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Telemedicine Perception: An Identification and Evaluation of Factors Contributing To The Use of Telemedicine Services

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TELEMEDICINE PERCEPTION: AN IDENTIFICATION AND EVALUATION OF FACTORS CONTRIBUTING TO THE USE OF TELEMEDICINE SERVICES

by

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ABSTRACT

A morbidity and mortality report made by the Centers for Disease Control (CDC) on the impact of telehealth services during the COVID-19 pandemic throughout 2020 noted several instances in which telemedicine tools had contributed to improved patient outcomes, including: increasing the availability of care to patients otherwise left with little access to health care, decreasing unnecessary patient visits, and reduced disease exposure to patients and staff directly at risk (CDC, 2020).

As the utilization of telemedicine becomes more important and prevalent in U.S. health care systems, it is important to recognize factors that inhibit patient usage. Factors such as inadequate access to electronic tools, the internet, education on telemedicine program use, and personal preference in health care management can affect how patients participate in telemedicine. The purpose of this DNP project was to identify and analyze the different factors that affect telemedicine use among adult participants utilizing a questionnaire created by the researcher. The questionnaire was made available to two locations for convenience sampling: The University of Southern Mississippi (USM) Nursing College student email list via direct online hyperlink, and a specialty clinic in Hattiesburg, Mississippi via paper copies and QR code signage linked to the questionnaire online.

Improving health care systems such as patient telemedicine use can positively impact patient health outcomes through improved health care access. Providers, health care organizations, and other interested parties can improve patient participation through individualized promotion and education on the use and benefits of telemedicine by recognizing factors that impact telemedicine use. Providing a self-completed

questionnaire for patients evaluating telemedicine perception, access, and use can provide adequate data to improve patient-centered approaches to telemedicine participation.

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DEDICATION

I would like to dedicate my doctoral project to my husband, John Conerly Lewing, and our cats Charlie, Lu, and Kit. You stood by me through the good and bad, and all manners of situations in between; for that, I will always cherish and love you.

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LIST OF ABBREVIATIONS

CDC	Centers for Disease Control
CHNA	Community Health Needs Assessment
FGH	Forrest General Hospital
IRB	Institutional Review Board
RN	Registered Nurse
TAM	Technology Assessment Model
TUQ	Telehealth Usability Questionnaire
TAQ	Telemedicine Acceptance Questionnaire
U.S.	United States
USHHS	Department of Health and Human Services
USM	The University of Southern Mississippi

CHAPTER I - INTRODUCTION

Health care can be improved by assessing the presence and importance of factors that lead to participation or non-participation in telehealth services. Adjustments to facility promotion and patient education on the use of telemedicine portals can be made to increase positive patient health outcomes in the future. The identification of these factors can directly influence how telemedicine programs are developed and promoted. Low-participation patient populations can also be identified for specialized education on how to utilize these programs.

The distinction between the term *telehealth* and *telemedicine* are important to the basis of this project paper. The two are commonly interchangeably used when discussing electronic health care services for patients and providers. “Telehealth,” may be used to refer to any technologies involving telecommunication to support health care, while “telemedicine,” is often used during reimbursement for Medicare and Medicaid to refer to the services of direct communication between patient and health care provider (Chaet et al., 2017). For the purposes of understandable terminology, the term *telemedicine* will be used most often to refer to both throughout this scientific paper.

Background and Significance

A morbidity and mortality report made by the Centers for Disease Control (CDC) on the impact of telemedicine services during the COVID-19 pandemic throughout 2020 detailed several instances in which electronic health care tools contributed to improved patient outcomes. The improved outcomes included increasing the availability of care to patients with limited access, decreasing unnecessary patient visits, and reducing disease

exposure to patients and staff directly at risk (CDC, 2020). The CDC (2020) reports the uptick of telemedicine usage in the following quote from the report:

> During the first quarter of 2020, the number of tele-health visits increased by 50%, compared with the same period in 2019, with a 154% increase in visits noted in surveillance week 13 in 2020, compared with the same period in 2019. During January–March 2020, most encounters were from patients seeking care for conditions other than COVID-19. (n.p.)

This sharp increase in the successful use of telemedicine services for diseases other than COVID-19 indicates a necessity for researching better ways to utilize telemedicine or encourage patients to use telehealth services or telemedicine portals, especially in the elderly with high rates of treatable comorbidities and multimorbidity (Vu, 2011).

This problem of interest is relevant due to perceived lack of participation in online technology in certain populations, such as low-income and elderly (Maier et al., 2011). Using a survey-based cohort study conducted within the clinic setting and available online regarding telemedicine use would ideally provide the information needed to address factors that deter telemedicine use among populations involved in the study. With the high incidence of telemedicine use within the past three years due to the COVID-19 pandemic, the growing number of the elderly population in the U.S., and the high incidence of comorbidities that require increased health care attention within the elderly and low-income populations, barriers must be identified regarding the use of telehealth and telemedicine services (Syed et al., 2013).

Problem Description and PICOT

Most health care facilities utilizing a telemedicine portal encourage nurses and staff to teach patients the importance of enrollment and use for continued health maintenance. Despite the recent need for telemedicine throughout the COVID-19 pandemic, certain patients remain reluctant to participate. Data on the disparities in telemedicine usage among adults remains infrequent. The creation of this study was due to concern for, "Barriers...borne disproportionately by socioeconomically and medically disadvantaged patient populations," leading to decreased access to telemedicine services for low-income and elderly populations (Chang et al., 2021, p. 343).

