey instruments selected, and available within the SPSS V29.0 software. The goal was to achieve an acceptable Cronbach alpha of at least 0.70

(Tavakol & Dennick, 2011). For this study, the Medical Mistrust Index for elderly residents of rural Appalachia produced a less than desirable alpha of 0.59. Through the lens of Telehealth Acceptance Model, the Cronbach alpha was also 0.59 for those with previous telehealth experience but was much more robust among elderly rural residents of rural Appalachia with no previous telehealth experience ($\alpha = 0.94$).

Philosophical & Epistemological Underpinnings

The philosophical and epistemological views guiding this research include positivism and constructivism. Based on the premise that science is the only path to truth, positivism adheres to factual knowledge obtained through observation/measurement with the aim to explain or predict (Dudovskiy, n.d.) making a correlational study and the use of TAM and MMI appropriate for the research presented. Ontologically, only one truth will exist resulting in either no relationship, a positive relationship, or a negative relationship between medical mistrust and telehealth acceptance among the elderly of rural Appalachia. The researcher will remain independent of the study, not allowing for provision of human interest (Dudovskiy, n.d.).

Epistemologically, constructivism will help to explain the knowledge of understanding that is constructed individually and collectively based upon previous experiences maintaining that individual understanding or knowledge is developed through beliefs, ideas, events, and activities experienced (Ultanir, 2012). It is assumed that elderly residents of rural Appalachia do not passively receive knowledge related to telehealth and medical mistrust but, instead, gain knowledge through the process of meaning-making, emotions, and intuition with their reality being the result of social experiences (Ultanir, 2012).

Conclusion

This chapter described associated terms, the research design, target population, sampling strategy, protection of human subjects, data collection method, philosophical and epistemological underpinnings, and data analysis utilized for this study. A detailed description of the instruments selected and reliability and validity was also provided. Currently there is a lack of research specifically exploring a connection between medical mistrust and telehealth acceptance in the elderly of rural Appalachia negating a need for further research exploring a possible connection between these variables. Using two survey instruments including the Medical Mistrust Index and Technology Acceptance Model to measure these variables, and through the lens of Rural Nursing Theory, this study was designed to better understand the degree of medical mistrust existing in the elderly of rural Appalachia and if medical mistrust may be inhibiting efforts related to telehealth acceptance among this population.

Chapter 4. Findings

The correlational study presented assessed for a relationship between medical mistrust and technology acceptance among the elderly of rural Appalachia while appraising the impact of certain variables including gender, annual income, education, and prior telehealth experience. This chapter will describe the participant sample and the results of the correlational analyses.

The study's population was comprised of elderly adults living in rural Appalachia. An electronic REDCap survey was conducted utilizing the power of social media (i.e., Facebook). Participants were notified of the research study via a recruitment flyer posted to multiple Facebook community pages including: Jellico Area Announcements, Jellico Current Events, and Jellico Public Library. Within the recruitment flyer, there was a link taking the potential participant to the study while informing them of the six-week window set for completion. To meet inclusion criteria, participants had to be at least 65 years of age, reside within 15 miles of Jellico, Tennessee, be physically present in the United States, have the ability to speak and read English, and be absent of a cognitive impairment such as advanced dementia or Alzheimer's disease according to self-report.

A total of 286 participants met initial eligibility for the study. Of the 286 participants that met initial eligibility criteria, thirteen provided no demographic data, nor answered any questions within the survey instrument resulting in exclusion from the study. An additional seven participants answered demographic data questions only and were utilized for simple descriptive statistics exclusively. Of the 266 participants remaining, four failed to complete the portion of the survey instrument related to technology acceptance. However, their demographic data and scores on the medical mistrust index were kept and analyzed for the purpose of simple

descriptive statistics, means, and standard deviation. Consequently, a total of 262 participants completed the survey in its entirety and were analyzed accordingly.

Upon completion of eligibility screening, categorical data were coded (see Appendix C) within an excel spreadsheet downloaded from REDCap and then uploaded into IBM SPSS Statistics Grad Pack 29.0 for analysis. Gender was coded as 1 for female, 2 for male, 3 for not listed, and 4 for prefer not to answer. Annual income was coded as 1 for less than $50,000 and 2 for $50,000 or above. Education was coded as 1 for no schooling completed through high school graduate/GED and 2 for first year of college or above. Prior experience with telehealth use was coded categorically using 1 for yes and 2 for no. Medical mistrust scores and technology acceptance scored were coded based on Likert scale responses, reverse coded as needed, then tabulated separately in preparation for correlational analysis.

Frequency statistics were obtained for all categorical data including gender, annual income, education, and prior experience with telehealth use. Utilizing scores obtained from the medical mistrust index and technology acceptance portions of the survey, descriptive statistics and histograms were generated to assess the main features of the dataset and to ensure there were no additional gaps in the data.

Description of Sample

Although questions requiring an exact age to be disclosed was not provided in this survey, a total of 286 participants selected “I AGREE” indicating willingness to participate in the survey, but also indicating that they were at least 65 years of age or above. Two-hundred seventy-three participants responded to gender with 57.9% (n = 158) reported to be male, 38.8% (n = 106) reporting female, 2.9% (n = 8) preferring not to answer, and 0.4% (n = 1) describing their gender as not listed (see Table 2). Of the 272 participants who responded to annual income,

46% (n = 125) reported an annual income of less than $50,000, while 54% (n = 147) reported an annual income of $50,000 or above. In terms of education, 62.4% (n = 169) report completing a first year of college or above with the remaining 37.6% (n = 102) declaring no schooling completed through high school graduate/GED. A total of 265 participants responded to the question of prior telehealth experience with the vast majority, 81.5% (n = 216), responding yes.

Table 2

Description of Sample Population

	N	**Percent**
Gender		
Female	106	38.8%
Male	158	57.9%
Not Listed	1	0.4%
Prefer Not to Answer	8	2.9%
Annual Income		
Less than $50,000	125	46%
$50,000 or Above	147	54%
Level of Schooling		
No Schooling Completed Through High School Graduate/GED	102	37.6%
First Year of College or Above	169	62.4%
Previous Telehealth Use		
Yes	216	81.5%
No	49	18.5%

Medical mistrust scores have a possible range of 17 to 68 with higher scores suggesting increased levels of medical mistrust and vice versa. In the sample population presented, medical mistrust scores ranged from 27 to 58 with a mean score of 42.03 (*SD* = 4.73). Additional means were assessed based upon gender, annual income, and educational level (see Table 3).

Table 3

Medical Mistrust Scores Among Demographics

	Female	Male	Less Than $50,000 Annually	$50,000 or Above Annually	No Schooling Through High School Graduate/GED	First Year of College or Above
Mean Score	41.79	42.31	42.43	41.70	41.95	42.03
Standard Deviation	4.95	4.59	5.20	4.32	4.93	4.64

When tabulated, telehealth acceptance scores have a possible range of 31 to 155 for those with previous telehealth experience and 17 to 85 without experience with higher scores indicating increased acceptance of telehealth as a technology regardless of prior exposure to telehealth. In the sample population presented, those with previous telehealth experience (n = 216) had scores ranging from 56 to 118 with a mean score of 89.97 (*SD* = 8.59). Telehealth acceptance scores among females with previous telehealth experience were slightly higher, with a mean score of 90.40 (*SD* = 9.52), as compared to their male counterparts (M = 89.63, *SD* = 8.04). Participants with previous telehealth experience and an annual income of $50,000 or above had a mean telehealth acceptance score of 90.46 (*SD* = 9.26) as compared to those earning less than $50,000 annually (M = 89.30, *SD* = 8.53). However, higher education and previous telehealth experience resulted in slightly lower telehealth acceptance scores (M = 89.74, *SD* = 8.23) than those participants with less education and previous telehealth experience (M = 90.75, *SD* = 9.26). Means for those without previous telehealth experience (n = 49) were also assessed based upon gender, annual income, and educational level and are displayed below (see Table 4).