Discovering factors that contribute to non-participation in telemedicine portals may later influence ways to raise patient's confidence in using telehealth. Several studies have also noted that factors other than fear may contribute to the rejection of internet-based technology, such as access to the internet, ownership of internet-capable devices, and socioeconomic factors such as education level or financial background (Maier et al., 2011). Creating and utilizing a questionnaire to assess the factors listed above can serve as a health systems improvement and contribute to future adjustments on patient education, telemedicine portals, or public health outreach to improve patient health outcomes. The interest of factors that can influence a patient's choice to utilize telemedicine led to the creation of the PICOT of this research project: In providing a questionnaire (I) over 14 days (T), what are identifiable factors contributing to non-participation in telemedicine (O) and their importance (C) among random participants over the age of 18 (P)?

Available Knowledge

A 2019 Community Health Needs Assessment report conducted by Forrest General Hospital (FGH), a prominent health care facility within Forrest County, indicates that the top three health risk factors noted were on the highest causes of death for Forrest County and Lamar County were Heart Disease, Cancer, and chronic lung diseases (Forrest General Hospital [FGH], 2019). The CHNA also notes that a large contribution to health disparities among rural communities in Forrest and Lamar County are from lack of available health care, including specialty and sub-specialty medical services that are unlikely to be readily available rural communities than larger populated areas (FGH, 2019). Populations with high comorbidities like the elderly and low-income populations require more frequent and attentive care, which can be improved through telemedicine use.

Population aging is a growing phenomenon within most western countries, with the U.S. Census Bureau reporting over the next 20 years, the number of adults aged 65 and older is predicted to grow from 40 million as of 2010 to "nearly 72 million in 2030 and more than 81 million in 2040," (Nikou, 2015, p. 295). As these patients age, health care costs increase unless combated with efficient tools or programs to aid in disease prevention. Given the rising incidence of population aging and the cost of associated health care maintenance, it would be beneficial to find ways of engaging the elderly in the use of electronic health care portals to help manage their care and save in the cost of treatments through disease prevention, as well as early detection and treatment, that comes along with faster health care provider interaction within these portals (King et al., 2013).

Telemedicine can serve as an intervention in low-income populations to aid in the improvement of community health through effective teaching and promoting health literacy among patients. In 2013, the U.S. Census Bureau reported that 46.7 million U.S. citizens were impoverished. Low income can directly affect lifestyle factors such as stress and education level, access to nutritious food, adequate housing, physical recreation facilities, and health care. Through this negative effect on lifestyle factors, low income is often correlated with a higher incidence of chronic illness and lower life expectancy. Better health outcomes have been directly linked to content tailoring and improved health education (Schaffler et al., 2018).

Needs Assessment

More research is needed regarding the factors contributing to patient participation in telemedicine to adjust how health care facilities promote the use of telemedicine among high-risk patient populations. The elderly population's high incidence of co-morbidities makes their population a key stakeholder in the health care field and population health initiatives (Vu, 2011). The U.S. Census Bureau reports that as of July 1, 2021, the total population of Forrest County was 77,875. Of this total, 14.1% were reported to be 65 years old or older, or 10,980 elderly residents within Forrest County (U.S. Census Bureau, 2021a).

Other key stakeholders in this project are low-income populations due to the increased risk for comorbidities due to limited access to health care or self-management skills (Schaffler et al., 2018). In 2019, the poverty rate for Forrest County was 24.9%, or 19,390 residents (U.S. Census Bureau, 2021a). Discovering factors that deter patients from participating in telemedicine from the convenience samples utilized in this study

located in Forrest County, Mississippi may later contribute to data comparable to the overall U.S. population.

Synthesis of the Evidence

Through searching within Cochrane Library, *Google Scholar* databases, as well as the U.S. Census Bureau website, literature was found to support this theory. Searches for this project were performed with the following keywords and phrases: telemedicine, telemedicine, elderly and telemedicine, telemedicine use in the elderly, elderly population statistics in Mississippi, poverty statistics of the Southern U.S., public Internet access in South Mississippi, Telemedicine Insurance benefits, Telehealth outreach and promotion, Mississippi census 2018-2022, Elderly census of the U.S., telehealth uses nation-wide, national telemedicine programs, economic benefit of telemedicine use, Forrest County population statistics, Forrest County poverty rate, socioeconomic impact of telehealth, fear of technology, technology fear, COVID-19 telehealth usage report, impact of telemedicine during COVID-19 pandemic. All searches were performed in English and included the years 2009-2022. Initial searches yielded over 17,000 results; the search was then refined to include full text only between the years 2011-2020, published in peer-reviewed journals, and were not excluded based on research design or outcomes. An issue the researcher found is a lack of research pertaining to the use of telehealth in South Mississippi, or Forrest County specifically, in which the project was held and the socioeconomic demographics of nursing students, which is a sample pool utilized in this study.

Factors Contributing to Barriers in Telemedicine Use

In an organizational study comparing health care visit interactions in a 4-week period: Two weeks before telemedicine implementation in comparison to two weeks after implementation, it was found that populations at increased risk for limited Internet access or literacy decreased in visit participation significantly. The patient group with the highest rate in decreased visitation with their provider was 65 years old or older, who were non-English language speaking primarily (Nouri et al., 2020). Barriers recognized in telemedicine through this study included: no interpreter provided, requiring a patient portal to access, and inflexible approaches to technical issues when scheduling telemedicine visits (Nouri et al., 2020).