Table 4

Telehealth Acceptance Scores Among Participants With No Previous Telehealth Experience

	Female	Male	Less Than $50,000 Annually	$50,000 or Above Annually	No Schooling Through High School Graduate/GED	First Year of College or Above
Mean Score	42.79	47.44	40.50	50.62	48.81	41.59
Standard Deviation	12.34	14.46	9.47	15.16	16.30	7.81

Data Analysis

A correlation of medical mistrust scores and telehealth acceptance scores among the elderly of rural Appalachia was completed and assessed based upon the total sample population as well as by gender, annual income, education, and prior telehealth experience. Table 5 shows the results of the correlational analyses among the total sample population and Table 6 displays confidence intervals for all statistically significant findings among the total population and subgroups after Fisher's r-to-z transformation with bias adjustment.

Sample Population

According to the analysis, there was a moderate positive relationship between income and education ($r(267) = .34$, $p < .001$) with those of higher education earning more money annually and those with a high school diploma/GED earning less. However, results also indicated that education and telehealth use had a weak negative relationship with one another ($r(260) = -.18$, $p = .003$) suggesting that increased education may result in decreased telehealth use among the elderly of rural Appalachia. Of the participants with no prior telehealth experience ($n = 49$), a moderate positive relationship was found between income and telehealth acceptance ($r(47) = .39$, $p = .008$) suggesting that the elderly of rural Appalachia with no prior telehealth experience and increased income are more likely to be acceptant of telehealth as a technology as

compared to elderly Appalachians of lower income or those who have previously used telehealth services. Of the participants who cited prior experience using telehealth (n = 216), the analysis revealed a moderate negative relationship between medical mistrust and telehealth acceptance ($r(214) = -.44$, $p < .001$) indicating that elderly residents of rural Appalachia with higher levels of medical mistrust are less likely to be acceptant of telehealth as a technology, while those that are more acceptant of telehealth are likely to self-report lower levels of medical mistrust within this population.

Table 5

Correlations of Elderly Appalachian Residents' Medical Mistrust and Telehealth Acceptance Scores

		Gender	Annual Income	Education	Medical Mistrust Index	Telehealth Use	Telehealth Acceptance Previous Experience	Telehealth Acceptance No Previous Experience
Gender	Pearson Correlation	1	-.077	.040	.012	-.006	-.026	.145
	Sig. (2-tailed)		.208	.508	.846	.919	.710	.325
	N	273	271	270	265	264	213	48
Annual Income	Pearson Correlation	-.077	1	.336**	-.076	-.088	.067	.385**
	Sig. (2-tailed)	.208		< .001	.217	.153	.332	.008
	N	271	272	269	264	263	213	47
Education	Pearson Correlation	.040	.336**	1	.008	-.184**	-.055	-.270
	Sig. (2-tailed)	.508	< .001		.893	.003	.423	.064
	N	270	269	271	263	262	211	48
Medical Mistrust Index	Pearson Correlation	.012	-.076	.008	1	.026	-.435**	-.008
	Sig. (2-tailed)	.846	.217	.893		.679	< .001	.958
	N	265	264	263	266	264	214	48

Table 5 (continued).

Telehealth Use	Pearson Correlation	-.006	-.088	-.184**	.026	1		
	Sig.(2-tailed)	.919	.153	.003	.679			
	N	264	263	262	264	265	214	48
Technology Acceptance Previous Experience	Pearson Correlation	-.026	.067	-.055	-.435**		1	
	Sig. (2-tailed)	.710	.332	.423	< .001			
	N	213	213	211	214	214	214	0
Technology Acceptance No Previous Experience	Pearson Correlation	.145	.385**	-.270	-.008			1
	Sig. (2-tailed)	.325	.008	.064	.958			
	N	48	47	48	48	48	0	48

**.Correlation is significant at the 0.01 level (2-tailed).

Gender Differences Among the Sample Population

Within both female and male participants, income was positively, and moderately, correlated with education having Pearson coefficients of $r(103) = .32$ and $r(152) = .34$ respectively, $p < .001$. Congruent with analyses of the total sample population, this suggests that elderly residents of rural Appalachia with a higher level of education are likely to earn more annually regardless of gender. Of the male participants with no previous telehealth experience ($n = 26$), a strong positive relationship was identified between income and technology acceptance ($r(24) = .59$, $p = .002$) suggesting that elderly males of rural Appalachia with a higher annual income were more likely to be acceptant of telehealth as a technology. However, no relationship was found between these variables and female gender with possible skewing of the data secondary to the small sample size within the subgroup. Although elderly Appalachian males seemed to have a strong positive relationship between income and telehealth acceptance, the same was not true for education and telehealth acceptance. In fact, elderly males of rural Appalachia with no previous telehealth experience ($n = 27$) displayed a strong negative relationship between education and telehealth acceptance ($r(25) = -.51$, $p = ,007$) suggesting that males with a higher level of education are actually less acceptant of telehealth as a technology than their rural Appalachian female counterparts where no relationship was identified. However, this may be the result of a small sample size within the subgroup examined. Also among elderly Appalachian males, a negative, although weak, relationship was found between education and telehealth use ($r(149) = -.16$, $p = .045$) hinting that male gender and higher levels of education may result in decreased telehealth use amongst this population. Of female participants with previous telehealth experience ($n = 82$), increased levels of medical mistrust was strongly, and negatively, correlated with telehealth acceptance ($r(80) = -.61$, $p < .001$), while males ($n = 124$)

displayed more of a moderate negative relationship between the two variables ($r(122) = -.30$, $p < .001$). Although significant among both genders, this suggests that medical mistrust is more strongly associated with a lack of telehealth acceptance among elderly rural Appalachian females as compared to elderly rural Appalachian males.

Income Differences Among the Sample Population

For elderly participants of rural Appalachia earning less than $50,000 annually and with previous telehealth experience ($n = 92$), a moderate negative relationship was identified between medical mistrust and telehealth acceptance ($r(90) = -.48$, $p < .001$) indicating that elderly rural Appalachians of lower income with higher levels of medical mistrust are less acceptant of telehealth as a technology. However, a similar moderate relationship was found for elderly rural Appalachian residents with previous telehealth experience earning $50,000 or above ($r(119) = -.40$, $p < .001$) suggesting that the variable of income may not be as relevant in the acceptance of telehealth as a technology as the presence of medical mistrust amongst this population. For elderly rural Appalachian participants earning $50,000 or above annually with no previous telehealth experience ($n = 21$), a strong negative relationship was identified between education and telehealth acceptance ($r(19) = -.58$, $p = .006$) suggesting that a higher level of education may actually result in less acceptance of telehealth as a technology. However, small sample size within this subgroup should be considered. But, this finding may also be supported by the moderate negative relationship found between those earning $50,000 or above annually, education, and telehealth use ($r(142) = -.42$, $p < .001$) indicating that elderly rural Appalachians with a higher annual income and higher education are less likely to use telehealth services.

Educational Differences Among the Sample Population

For elderly rural Appalachian participants with no schooling completed through high school graduate/GED and previous telehealth experience (n = 69), a strong negative relationship was found between medical mistrust and telehealth acceptance ($r(67) = -.65$, $p < .001$) indicating that elderly rural Appalachians of lower education with higher levels of medical mistrust are less acceptant of telehealth as a technology. However, a similar, but much weaker, negative relationship was found for those who completed their first year of college or above ($r(140) = -.29$, $p < .001$) suggesting that the variable of education may not be as relevant in the acceptance of telehealth as a technology as is the presence of medical mistrust amongst the elderly of rural Appalachia. Of the elderly rural Appalachian participants with no school completed through high school graduate/GED (n = 95), there was a weak positive relationship ($r(93) = .26$, $p = .010$) found between income and telehealth use suggesting that the elderly of rural Appalachia with a lower education level and higher income may be more likely to use telehealth. However, the exact opposite results were found for elderly rural Appalachian participants with at least one year of college (n = 165) where a weak negative relationship was identified ($r(163) = -.27$, $p = < .001$) and whereas increased education and increased income resulted in decreased telehealth use. Additionally, a strong positive relationship was found among elderly rural Appalachians with no schooling completed through high school graduate/GED, income, no previous experience with telehealth, and telehealth acceptance ($r(23) = .61$, $p = .001$) indicating elderly rural Appalachians with less education, higher annual income, and no previous telehealth experience are more likely to be acceptant of telehealth as a technology. However, data may be skewed secondary to the small participant representation within the subgroup.

Table 6

Confidence Intervals for All Statistically Significant Findings

				95% Confidence Intervals (2-tailed)	
		Pearson Correlation	**Sig. (2-tailed)**	**Lower**	**Upper**
Total Sample Population	Income -- Education	.336	< .001	.226	.438
	Education – Telehealth Use	-.184	.003	-.298	-.064
Sample Population with No Previous Telehealth Experience	Income – Telehealth Acceptance	.385	.008	.106	.603
Sample Population with Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.435	< .001	-.537	-.319
Female Gender	Income – Education	.318	< .001	.133	.479
Female Gender with Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.607	< .001	-.726	-.446
Male Gender	Income – Education	.335	< .001	.185	.467
	Education – Telehealth Use	-.164	.045	-.315	-.004
Male Gender with No Previous Telehealth Experience	Income – Telehealth Acceptance	.589	.002	.250	.790
	Education – Telehealth Use	-.508	.007	-.740	-.149
Male Gender with Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.304	< .001	-.455	-.134
< $50,000 Annual Income With Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.476	< .001	-.618	-.298
$50,000 or Above Annual Income	Education – Telehealth Use	-.423	< .001	-.548	-.277
$50,000 or Above Annual Income With Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.403	< .001	-.542	-.241
No Schooling Through High School Graduate/GED	Income – Telehealth Use	.262	.010	.062	.439
No Schooling Through High School Graduate/GED With No Previous Telehealth Experience	Income – Telehealth Acceptance	.610	.001	.271	.805
No Schooling Through High School Graduate/GED With Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.651	< .001	-.767	-.486
First Year of College or Above	Income – Telehealth Use	-.265	< .001	-.401	-.116
First Year of College or Above With Previous Telehealth Experience	Medical Mistrust – Telehealth Acceptance	-.294	< .001	-.437	-.135

Analysis of Original Correlational Test Assumptions

Based upon best practices when using Pearson correlation coefficients (Green & Salkind, 2011), the following two assumptions were utilized in this study including:

1. The variables are bivariately normally distributed.

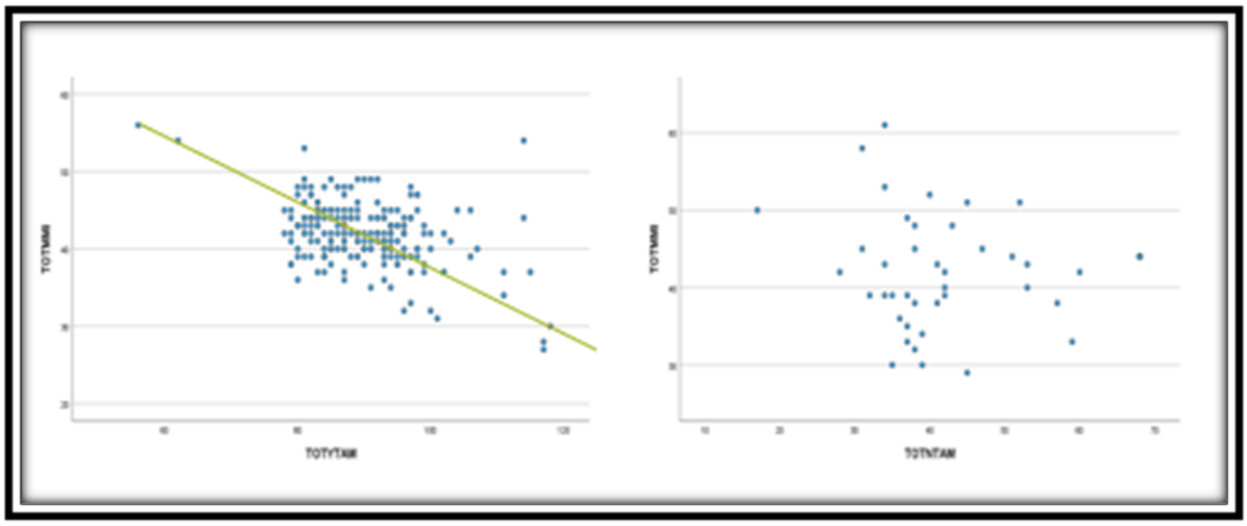
Nonlinearity was assessed for visually using a scatterplot of data points (see Figure 2). The cumulative scores for medical mistrust (i.e. TOTMMI) and cumulative scores for telehealth acceptance were analyzed for normal distribution based upon previous telehealth experience (i.e. TOTYTAM) and no previous telehealth experience (i.e. TOTNTAM). Based on the scatterplot for those with previous telehealth experience, there did appear to be a negative association between medical mistrust and telehealth acceptance with data points coming from the upper left to lower right. However, some small outliers were noted as was an extreme amount of clustering suggesting that there were several members of the group with similar medical mistrust and telehealth acceptance scores. The assumption that variables are bivariately normally distributed in the sample population with previous telehealth acceptance was met. For the group reporting no previous telehealth experience, there did appear to be some movement from upper left to lower right, but there was more deviation of points outward suggesting nonlinearity, or no association, between the variables. Because nonlinearity was evident for those in the sample population with no previous telehealth experience, the assumption was not met. This absence of a normal distribution, or relationship, may be the result of the small subgroup of those with no previous telehealth experience (n = 49) as compared to those with previous telehealth experience (n = 216).

2. The cases obtained represent a random sample of the population and variable scores from each of the survey instruments are independent of one another and independent of scores between individual cases.

The data collected for the study represented a random sample of elderly adults living in rural Appalachia with cumulative scores from the Medical Mistrust Index and Technology Acceptance Model Questionnaire being independent of one another. Scores between individual cases were also independent of one another. As such, the second test assumption was met.