Comparable to the U.S. in their growing elderly population and advancement in electronic health care portals and Telemedicine use, China experiences their own barriers regarding dispassion for Telemedicine and Telehealth among the elderly population (Zhou et al., 2019). Using the Technology Acceptance Model, Zhou et al. (2019) reports that elderly patients place greater emphasis on quality of care, rather than accessibility, and should be considered when encouraging elderly patients to participate in Telemedicine or Telehealth portals. Statistical analysis of data in a retrospective cohort study conducted to analyze the barriers to telehealth use among underprivileged and minority populations in an area capable of utilizing telehealth revealed that inequalities in telehealth persist due to a multitude of socioeconomic factors such as financial and educational limitations (Jaffe et al., 2020).

A meta-analysis of research studies in 2021 on high-risk populations involvement in telemedicine before and after the COVID-19 pandemic suggests that health literacy is

affected by the patient's level of education, age, or socioeconomic status. "Studies have found that older adults, low-income patients, less-educated patients, and those with chronic conditions are less likely to use video-enabled telehealth, even when given the option." (Chang et al., 2021, p. 343). Involvement in telemedicine improved marginally after the COVID-19 pandemic due to necessity (Chang et al., 2021). In a multi-organizational, clinician-led interview study in rural health care, a positive aspect to telemedicine that patients mentioned included access to care not involving travel. Because of distance restrictions due to access in transportation, risk for long travel in the elderly, and financial limitations for lower-income patients, patients found telemedicine useful and innovative (Potter et al., 2016).

Internet Access in Low-Income Populations

The U.S. has placed initiatives on greater accessibility to the Internet to underserved or impoverished areas through its investments in improving Internet infrastructure. Through this increase in investment in Internet access, evidence has suggested that the increase in Internet access in underserved areas has improved and was successful. This increased access decreases the cost of commercial providers and increases the adoption of the Internet locally (Ma & Huang, 2014).

Even with increased access to the Internet, some low-income populations still have trouble utilizing it. Interviews with 72 individuals described as low-income in a non-metropolitan, Midwestern U.S. town revealed that almost all have or had used the internet, but frequently experienced barriers such as: frequently interrupted internet services, outdated technology, and limitations to access public sources to the internet such as libraries (Gonzales, 2015). These barriers increased the incidence of limited

access to employment and health care and resulted in negative attitude toward technology (Gonzales, 2015).

Potential Benefits to Telemedicine Use in Elderly Populations

An analysis made on data obtained between 2007 and 2010 on the nation's health and nutrition, specifically targeting the Baby Boomer population, revealed, "U.S. baby boomers have higher rates of chronic disease, more disability, and lower self-rated health than members of the previous generation at the same age" (King et al., 2013, p. 386). Telehealth may prove beneficial in assisting with lowering overall health care costs due to increased healt care intervention options and promoting beneficial interactions among a rapidly growing population of elderly with multiple comorbidities (Syed et al., 2013). Telemedicine, as supported by the COVID-19 pandemic, has proved to be an invaluable tool in protecting the health of the general public as well as individual patients, especially the elderly, due to limited physical exposure between patients and/or health care workers as reported by the CDC a morbidity and mortality report made on the impact of telehealth services during the COVID-19 pandemic (CDC, 2020).

According to authors Syed, Gerber and Sharp (2013), a meta-analysis of 61 studies revealed that transportation remains a significant barrier to elderly patients in pursuing health care management, especially lower-income or uninsured elderly patients. These authors also point out the impact of cost regarding transportation to and from in-person health care visits for routine health maintenance (Syed et al., 2013). Intervention via telemedicine use among the elderly could hold potential in the reduction of financial strain caused by transportation issues, as well as negative medical outcomes due to inability to consistently acquire transportation for health care visits.

Potential Benefits to Telemedicine Use in Low-Income Populations

In a study involving individual interviews with clinicians participating in a local health care organization's telemedicine program, patients were positive in their reception of the services. "...patients appreciated immediate access to the regional hospital's resources and felt more comfortable that they were receiving the best possible care. Some interviewees noted that telemedicine provided language translation services are not available in most rural communities" (Potter et al., 2016, p. 3).

Options for studying telemedicine perception and use.

An analysis search in PubMed and analyzed through descriptive statistics revealed that both the TAM model and the Telemedicine Acceptance Questionnaire (TAQ) were the most widely used and universally accepted forms of study among telehealth and telemedicine researchers (Hajesmaeel & Bahaadinbeigy, 2021; Weaver et al., 2021). Authors King and He explain that "TAM involve(s) two primary predictors— perceived ease of use (EU) and perceived usefulness (U) and the dependent variable behavioral intention (BI), which TRA assumed to be closely linked to actual behavior. TAM has come to be one of the most widely used models in IS, in part because of its understandability and simplicity." (King & He, 2006).

Portz and associates' (2019) state, "Understanding portal user interface and user experience (UI and UX) preferences of older adults with MCC may improve accessibility, acceptability, and adoption of patient portals" (p. 2). Portz (2019) found the Technology Assessment Model (TAM) appropriate in its assessment of user experience, intent to use, and behavior of use when conducting qualitative study on telemedicine use and utilization among the elderly due to their preferences in outcomes such as quality of

care and ease of use. The Telehealth Usability Questionnaire (TUQ) is also reported to be an efficient and reliable tool to assess the usability and functionality of telehealth programming that can be referenced to produce a questionnaire to assess elderly patient preferences and biases. Parmanto et al. (2016) explains that the TUQ provides a high validity and reliability when assessing desirable traits within telehealth programs among patients.