Figure 2

Scatterplot of Data Points



Conclusion

This chapter described the statistical analyses and results of the study. The study's purpose was to better understand the degree of medical mistrust existing in the elderly of rural Appalachia and if medical mistrust may be inhibiting efforts related to telehealth acceptance among this population. Medical mistrust and telehealth acceptance scores were quantified, and statistical significance analyzed. The findings support a moderate level of both medical mistrust and telehealth acceptance among the elderly of rural Appalachia. The findings also support a

negative relationship between the two variables for those with previous telehealth experience, but particularly among females and those of lower annual income.

Chapter 5. Discussion

The correlational research study presented had two objectives. First, to better understand the degree of medical mistrust in the elderly residents of rural Appalachia. Second, to determine if medical mistrust was inhibiting efforts related to telehealth acceptance among this population. The overarching research question guiding the study was: Is there a relationship between medical mistrust and telehealth acceptance among the elderly rural residents of Appalachia? The participants' level of medical mistrust was assessed using the Medical Mistrust Index (MMI) (LaVeist et al., 2009). Whereas the degree of telehealth acceptance among this population was measured using the Technology Acceptance Model (TAM) Questionnaire (Davis et al., 1989; Holtz et al., 2022). Demographics for the study included gender, annual income, education, and previous experience with telehealth. A correlational study was implemented to determine if a relationship between medical mistrust and telehealth acceptance existed and as to how this potential relationship may be impacting telehealth use among the elderly residents of rural Appalachia. Data were screened and analyzed as a group, as well as by the demographics of gender, annual income, education, and previous telehealth experience. A Cronbach's alpha was calculated on the MMI and TAM instruments. In this chapter, the final results of this study are interpreted and discussed, strengths and weakness identified, and future recommendations are provided.

Hypothesis One

The first hypothesis for this study was that there was relationship between medical mistrust and telehealth acceptance among elderly rural residents of Appalachia. Based upon the study presented, it is this author's stance that the first hypothesis has been accepted, the null hypothesis rejected, and that there is a relationship, described as negative, between medical

mistrust and telehealth acceptance among elderly rural residents of Appalachia. Due to a lack of current research exploring the connection between medical mistrust and technology acceptance in this specific population, the relationship between the two variables was identified utilizing a correlational approach. The participants' MMI and TAM scores were first correlated as a group, then separately through subgroups based upon demographics. When scores for medical mistrust and telehealth acceptance were examined, a statistically significant negative correlation was found to exist between the two variables, specifically among elderly Appalachian respondents with previous telehealth experience, with those participants self-reporting higher levels of medical mistrust being less acceptant of telehealth as a technology ($r(214) = -.44$, $p < .001$) . This finding supports previous research whereas telehealth success among older adults and among rural adults was found to be dependent on trust (Akbar et al., 2020; Holtz et al., 2022) and was identified as a key theme to telehealth utilization and overall success in a recent scoping literature review of rural beliefs and attitudes (Pullyblank, 2022). Of late, in poverty-stricken areas of Appalachia Ohio, older participants were found to have higher medical mistrust scores in the presence of higher self-reported health issues with medical mistrust scores increasing with age, but especially apparent for those 60 years and above according to a cross-sectional study of 248 participants (Thomas et al., 2023).

Although negative correlations between medical mistrust and telehealth acceptance were found among both genders with previous telehealth experience, the relationship was more statistically significant in females ($r(80) = -.61$, $p < .001$) as compared to their male counterparts ($r(122) = -.30$, $p < .001$). Gender differences in medical mistrust are not unique to this study. Cited precursors to medical mistrust among Appalachian women has included perceptions of poor medical care via telehealth and a perceived lack of effective patient-centered

communication that impacted health-seeking behaviors among the population (McAlearney et al., 2012). Furthermore, trust has been identified as playing an important role in society with women trusting less than men for various reasons including, but not limited to, a higher vulnerability and sensitivity to betrayal, identified neural signature differences between men and women, and higher levels of emotional awareness among women that results in increased suspiciousness in all aspects of social life (Boden & Berenbaum, 2007; Wu et al., 2020).

Although gender differences were found among the participants in this study, annual income did not appear to impact the moderate negative relationship found between those earning less than $50,000 annually ($r(90) = -.48$, $p < .001$) and those earning $50,000 or above ($r(119) = -.40$, $p < .001$). This leads the author to question whether income is truly a relevant demographic in this study. However, recent research does suggest that income and socioeconomic status do impact telehealth use and acceptance with Appalachian counties doing economically worse being less likely to use telehealth as compared to those fairing more well (Hood-Wells et al., 2022). In addition, decades of research shows that low-income respondents or individuals with low socioeconomic status experience higher levels of medical mistrust in general (Becker & Newsom, 2003, Idan et al., 2020) with socioeconomic stratum serving to be a predominant cause of medical mistrust in vulnerable populations and minorities (Hammond & Siddiqi, 2013; Williams & Shang, 2023).

Negative relationships between medical mistrust and telehealth acceptance were found among both education levels with previous telehealth experience. However, the negative relationship was more statistically significant in participants who reported no schooling though high school graduate /GED ($r(67) = -.65$, $p < .001$) as compared to those reporting first year of college or above ($r(140) = -.29$, $p < .001$) indicating that those of lower educational level are

much more likely to be less of acceptant of telehealth in the presence of higher medical mistrust than those with at least some post-secondary exposure. Recent research supports the trend for Appalachian individuals of lower education to be much less likely to engage in telehealth use as compared to their more educated counterparts (Hood-Wells et al., 2022). In addition, research has found that individuals with lower educational levels are more likely to experience higher levels of medical mistrust, but strong effects have yet to be identified leading some to believe the effects may be more of a social norm requiring mistrust to be addressed on both an individual and community level (Hostetter & Klein, 2021). Again, this raises the question as to if medical mistrust and telehealth acceptance are not so much tied to income or education as they are to social norms within the Appalachian community.

Research has suggested that psychological considerations are vital aspects of an elderly person's decision to accept technology with intention being largely based upon personal long-held beliefs, social norms, and past experiences that can be influenced by not only age, but also by present illness (Onyeachu & Clark, 2022). Rural nursing theory suggests that ethnographic data, including the concept of outsider/insider, provides guidance in various interactions and relationships with more trust being placed upon familiar practices and familiar people in rural communities (Winters & Lee, 2018). For these reasons, and in the presence of medical mistrust, the development of new skills and new relationships may pose to be difficult impacting healthcare decisions and behaviors.

Hypothesis Two

The second hypothesis for this study was that medical mistrust does exist among elderly residents of rural Appalachia. Based upon the results of this study, the hypothesis that medical mistrust does exist among elderly residents of rural Appalachia is accepted, and the null

hypothesis rejected, as a moderate level of medical mistrust has been identified across the entire sample and subgroups. As stated previously, medical mistrust scores have a possible range of 17 to 68 with higher scores indicating increased levels of medical mistrust. Based on the possible score range, this author divided the scale scores into three equal portions including 17-34.33, 34.34-51.67, and 51.68-68 indicating either low, moderate, or high levels of medical mistrust among the elderly residents of rural Appalachia. As an entire sample population, the group had a mean of 42.03 (*SD* = 4.73) indicating a moderate level of medical mistrust. Medical mistrust means were also assessed by gender, annual income, education, and previous telehealth use with mean scores ranging from 41.70-42.43 indicating that, regardless of demographics, the elderly residents of rural Appalachia in this sample displayed a moderate level of medical mistrust. Medical mistrust is not unique to those residing in Appalachia with this concept being identified in research spanning several decades (Brumbaugh et al., 2023; Thomas et al., 2023; Welch, 2011; Winters & Lee, 2018). Medical mistrust has also been identified in older adults seeking chronic disease management (Ladin et al., 2021; Mascarenhas et al., 2006). However, research exploring medical mistrust among older adults in urbanized areas is only recently examined making it difficult to determine if medical mistrust is a phenomenon consistent among older adults whether residing in large metropolitan areas, urban Appalachia, or rural Appalachia.

To assess whether there was a significant difference between the means of male versus female, low income versus high income, low education versus high education, and previous telehealth experience versus no previous telehealth experience, a series of independent-samples t-tests were performed and analyzed for statistical significance. There was not a statistically significant difference in mean MMI scores between female (M = 41.79, *SD* = 4.95) and males (M = 42.31, *SD* = 4.59); t(254) = -.873, p = .727. There was not a statistically significant

difference in mean MMI scores between those earning less than $50,000 annually (M = 42.43, *SD* = 5.20) and those reporting an annual income of $50,000 and above (M = 41.70, *SD* = 4.32); t(262) = 1.238, p = .324. There was not a statistically significant difference in mean MMI scores between those with no schooling through high school graduate/GED (M = 41.95, SD = 4.93) and those completing their first year of college or above (M = 42.03, *SD* = 4.64); t(261) = -.134, p = .978. However, there was a statistically significant difference in mean MMI scores between those with no previous telehealth experience (M = 42.31, *SD* = 6.80) and those with previous telehealth experience (M = 42.00, *SD* = 4.14); t(262) = .414, p < .001. This finding indicates that elderly rural residents of Appalachia with no previous telehealth experience are more likely to have higher mean MMI scores than those with previous experience. To this author's knowledge, there is no research to date that has assessed medical mistrust among those with previous telehealth experience versus without any previous telehealth experience in any population, let alone elderly residents of rural Appalachia.

Hypothesis Three

The third hypothesis for this study was that elderly residents of rural Appalachia are acceptant of technology as a means of managing healthcare needs. Based upon the results of this study, the hypothesis that elderly residents of rural Appalachia are acceptant of technology as a means of managing healthcare needs is accepted, and the null hypothesis rejected, as a moderate level of telehealth acceptance has been identified across the entire sample and all subgroups. Telehealth acceptance scores have two possible ranges depending on whether the participant has previous telehealth experience or no previous telehealth experience. For those with previous telehealth experience, TAM scores have a possible range of 31 to 155 with higher scores indicating an increased level of telehealth acceptance. Based on the possible score range, this

author divided the scale into three equal portions including 31-72.33, 72.34-113.67, and 113.68-155 indicating either low, moderate, or high levels of telehealth acceptance among the elderly residents of rural Appalachia. For those denying previous telehealth experience, TAM scores have a possible range of 17 to 85 with higher scores also indicating an increased level of telehealth acceptance. The same process was used to determine low (i.e., score of 17-40), moderate (i.e., score of 41-63), or high (i.e., score of 64-85) levels of telehealth acceptance.

Previous Telehealth Experience

Of the sample population with previous telehealth experience (n = 215), the group had a mean of 89.97 (*SD* = 8.59) indicating a moderate level of telehealth acceptance. Telehealth acceptance means were also assessed by gender, annual income, and education with mean scores ranging from 89.30-90.75 indicating that, regardless of demographics, the elderly residents of rural Appalachia with previous telehealth experience displayed a moderate level of telehealth acceptance. The fact that participants in this subgroup already had previous telehealth experience according to self-report reflects that some degree of acceptance was already present at the time of survey completion. To assess whether there was a significant difference between the means based on gender, annual income, or education, a series of independent-samples t-tests were performed and analyzed. According to this analysis, there was not a statistically significant difference in mean telehealth acceptance scores in those reporting previous telehealth experience regardless of female versus male ($t(204) = .628$, $p = .345$), less than $50,000 earned annually versus $50,000 or above ($t(211) = -.973$, $p = .767$), or no schooling through high school graduate/GED versus those completing their first year of college or above ($t(209) = .803$, $p = .441$).

No Previous Telehealth Experience

Of the sample population reporting no previous telehealth experience (n = 49), the group had a mean of 45.50 (*SD* = 13.48) indicating a moderate level of telehealth acceptance. Telehealth acceptance means were also assessed by gender, annual income, and education with mean scores ranging from 40.50-50.62. All subgroups among the elderly residents of rural Appalachia, with no previous telehealth experience, displayed a moderate level of telehealth acceptance with the exception of those earning less than $50,000 annually. In this small group (n = 21), a low level of telehealth acceptance (M = 40.50, *SD* = 9.47) was identified. To assess whether there was a significant difference between the means based on gender, annual income, and education, a series of independent -samples t-tests were performed and analyzed. According to this analysis, there was not a statistically significant difference in mean telehealth acceptance scores in those reporting no previous telehealth experience regardless of gender ($t(44) = -1.141$, $p = .309$). However, a statistically significant difference was found in mean telehealth acceptance scores when examined through the lens of annual income ($t(45) = -2.798$, $p < .001$) and education ($t46) = 1.898$, $p < .001$) with those earning less than $50,000 annually or those with at least one year of college or above being less acceptant of telehealth as compared to those earning more than $50,000 annually or those with no schooling to high school graduate/GED. These results do raise significant questions as some aspects are in line with current research as other aspects are contradictory which may be the result of the small sample size within this subgroup.

Much of the literature, although extremely limited, has identified at least some degree of telehealth acceptance in rural Appalachia, but it has been predominantly isolated to females, Caucasians, minorities, or younger to middle-aged adults (Haggerty et al., 2022; Hood-Wells et al., 2022; Strowd et al., 2021; Vanderpool et al., 2021) with findings suggesting telehealth

acceptance being more prevalent in times of perceived need (Haggerty et al., 2022; Hood-Wells et al., 2022; Walker et al., 2021). Because ethnicity and reasons for telehealth use (i.e. perceived need) were not assessed in this study, it is difficult to determine if these variables might have contributed to overall telehealth acceptance scores with or without previous telehealth experience. It is also unclear as to if the recent COVID-19 pandemic changed telehealth acceptance beliefs and attitudes in this population though one could assume that the pandemic was definitely a 'tipping point' where no other choice was available during the time.

Contrary to some of these study findings, the vast majority of literature suggests telehealth use (i.e. not necessarily telehealth acceptance), whether among rural or urban communities in and outside of Appalachia, has been impacted by socioeconomic status with those of less income and less education being less likely to use such services as compared to those earning more annually and with higher education levels (Becker & Newsom, 2003; Edmiston & Alzubi, 2022; Hammond & Siddiqi, 2013; Hood-Wells et al. 2022; Idan et al., 2020; William & Shang, 2023). Although participants in this study with no previous telehealth experience and of higher education were still moderately acceptant of telehealth according to mean scores, it is unclear as to specifically why their telehealth acceptance scores were significantly lower than their less educated counterparts. Again, this may be the result of personal beliefs where relative advantage of telehealth as a technology is perceived as inferior to in-person interaction.