Rationale

Specific Aims

The specific aims of this project were to act as a needs assessment for a health care systems improvement by identifying factors that influence patients in the utilization of telemedicine for health maintenance needs. Factors such as fear, financial barriers, user interface comfort, and technological literacy and access were identified through the created questionnaire provided for participants. A short-term goal of this project involved bringing awareness of telehealth availability and use to participants in this study; a long-term goal is to utilize the data obtained to help develop provider-oriented educational materials to help increase patient education on the benefits of telehealth in their long-term health care management. The rationale behind this project was to provide information on the needs assessment associated with patients' feelings and experience with telehealth, and how they impact participation.

Theoretical Framework

Technology Maintenance served as the theoretical framework for this DNP project. Technology maintenance poses the argument that a digital divide among socioeconomic classes can exist that increases the inability to stay connected through a

variety of barriers. Inconsistent access, continued technological advance, and technological maintenance serve as barriers for low-income and technologically illiterate persons, which require governmental and organizational intervention to promote inclusiveness as technology evolves (Gonzales, 2017).

Technology maintenance theory also investigates the issue where "...although most of the U.S. poor now use digital technology, access is unstable and characterized by frequent periods of disconnection... As a result, participants had limited access to health information and employment, and biased attitudes toward technology" (Gonzales, 2015, p. 234). The purpose of this project is to identify factors that affect patients' access to telemedicine, as well as their perception of telemedicine, which is heavily affected by technological literacy and Internet access.

Doctor of Nursing Practice Essentials

Several Doctor of Nursing Practice (DNP) Essentials were met during the completion of this project. Essential I: Scientific Underpinnings for Practice; this project utilized current evidence-based literature related to the clinical question presented by the researcher. Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking; this project focused on a target population to assess and meet the needs of the population studied. Essential III: Clinical Scholarship and Analytic Methods for Evidence-Based Practice; this project utilized knowledge from diverse disciplines related to the clinical issue addressed. Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care; this project aimed to improve patient participation in telehealth use by providing data to improve information technology in health care as a whole. Essential VII: Clinical

Prevention and Population Health for Improving the Nation's Health; this project addressed a clinical issue from a population health perspective with the intent to improve health care systems' function (Zaccagnini & Pechacek, 2021).

Summary

By creating and utilizing a questionnaire to assess factors that effect a person's participation in telehealth services, adjustments to patient education, telemedicine programs, and public health outreach can be made to improve and promote positive health outcomes. Identification of the factors provided from this project's data can directly influence how telemedicine programs and instructions for use are created, as well as how a desired patient population can be reached for increased use of these programs.

CHAPTER II – METHODOLOGY

Population and Setting

The convenience sample included patients over 18 years of age visiting a specialty clinic in Southeast Mississippi and the student population of The College of Nursing and Health Professions at The University of Southern Mississippi. The physical research site sees, on average, 35 patients a day with most requiring surgical intervention and subsequent post-surgical medical treatment. The average patient age entering the site is 62, usually with one or more co-morbid conditions requiring long-term medical management. 566 e-mail addresses listed under The USM College of Nursing and Health Professions' student directory were used to send a link to the questionnaire, with the average age and comorbidities of the addressees unknown to the researcher.

The total number of patients who completed the questionnaire for participation in this study was 64, 63 online responses and one printed response from the research site. All 64 participant responses were included in this project. Inclusion criteria included patients over the age of 18 who have, or have not, utilized telehealth in the past. Exclusion criteria included patients under the age of 18 or those patients unable to complete the survey of their own cognizance.

Measures

An investigator-developed assessment tool was created and utilized during this quasi-experimental project design using qualities of several telehealth questionnaire tools such as the TUQ and TAQ questionnaires. The questionnaire involves ranking or discussing several factors for refusal to utilize electronic health care portals or telehealth. Among standardized questions on patient acceptance, the patient was also given

numerical options to rate the importance of each factor between zero and five, with zero being "not at all important," one being "somewhat important," two being "neutral or no opinion," 4 being "very important," and five being "most important." Several descriptive answer options were provided in open answer format to provide their reason for or against using telehealth or telemedicine portals for their health care needs.

A copy of the survey can be found in Appendix A and contains the following questions approved before implementation. As motivation for participating in the study, a gift card drawing was used as incentivization for participation, provided by the lead researcher. All information involving participant identifiers used in the reward drawing was compiled separately from the data obtained, keeping the participant's survey data confidential.

Analysis

The data analyzed for this project was obtained using Qualtrics© and a printed copy of the questionnaire available at the research site. The data obtained from the questionnaire, as listed in the measures of this project, represent both quantitative and qualitative results given by the participant. All quantitative questions included were within a multiple-choice or select-all-that-apply format. These quantitative questions were analyzed and translated into majority percentages based on the patient frequency of replies. Some questions within the survey allowed for qualitative feedback, which were analyzed via table formatting for better qualitative comparison. The goal of utilizing both qualitative and quantitative responses from patients was to provide participant insight into the emotional, financial, and socioeconomic factors that influence their utilization of telehealth portals, and each factors importance to the patient.

Ethical Considerations

The project was conducted after receiving approval from The University of Southern Mississippi Institutional Review Board (USM IRB); the project's IRB approval letter is provided in Appendix E (Protocol #22-237). Permissions from authorities over the participating facility were also obtained, and a letter of site participation is provided in Appendix C. Confidentiality was maintained by the researchers and designated staff handing data relevant to this project within the participating facility via a password-protected file on a secure computer. The information utilized in the data of this research project did not include participant names or personal identifiers. Safety was ensured throughout this project by keeping the subjects of the questionnaire confidential from the researcher and anonymous from the participating site by excluding names among the information gathered. Completed documents were not gathered until the end of the project sampling period of 14 days.

Any digital copies of the data will be destroyed after transcription and within 6 months of study completion. Only the researcher and coordinating committee members have access to the raw data obtained from this project. Feedback from the agency will be given throughout the course of the project to keep in communication with research efforts. A summary of the data compiled, after analysis, will be given to the facility. All patients consented to the participation of the survey and were informed that any personal data obtained for the gift card drawing was not included in the survey via statement prior to patient providing personal data. A copy of the statement of anonymity and information on the drawing was included in the participant consent form found in Appendix D.

Project Timeline

In October 2021, Chapters I and II were presented to the committee chair and members. In November 2021, the lead investigator completed the proposal presentation and proposed the project. After obtaining approval, the lead investigator for the project reached out to the chosen research site for project site approval via email to the site manager, site administrator, and site HR. In February 2022, project site approval was obtained via letter. In June, the lead investigator submitted project approval forms to the university's IRB, with approval obtained in July for project implementation.

The intervention, a questionnaire, was released on August 8th, 2022, and concluded on August 26th, 2022. In September, all data was collected and analyzed. September 10th, 2022, a random drawing for project participants was held for a participating incentive, a $100.00 VISA gift card, and the winner was contacted via e-mail. September 12th, 2022, the incentive was mailed to the chosen project participant with receipt for delivery via the U.S. Postal Service.

Summary

Study participants provided information regarding their perception and preferences for telehealth visits that were utilized to help the researcher gather information on patient participation and satisfaction pertaining to telehealth services. This information will aid in compiling information to better understand patient perceptions and preferences of telemedicine services for future endeavors. A goal of better understanding these factors is to help improve future telehealth visit participation and ensure that these services will continue to be available for patients.

Evidence-based research guided the formation of the survey tool and was submitted and subsequently approved by the USM IRB. A panel of experts was provided with a copy of the questionnaire, as well as the participating research site. All data from the questionnaire was organized and analyzed to evaluate and transcribe patient responses. All personal data provided by the patient for the gift card drawing was immediately destroyed following the drawing.

CHAPTER III - RESULTS

A mass e-mail was sent to all addresses listed under The USM College of Nursing and Health Professions' student directory by a faculty member in student services on behalf of the lead investigator. The mass e-mail contained a URL link as well as a QR code link to the project questionnaire. Fifty printed copies of the questionnaire were made available at the research site, along with promotional materials containing the same QR code link utilized in the mass e-mail. Qualtrics© was utilized for questionnaire publishing, participant use, and afterward in data analysis by the lead investigator. The total number of participants who received a link through the mass e-mail is unknown; 62 participants completed the questionnaire via the questionnaire link in the mass e-mail. Out of the 50 printed copies available at the research site, one was completed in its entirety. One participant utilized the QR code available in either the mass e-mail to the student body or the research site.

All project participants met the inclusion criteria of being over the age of 18 and were able to complete the questionnaire in its entirety. Of the 64 participants, 38 were within the 18-29 age group (59.37%). Eighteen participants were within the 30-49 group (28.12%), while eight participants were within the 50-69 age group (12.50%). No participants reported being 70 years of age or older. Of the 64, 57 participants (89.06%) reported Mississippi as their state of residence, five participants (7.81%) were from Louisiana, and five participants (7.81%) offered variable states as their state of residence via the fill-in-the-blank portion. On reports of ethnicity, 15 participants (23.44%) were African American, and 44 (68.75%) were White. Other ethnicities chosen by participants were 2 (3.12%) Hispanic/Latino and one (1.5%) Asian participants. The fill-in-the-blank

option was utilized twice (3.12%) for variable ethnic input. Of the total participants, 17 (26.56%) reported their gender as male, with the remaining 47 (73.44%) identifying as female. Participant demographics are represented in Table 1 below.

Table 1

Participant Demographics

Age	Single Choice	
	Percentage	Number
18-29	59.37%	38
30-49	28.12%	18
50-69	12.50%	8
70+	0.00%	0
	Total:	64
State of Residence	Single Choice	
	Percentage	Number
MS	89.06%	57
LA	7.81%	5
Other	7.81%	5
	Total:	64
Ethnicity	Single Choice	
	Percentage	Number
White	68.75%	44
Black	23.44%	15
Latino	3.12%	2
Asian	1.56%	1
Other	3.12%	2
	Total:	64
Gender	Single Choice	
	Percentage	Number
Feale	73.44%	47
Male	22.56%	17
Other	0	0
	Total:	64

Socioeconomic factors were also evaluated in the questionnaire. Of the 64 participants asked about their household income after taxes, not including governmental benefits, many participants reported an income over $55,000 per year at 30 participants (46.87%), 17 participants (26.56%) reported their income as less than $10,500 per year, three (4.69%) reported between $10,500-25,000 per year, two (3.12%) reported between $25,000-35,000 per year, five (7.81%) between $35,000-45,000 per year, and seven participants (10.94%) reported an income between $45,000-55,000 per year. Participants also reported what insurance they held. Private and commercial insurance options were reported the most, with 31 (48.4%) and 19 (29.7%) participants respectively. Seven of the 64 participants (10.9%) reported no insurance or cash-paying, two (3.1%) reported being enrolled in Medicare, and five (7.8%) reported enrollment in Medicaid. Participant socioeconomic background are represented in Table 2 below.

Table 2

Socioeconomic Background of Participants

Household income (yearly)	Single Choice	
	Percentage	Number
< $10,500 per year	26.56%	17
$10,500-25,000	4.69%	3
$25,000-35,000	3.12%	2
$35,000-45,000	7.81%	5
$35,000-45,000	7.81%	5
$45,000-55,000	10.94%	7
$55,000+	46.87%	30
	Total:	64
Insurance	Single Choice	
	Percentage	Number
Private	48.44%	31
Commercial	29.69%	19
Medicare	3.12%	2

Table 2 (continued).