Hypothesis Four

The fourth, and final, hypothesis for this study was that medical mistrust does play a role in telehealth acceptance among elderly residents of rural Appalachia. Though cause and effect cannot be determined, and based upon the results of this study, the hypothesis that medical

mistrust does play a role in telehealth acceptance among elderly residents of rural Appalachia is accepted, and the null hypothesis rejected. Within this study, participants were asked to answer whether they had previous experience with telehealth. Based on their answer, they were taken to either one portion of the TAM scale or the other. Analysis revealed that 81.5% of responding participants (n = 216) had previous experience using telehealth with the remaining participants denying previous use. Of the participants with no prior telehealth experience (n = 49), a moderate level of medical mistrust (M = 42.31) with a moderate level of telehealth acceptance (M = 45.50) was identified, but no statistically significant relationship between the two variables was revealed in this sample population nor among any of the subgroups.

Within the group of those with previous telehealth experience, a moderate negative relationship between medical mistrust and telehealth acceptance ($r(214) = -.44$, $p < .001$) was identified indicating that elderly residents of rural Appalachia with previous telehealth experience and increased levels of medical mistrust are less likely to be acceptant of telehealth as compared to those without previous experience or lower levels of medical mistrust . Similar negative relationships were found among all the other subgroups, regardless of demographic (i.e., gender, annual income, education), with the strongest correlations being among females ($r(80) =-.61$, $p < .001$) and those earning less than $50,000 annually ($r(90) = -.48$, $p < .001$). This finding suggests that elderly female residents of rural Appalachia with previous telehealth experience and increased levels of medical mistrust are less likely to be acceptant of telehealth as compared to their male counterparts or those with lower self-reported medical mistrust. Additionally, the same could be suggested as true for elderly residents of rural Appalachia with lower socioeconomic status. Although the overall sample size did not meet power in this study, women (i.e., 38.8% of participants) and those earning less than $50,000 annually (i.e., 46% of

participants) were slightly under-represented in this study, but their results consistent with previous studies assessing either medical mistrust or technology acceptance independently of one another as discussed in previous sections.

Strengths and Limitations

There are several strengths noted in this study. Using social media, the survey was distributed electronically allowing for increased ease of use and convenience as to when and where a survey would be completed. Survey instruments used had well-established psychometrics among various populations and settings. Various demographics were considered including gender, annual income, education, and previous telehealth use. In addition, this study is unlike any previous identified research as the focus was specifically on the relationship between medical mistrust and telehealth acceptance, specific to those 65 years and older, and isolated to a rural Appalachian community. Consequently, the main strength of this study is that it has confirmed the presence of both medical mistrust and telehealth acceptance among the elderly of rural Appalachia along with the strength and direction of their complex relationship. Ultimately, this may allow future researchers to better understand and predict factors that may facilitate or serve as a barrier to telehealth use among this most vulnerable of populations.

Several limitations were identified in this study. In addition to not meeting adequate power and while an electronic-based survey may have been beneficial for most, there were some incomplete surveys submitted resulting in only partial analysis in some cases. Although this survey was only expected to take 20 to 30 minutes to complete, survey fatigue among the elderly may not have been fully considered. Another limitation is that the electronic-based survey eliminated potential participants that may have lacked broadband capabilities or internet access. The lack of in-person data collection most likely denied a very important part of the Appalachian

community from having their voice heard. In addition, this was a highly educated sample, obviously comfortable with technology, with over 60% of participants reporting at least one year of college or above which may not be representative of all elderly residents of rural Appalachia. Because ethnic and racial diversity was not captured, and because the sample size to those who specifically did not identify as gender binary was extremely small (n = 9), generalizability among underrepresented minorities proves to be difficult. The survey developed was designed to only capture whether participants were age 65 years or above. The absence of an exact participant age limits generalizability based upon generational differences that may occur between older versus younger elderly rural Appalachians. Subsequently, these findings are based on one single study with a limited set of elderly participants from one rural Appalachian community.

Finally, internal consistency between items on the Medical Mistrust Index and Technology Acceptance Model scales proved to be problematic although reliability for both instruments had been previously established across multiple studies and settings. Striving for an alpha of at least 0.70 (Tavakol & Dennick, 2011) in this study, the Medical Mistrust Index produced a Cronbach's alpha of 0.59 indicating less than adequate reliability between items. Problems with internal consistency were also identified within the Technology Acceptance Model for those participants specifically reporting previous telehealth experience, also with an alpha of 0.59. However, the Technology Acceptance Model did prove highly reliable among participants with no previous telehealth experience ($\alpha = 0.94$). Because Cronbach's alpha has been recently described as vulnerable and less than optimal (Hayes & Coutts, 2020), internal consistency and reliability was also measured using McDonald's omega coefficient with similar results found among both of the instruments.

Connection to Rural Nursing Theory

This study revealed that the elderly of rural Appalachia self-report a moderate level of medical mistrust regardless of previous telehealth experience. This was true for the entire sample as well as all subgroups. Through the lens of Rural Nursing Theory, this study suggests that telehealth is seen as an "outsider" and distrusted by the elderly rural residents of Appalachia with results suggesting a moderate level of incongruency between telehealth, individual beliefs, and cultural norms. Medical mistrust, as an antecedent to telehealth, has been identified amongst this population whereas there is a strong propensity for elderly adults of rural Appalachia to be suspicious of telehealth as a form of healthcare delivery. As a consequence, the decision to either accept or reject telehealth seems to be a personal decision that most likely considers a participant's current reality, historical experiences, and long-held homogenous beliefs that is only compounded by a perceived need versus preference with elderly residents of rural Appalachia self-reporting a moderate degree of telehealth acceptance that may have only been brought about by a global pandemic and minimal options for healthcare delivery.

Recommendations for Future Research

Significant findings, strengths, and limitations have been identified in this study, and despite inadequate power and low sample sizes within some of the subgroups, results should be worthy of consideration. Based on the findings of this study, several future recommendations can be discerned. Medical mistrust needs to be clearly defined as a review of the literature has shown that often mistrust, medical mistrust, distrust, and interpersonal mistrust are being used interchangeably among varying entities and using varying parameters with a different instrument being used for measurement. Without a defined meaning and clear parameters, the phenomenon may not be thoroughly and accurately analyzed. Novel ways to measure medical mistrust and

telehealth acceptance among the elderly of rural Appalachia should be utilized through qualitative and mixed-methodologies considering not only the majority of rural Appalachians, but also the small minority and non-gender binary populations within the culture that are often underrepresented in research.

A thorough representation of the rural Appalachian environment can allow for future research that better understands medical mistrust and telehealth acceptance working to address factors that may lead to medical mistrust (i.e., structural inequality, historical beliefs, economic exclusion, etc.) while developing community-based interventions that build upon trusting relationships. Longitudinal designs should be considered to measure medical mistrust and telehealth acceptance in various urban Appalachia and rural Appalachian communities over time accounting for differences that may be identified among varying age groups. Ultimately, this study has suggested that given the technological capabilities (i.e., infrastructure & digital literacy) and in the presence of medical mistrust, elderly residents of rural Appalachia are acceptant of telehealth, even if at only low or moderate levels. As such, an area that is greatly neglected within current research is a full and rich description of attitudes of telehealth users versus non-users in rural Appalachia to gain a more in-depth understanding of the processes that lead to their decision and how those decisions may be influenced by social, historical, and culture norms. Lastly, policy makers and health care providers should consider community-based participatory research for developing processes that incorporate the building of a trusting rapport, mutual respect, and open communication including of discussion of how telehealth might be viewed better as a supplementation to in-person interactions rather than a replacement for traditional health care.

Conclusion

Elderly rural Appalachians have a rich social and cultural history that includes strength, self-reliance, and independence from those viewed as outsiders due to repeated episodes of extraction, exploitation, and stereotyping throughout the years. Although these social norms have helped to build resilience in rural Appalachian communities through enduring times, their past experiences and long-held beliefs have resulted in medical mistrust which may be one of the many factors resulting in a slow uptake of telehealth as a primary form of healthcare delivery for those of advanced age in the region. Rural nurses, healthcare providers, and policy makers have a responsibility to meet individuals where they are understanding that many elderly residents of rural Appalachia may not be ready or fully prepared to incorporate telehealth into their management of care. However, rural nursing practice and continued research has the ability to evolve to meet the overwhelming needs that exist among those of advancing age and for individuals with limited healthcare resources such as those found in rural Appalachia.

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APPENDICES

Appendix A: Recruitment Flyer

Approved by ETSU/VA Medical IRB / Approval Date: October 4, 2023

Survey Instrument

1. To which gender identify do you most identify?

- □ Female
- □ Male
- □ Not listed, _____
- □ Prefer not to answer

2. What is your annual income?

- □ Less than $50,000
- □ $50,000 or above

3. What is the highest degree or level of schooling you have completed?

- □ No schooling completed through high school graduate/GED
- □ First year of college or above

Medical Mistrust Index

MEDICAL MISTRUST INDEX V2.2 MEASURING MISTRUST IN HEALTHCARE

Let's begin, I would like to ask you a few questions about how you feel about healthcare organizations. When I say healthcare organizations, I am not asking about an individual doctor or nurse or any other person like that. I am asking about organizations where you might get healthcare, like a hospital or a clinic, the healthcare system in general. Please listen to the statements carefully. For each one, tell me whether you strongly disagree, disagree, agree or strongly agree. **Read each statement.**

Item	Strongly Disagree	Disagree	Agree	Strongly Agree
B1. You'd better be cautious when dealing with healthcare organizations.	1	2	3	4
B2. Patients have sometimes been deceived or mislead by healthcare organizations.	1	2	3	4
B3. I trust that healthcare organizations will tell me if a mistake is made about my treatment.	1	2	3	4
B4. Healthcare organizations often want to know more about your business than they need to know.	1	2	3	4
B5. When healthcare organizations make mistakes they usually cover it up.	1	2	3	4
B6. Healthcare organizations have sometimes done harmful experiments on patients without their knowledge.	1	2	3	4
B7. The patient's medical needs come before other considerations at healthcare organizations.	1	2	3	4
B8.Healthcare organizations are more concerned about making money than taking care of people.	1	2	3	4
B9. Healthcare organizations put the patient's health first.	1	2	3	4
B10. Healthcare organizations don't always keep your information totally private.	1	2	3	4
B11. Patients should always follow the advice given to them at healthcare organizations.	1	2	3	4
B12. I typically get a second opinion when I am told something about my health.	1	2	3	4
B13. I trust that healthcare organizations check their staff's credentials to make sure they are hiring the best people.	1	2	3	4
B14. They know what they are doing at healthcare organizations.	1	2	3	4
B15. Sometimes I wonder if healthcare organizations really know what they are doing.	1	2	3	4
B16. Mistakes are common in healthcare organizations.	1	2	3	4
B17. I trust that healthcare organizations keep up with the latest medical information.	1	2	3	4

Technology Acceptance Model Questionnaire

Telemedicine or telehealth is a way to connect with a doctor or healthcare services through the internet using a computer, tablet or mobile phone. This survey is going to use the term "telehealth".

1. Have you ever used telehealth?

- ☐ Yes **(Go to BLOCK B)**
- ☐ No **(Go to BLOCK C)**

BLOCK B

Please indicate your level of agreement of each of these statements in regards to your overall experiences of telehealth.

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1. I was able to communicate adequately with the health care provider.	☐	☐	☐	☐	☐
2. I was comfortable that the health care provider was able to understand what was bothering me.	☐	☐	☐	☐	☐
3. I had difficulty hearing the health care provider over the computer/mobile system.	☐	☐	☐	☐	☐
4. I had difficulty seeing the health care provider over the computer/mobile system.	☐	☐	☐	☐	☐
5. Telehealth made it easier to get medical care when I needed it.	☐	☐	☐	☐	☐
6. I would have gotten better care if I had seen the health care provider in person.	☐	☐	☐	☐	☐
7. Overall, I was very satisfied with telehealth visits.	☐	☐	☐	☐	☐
8. The next time I would prefer to see a health care provider in person despite the possible inconvenience.	☐	☐	☐	☐	☐
9. It was easy to arrange an appointment.	☐	☐	☐	☐	☐
10. It was convenient to receive care through telehealth.	☐	☐	☐	☐	☐
11. The health care provider dominated the conversation.	☐	☐	☐	☐	☐

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
12. The health care provider spent little time taking my medical history.	□	□	□	□	□
13. There was less communication with the provider (than I normally receive in person) using telehealth.	□	□	□	□	□
14. The health care provider was sensitive to my needs and concerns.	□	□	□	□	□
15. I am satisfied with the care I received via telehealth.	□	□	□	□	□
16. The health care provider who provided me care genuinely seemed to care about me.	□	□	□	□	□
17. If I had the opportunity, I would use telehealth again.	□	□	□	□	□
18. I felt like my privacy was invaded during the telehealth visit.	□	□	□	□	□
19. I am worried about the confidentiality of my private information being exchanged through the telehealth visit.	□	□	□	□	□
20. I am worried about the continuity of care (i.e., I don't see my same provider every time).	□	□	□	□	□
21. I am concerned that my primary care provider will not get my visit information.	□	□	□	□	□
22. I am concerned that my insurance will not cover my telehealth visit.	□	□	□	□	□
23. I generally use telehealth when my provider isn't open (e.g., after hours, holidays, etc.).	□	□	□	□	□
24. I generally use telehealth when I feel too sick to leave the house.	□	□	□	□	□
25. I have used telehealth because I didn't feel like my condition was too urgent.	□	□	□	□	□
26. I have used telehealth because I didn't want to infect (cold, flu, etc.) other people in a waiting room.	□	□	□	□	□
27. I have used telehealth because I didn't want to get infected in the waiting room by other people (cold, flu, etc.).	□	□	□	□	□

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
28. It is easy to get in to see my primary care provider.	☐	☐	☐	☐	☐
29. I would recommend telehealth services to others.	☐	☐	☐	☐	☐
30. The quality of care through telehealth is excellent.	☐	☐	☐	☐	☐
31. I am worried about the accuracy of the information from the telehealth health care provider.	☐	☐	☐	☐	☐

BLOCK C 

[IF YOU ANSWERED <u>BLOCK B</u> – SKIP TO BLOCK D)

1. Indicate how much you agree with each statement.

I have not used telehealth because…	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1. It is easy to get into my primary care provider.	☐	☐	☐	☐	☐
2. I prefer going to walk-in clinics.	☐	☐	☐	☐	☐
3. I am unsure if my insurance covers these visits.	☐	☐	☐	☐	☐
4. I am worried about the ability to communicate adequately with the health care provider.	☐	☐	☐	☐	☐
5. I think I would get better care in person.	☐	☐	☐	☐	☐
6. I don't have very good internet.	☐	☐	☐	☐	☐
7. I am not technologically savvy enough to use telehealth services.	☐	☐	☐	☐	☐
8. I don't know how to get telehealth care.	☐	☐	☐	☐	☐
9. I would get better care if I see my provider in person.	☐	☐	☐	☐	☐
10. I worry about the quality of communication with a provider using telehealth.	☐	☐	☐	☐	☐