Medicaid	7.81%	5
None	10.94%	7
	Total:	64

Participants were asked to report on the availability of technology to them for telehealth use. A select-all-that-apply option was given to report what internet capable device(s) the patient had access to. All participants (100%) reported owning a smartphone. Of the total number of participants, 35 (54.69%) reported owning a tablet; 63 participants (98.44%) reported owning a personal computer; 17 participants (26.6%) reported utilizing a public computer (i.e., a public library). No participants (0%) reported not having internet-capable device available to them. Participants asked if their internet service is reliable enough to utilize telehealth reported: Yes, 56 participants (87.5%); No, two participants (3.12%); and five participants (7.81%) reported "mostly reliable" internet service. One participant reported they did not have internet services reliable for telehealth usage (1.56%). When asked on the participant's comfort level with utilizing technology, 50 (78.12%) chose "Extremely comfortable," 13 (20.31%) chose "Somewhat comfortable," one (1.56%) chose "Neither." No participants (0%) chose "Somewhat uncomfortable," or "Extremely uncomfortable." Participant technology usage and familiarity is reported in Table 3.

Table 3

Participant Technology Familiarity and Usage

Internet-capable Device available	Select All That Apply	
	Percentage	Number/Total Participants
Smartphone	100%	64/64
Personal Computer	98.44%	35/64
Tablet	54.69%	63/64
Public Computer	26.56%	17/64
None	0%	0/64
Reliable Internet access	Single Choice	
	Percentage	Number
Yes, reliable	87.5%	56
No, unreliable	3.12%	2
Mostly reliable	7.81%	5
No internet	1.56%	1
	Total:	64
Technology comfort level	Single Choice	
	Percentage	Number
Extremely comfortable	78.12%	50
Somewhat comfortable	20.31%	13
Neither	1.56%	1
Somewhat uncomfortable	0%	0
Extremely uncomfortable	0%	0
	Total:	64
Internet-capable Device available	Select All That Apply	
	Percentage	Number/Total Participants
Smartphone	100%	64/64
Personal Computer	98.44%	35/64
Tablet	54.69%	63/64
Public Computer	26.56%	17/64
None	0%	0/64
Reliable Internet access	Single Choice	
	Percentage	Number
Extremely comfortable	78.12%	50
Somewhat comfortable	20.31%	13

Table 3 (continued).

Neither	1.56%	1
Somewhat uncomfortable	0%	
Extremely uncomfortable	0%	0
	Total:	64

All participants were also questioned on aspects of telehealth that may influence participation. When asked if participants knew if their facility provided an option for telehealth visits 44 participants (68.75%) reported yes, and 20 participants (31.25%) reported no. A majority of participants, 53 of the 64 total (82.81%), reported that they currently have an electronic health care account such as IRIS, MyChart, etc.; seven participants (10.94%) reported not having an account, and 4 (6.25%) reported: "I don't know." When asked, "How comfortable are you with the idea of following instructions for the process of logging in for a telehealth visit with your provider?" 47 of the 64 participants (73.43%) chose "Extremely comfortable," 16 participants (25%) chose "Somewhat comfortable," and one (1.6%) participant chose "Neither." No participants (0%) chose "Somewhat uncomfortable," or "Extremely uncomfortable."

Participants were also asked who would be accessing their account on their behalf to participate in telemedicine visit, if needed. All 64 participants (100%) chose "Myself," no (0%) participants chose "A family member would help me," or "A friend/neighbor would help me." No participants (0%) chose the option of not utilizing telehealth. When asked on how likely the participants were to try to use telehealth in the future, 30 of the 64 (46.87%) chose "Extremely likely," 27 participants (42.19%) chose "Somewhat likely," six participants (9.37%) chose "Not likely," and one participant (1.56%) chose

"Somewhat unlikely." No participants (0%) chose "Extremely unlikely." Participant telehealth usage and comfortability is reported in Table 4.

Table 4

Participant Telemedicine Usage and Comfort

Awareness of telemedicine portal/app availability of health care facility	Single Choice	
	Percentage	Number
Yes	68.75%	44
No	31.25%	20
	Total:	64
Has telemedicine account	Single Choice	
	Percentage	Number
Yes	82.81%	53
No	10.94%	7
Unsure/ "I don't know."	6.25%	4
	Total:	64
Comfort level with Telehealth instructions	Single Choice	
	Percentage	Number
Extremely comfortable	73.43%	47
Somewhat comfortable	25%	16
Neither	1.56%	1
Somewhat uncomfortable	0%	0
Extremely uncomfortable	0%	0
	Total:	64
Person accessing account for your appointments	Single Choice	
	Percentage	Number
Myself	100%	64
A family member's help	0%	0
A friend/neighbor's help	0%	0
Would not use telehealth	0%	0
	Total:	64
Would use telehealth in the future	Single Choice	
	Percentage	Number

Table 4 (continued).