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
11. I worry that the health care provider will not be sensitive to my needs.	☐	☐	☐	☐	☐
12. I worry about confidentiality of my private information being exchanged through telehealth.	☐	☐	☐	☐	☐
13. I worry about the continuity of care (i.e., I don't see the same provider every time).	☐	☐	☐	☐	☐
14. I am concerned that my primary care provider would not get my visit information.	☐	☐	☐	☐	☐
15. I don't know how to find telehealth services.	☐	☐	☐	☐	☐
16. I don't have the technology needed for telehealth visits.	☐	☐	☐	☐	☐
17. I think it would take longer to have a visit over telehealth than in person.	☐	☐	☐	☐	☐

BLOCK D

Thank you for taking the survey. If you would like to enter your email for a chance of winning 1 of 5 $50 Walmart electronic gift cards, please click the link below. This will take you to another web page that is totally unrelated to your responses of this survey. Therefore, your answers remain anonymous.
Have a nice day!
https://etsuredcap.etsu.edu/surveys/?s=KXYNMXRDWAMTP3CJ

Appendix C: Codebook

Section 1: Demographics

1) To which gender identity do you most identify?

a. Female (1)

b. Male (2)

c. Not listed (3)

d. Prefer not to answer (4)

2) What is your annual income?

a. Less than $50,000 (1)

b. $50,000 or above (2)

3) What is the highest degree or level of schooling you have completed?

a. No schooling completed through high school graduate/GED (1)

b. First year of college or above (2)

Section 2: Medical Mistrust Index

1) You'd better be cautious when dealing with healthcare organizations.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

2) Patients have sometimes been deceived or mislead by healthcare organizations.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

3) I trust that healthcare organizations will tell me if a mistake is made about my treatment.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

4) Healthcare organizations often want to know more about your business than they need to know.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

5) When healthcare organizations make mistakes they usually cover it up.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

6) Healthcare organizations have sometimes done harmful experiments on patients without their knowledge.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

7) The patient's medical needs come before other considerations at healthcare organizations.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

8) Healthcare organizations are more concerned about making money than taking care of people.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

9) Healthcare organizations put the patient's health first.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

10) Healthcare organizations don't always keep your information totally private.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

11) Patients should always follow the advice given to them at healthcare organizations.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

12) I typically get a second opinion when I am told something about my health.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

13) I trust that healthcare organizations check their staff's credentials to make sure they are hiring the best people.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

14) They know what they are doing at healthcare organizations.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

15) Sometimes I wonder if healthcare organizations really know what they are doing.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

16) Mistakes are common in healthcare organizations.

_1_ Strongly disagree

_2_ Disagree

_3_ Agree

_4_ Strongly agree

17) I trust that healthcare organizations keep up with the latest medical information.

_4_ Strongly disagree

_3_ Disagree

_2_ Agree

_1_ Strongly agree

Section 3: Technology Acceptance Model Questionnaire

1) Have you ever used telehealth?

a. Yes (Go to BLOCK B) (1)

b. No (Go to BLOCK C) (2)

BLOCK B

1) I was able to communicate adequately with the health care provider.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

2) I was comfortable that the health care provider was able to understand what was bothering me.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

3) I had difficult hearing the health care provider over the computer/mobile system.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

4) I had difficulty seeing the health care provider over the computer/mobile system.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

5) Telehealth made it easier to get medical care when I needed it.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

6) I would have gotten better care if I had seen the health care provider in person.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

7) Overall, I was very satisfied with telehealth visits.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

8) The next time I would prefer to see a health care provider in person despite the possible inconvenience.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

9) It was easy to arrange an appointment.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

10) It was convenient to receive care through telehealth.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

11) The health care provider dominated the conversation.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

12. The health care provider spent little time taking my medical history.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

13) There was less communication with the provider (than I normally receive in person) using telehealth.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

14) The health care provider was sensitive to my needs and concerns.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

15) I am satisfied with the care I received via telehealth.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

16) The health care provider who provided me care genuinely seemed to care about me.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

17) If I had the opportunity, I would use telehealth again.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

18) I felt like my privacy was invaded during the telehealth visit.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

19) I am worried about the confidentiality of my private information being exchanged through the telehealth visit.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

20) I am worried about the continuity of care (i.e., I don't see my same provider every time).

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

21) I am concerned that my primary care provider will not get my visit information.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

22) I am concerned that my insurance will not cover my telehealth visit.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

23) I generally use telehealth when my provider isn't open (e.g., after hours, holidays, etc.)

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

24) I generally use telehealth when I feel too sick to leave the house.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

25) I have used telehealth because I didn't feel like my condition was too urgent.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

26) I have used telehealth because I didn't want to infect (cold, flue, etc.) other people in a waiting room.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

27) I have used telehealth because I didn't want to get infected in the waiting room by other people (cold, flu, etc.).

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

28) It is easy to get in to see my primary care provider.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

29) I would recommend telehealth services to others.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

30) The quality of care through telehealth is excellent.

_5_ Strongly agree

_4_ Agree

_3_ Neutral

_2_ Disagree

_1_ Strongly disagree

31) I am worried about the accuracy of the information from the telehealth health care provider.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

BLOCK C

1) It is easy to get into my primary care provider.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

2) I prefer going to walk-in clinics.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

3) I am unsure if my insurance covers these visits.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

4) I am worried about the ability to communicate adequately with the health care provider.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

5) I think I would get better care in person.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

6) I don't have very good internet.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

7) I am not technologically savvy enough to use telehealth services.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

8) I don't know how to get telehealth care.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

9) I would get better care if I see my provider in person.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

10) I worry about the quality of communication with a provider using telehealth.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

11) I worry that the health care provider will not be sensitive to my needs.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

12) I worry about confidentiality of my private information being exchanged through telehealth.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

13) I worry about the continuity of care (i.e., I don't see the same provider every time).

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

14) I am concerned that my primary care provider would not get my visit information.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

15) I don't know how to find telehealth services.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

16) I don't have the technology needed for telehealth visits.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

17) I think it would take longer to have a visit over telehealth than in person.

_1_ Strongly agree

_2_ Agree

_3_ Neutral

_4_ Disagree

_5_ Strongly disagree

VITA

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Publications: “Telehealth acceptance among Appalachian respondents during

COVID 19: A secondary data analysis." Online Journal of Rural Nursing and Health Care, 22(2), 43-65. https://doi.org/10.14574/ojrnhc.v22i2.715

Presentations:

"Elderly Perception & Use of Telehealth/Telemedicine: A Scoping Review." Rural Health Association Conference. Poster Presentation. Pigeon Forge, Tennessee. November 2022.

"Outsider: A Concept Analysis Using Rodgers' Evolutionary Model." Rural Health Association Conference. Poster Presentation. Pigeon Forge, Tennessee, November 2020.

"Student Reflections of Interprofessional Education among Physician Assistant, Nursing, and Pharmacy Students Utilizing Human Patient Simulation,". ASHP Preceptors Conference. Poster Presentation. Washington, DC. August 2016.

Media Appearances:

"If Dreams Were Lightning: Rural Healthcare Crisis". Gigantic/Noruz Films Production. Contributor & Interviewee. Filmed 2021. Public Broadcasting Service. Premiered January 10, 2024.