Extremely likely	46.87%	30
Somewhat likely	42.19%	27
Not likely	9.37%	6
Somewhat unlikely	1.56%	1
Extremely unlikely	0%	0
Awareness of telemedicine portal/app availability of health care facility	Single Choice	
	Percentage	Number
Yes	68.75%	44
No	31.25%	20
	Total:	64
Has telemedicine account	Single Choice	
	Percentage	Number
Yes	82.81%	53
No	10.94%	7
Unsure/ "I don't know."	6.25%	4
	Total:	64
Comfort level with Telehealth instructions	Single Choice	
	Percentage	Number
Extremely comfortable	73.43%	47
Somewhat comfortable	25%	16
Neither	1.56%	1
Somewhat uncomfortable	0%	0
Extremely uncomfortable	0%	0
	Total:	64
Person accessing account for your appointments	Single Choice	
	Percentage	Number

The last question required the participant to evaluate factors contributing to not utilizing telehealth services from "Not important" to "Most important," via a value scale. Participant responses to "Most Important" factors that affect their choice in not utilizing telehealth are detailed below in Figure 1. This figure is based on the responses of all 64

participants, with some not choosing a factor in the “Most important” category at all, presumably due to familiarity and comfort with telehealth.

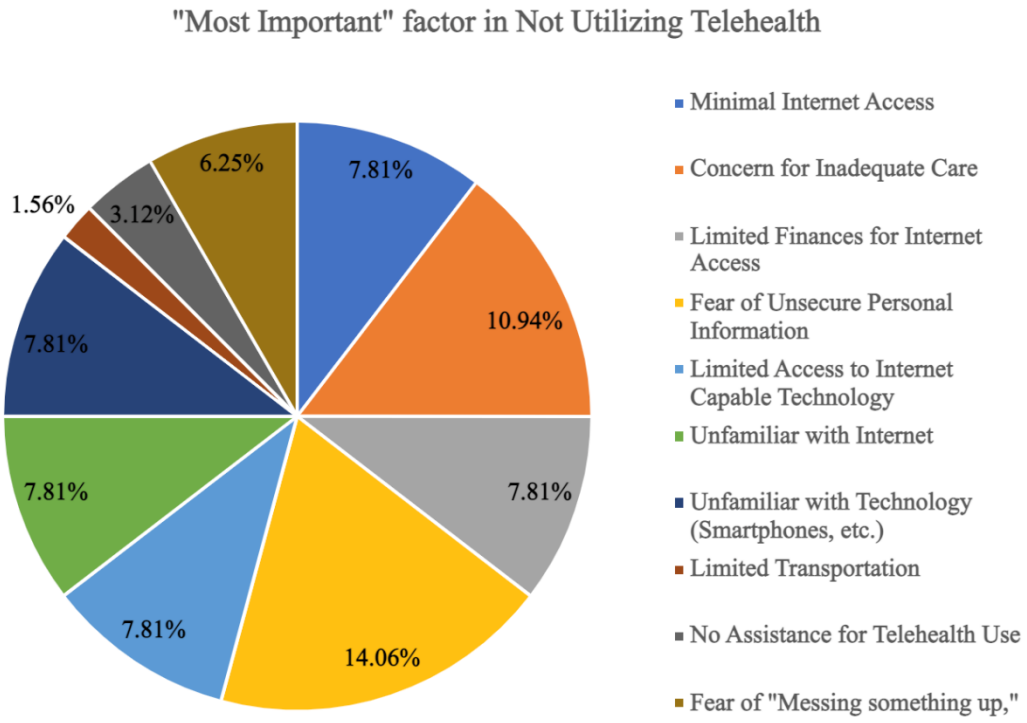

Figure 1. “Most Important,” Factor in Not Utilizing Telemedicine

Participants rank the most important factors affecting their decision to not utilize telemedicine.

Summary

Most participants (98.4%) accessed the questionnaire online via a link provided through e-mail. Forty-seven participants (73.4%) identified as female. The age group largely represented in this study was the 18-29 age group with 59.4% of the participation value, while the lowest participation value group was the 50-69 age group with 12.5%. 89% of participants reported Mississippi as their state of residence, in which the study took place. Fifteen participants (23.4%) were African American, and 44 (68.7%) were

White. 46.9% of participants reported an income over $55,000 per year. Private insurance was reported the most with 31 participants (48.4%).

The internet-capable devices most reported to be utilized by the participants were smartphones (100%), personal computers (98.4%), and tablets (54.7%). Fifty-six of the total number of participants (87.5%) replied "Yes," when asked if their internet service is reliable enough to utilize telehealth. Fifty participants (78.1%) stated they were "Extremely comfortable," with utilizing technology, while thirteen (20.3%) chose "Somewhat comfortable." All participants (100%) stated that when using telehealth services, they would access their account without help. When asked on how likely the participants were to try to use telehealth in the future, 30 participants (46.9%) chose "Extremely likely," while 27 participants (42.2%) chose "Somewhat likely."

The last question required the participant to evaluate factors contributing to not utilizing telehealth services from "Not important" to "Most important," via a value scale. The two highest reported participant responses to "Most Important" factors that affect their choice in not utilizing telehealth were: fear of unsecure personal information (14.06%), and concern for inadequate care (10.94%). Limited finances, minimal Internet access, Internet unfamiliarity/illiteracy, limited access to Internet capable technology, and technology unfamiliarity/illiteracy were all moderate concerns at 7.81% each. Minimal concern was given for ranking telehealth assistance availability, fear of "messing something up," or limited access to transportation.

CHAPTER IV – DISCUSSION

Identifying and analyzing factors that contribute to patient participation and perception of telemedicine may later influence ways to address barriers to its use that patients experience. Several studies have also noted that several factors may contribute to the rejection of internet-based technology, such as: fear of technology, inadequate Internet access, ownership of Internet-capable devices, and socioeconomic factors such as education level or financial background (Maier et al., 2011). Creating and utilizing a questionnaire to assess these factors can contribute to future patient education, telemedicine portal development, or public health outreach programming to increase telemedicine participation among desired patient populations.

Interpretation

After evaluating the participant's responses, the results of this study indicated that most participants were already familiar with the Internet, Internet-capable technology, and telemedicine services, with the financial security and adequate tools to do so. 48.4% of participants reported having private insurance, and 29.7% reported having commercial insurance options. When asked if participants knew if their health care facility provided an option for telehealth visits 68.75% reported yes, and 31.25% reported no. Approximately eighty-three percent of participants reported that they currently have an electronic health care account for telemedicine visits, 10.94% reported not having an account at all, and 6.25% reported that they were unsure if they had been enrolled in a telemedicine account. One hundred percent of participants reported that they would be the ones accessing their telehealth account without help. Approximately eighty-nine

percent of participants were likely to use telemedicine visits in the future, while 9.37% stated they were unlikely to utilize telemedicine visits in the future.

When participants were asked to rank the factors that are most important to influencing their choice to use telemedicine, the two highest reported participant responses were: fear of unsecure personal information (14.06%), and concern for inadequate care (10.94%). A higher ranking of unsecure personal information and concern for inadequate care as factors indicates a distrust in telemedicine security and health care quality in over 10% of the population in this research study. The data above is important in recognizing issues regarding telemedicine programs among patients, and how these concerns can be addressed in the future to improve participation.

The Department of Health and Human Services (USHHS) defines the Mississippi poverty rate as a one-person household with a yearly household income of or below $13,590 or a two-person household with a yearly household income of or below $18,500 (HHS, 2022). Analyzing the data from this study, and assuming the average participant of this study lives within a one- or two-person household: 26.56% of participants were reported to be within the poverty threshold and 73.44% above poverty threshold. The poverty rate for Mississippi is 19.4%; thus, this data is generally comparable to the general population of Mississippi with a ~7% difference (U.S. Census Bureau, 2021b).

There was limited information through scholarly searches on the ethnic and socioeconomic demographics of nursing students across the U.S. to compare this study's results. The 2020 National Nursing Workforce Survey revealed that the average age of RNs surveyed was 52 years old, with nurses 65 and older being the largest represented age group. Men represented 9.4% of RNs. 80.6% of RNs identified as Caucasian, 7.2% as

Asian, 5.6% as Hispanic, and 6.7% as Black (Carson-Newman University Online, 2022). Of the USM nursing student body who participated in this study, 59.37% were within the 18-29 age group, 28.12% were within the 30-49 group, and 12.50% were within the 50-69 age group. 68.75% of participants identified as Caucasian, 23.44% as African American/Black, and Hispanic/Latino as 3.12%. 26.56% participants were male, and 73.44% were female. The results of the convenience sample among USM College of Nursing and Health Professions' students in this study show a greater representation of males, minority students, students under the age of 50 than comparative information found on RNs in scholarly searches; thus, the data in this study cannot be directly compared to the US general population of RNs.

Limitations and Barriers

The results from this study are likely skewed due to the convenience sample originating primarily from the student body of The USM College of Nursing and Health Professions, which is a majority 18–29-year-old population. The results may also be influenced by the non-involvement of the elderly population at the research site, who would arguably benefit the most from telehealth usage due to age and likely presence of comorbidities (Syed et al., 2013; Vu, 2011). Limitations in this study included that 98.4% of participants utilized in the questionnaire online via mass e-mail link to the College of Nursing and Health Professions student body, limiting diversity in population. This lack of diversity in population is apparent as most participants were female (73.4%), white (68.7%), and 18-29 years of age (59.4%). Lack of diversity in participant population limits the comparison and application of the study results to the larger population of South Mississippi, or U.S.

Barriers to this project include a limited time frame of two weeks, limited signage at the research site due to site preference, and the use of convenience sampling in The USM College of Nursing and Health Professions' email listing for potential participants. Another important barrier to this project is that participants who would likely not utilize telemedicine may also be less inclined to participate in a study surrounding telemedicine use. Even though the study included several barriers and limitations, the data obtained can be included and considered in overall data on participation and perception of telemedicine among patients in South Mississippi.

Implications of Study

In discussing future implications of this study, sites would not be limited to one physical location, and the online questionnaire would be made available to a wider group of possible participants via broader promotion and multi-facility involvement. The results of this study revealed that younger populations with higher socioeconomic and financial status are likely to participate in telehealth usage. Results of this study also concluded that the highest concerns impacting telemedicine use are of unsecure personal information and a decrease in quality of care received. Possible stakeholders that could be impacted by this study are medical facilities utilizing electronic health care portals, hospital networks with rural facilities requiring telehealth usage, insurance agencies that promote telehealth usage, and federal, state, or local governments wishing to improve health maintenance of their communities via telemedicine or telehealth usage.

Conclusion

The purpose of this study was to identify factors that influence adult choices in not utilizing telemedicine. Socioeconomic factors such as Internet access, Internet-

capable technology ownership, previous access tools used, and financial status of participants were evaluated. Emotional factors such as technophobia, fear of unsecure personal information, and concern for quality of health care provided were also evaluated. Convenience samples of The USM College of Nursing and Health Professions' student body and a local specialty clinic in Hattiesburg, Mississippi were utilized. A questionnaire was made available online, via direct link, or by physical printed copies at the specialty clinic.

The data collected during this project indicated that almost all participants had utilized telehealth in the past and would do so again. The biggest factor contributing to participants not utilizing telehealth is fear of unsecure personal information during the use of telehealth and the concern for decreased quality of care. The study also revealed that participants were more likely to participate via a direct e-mail link, as the QR code and printed versions were only utilized once each out of the 64 participants. Participant financial status seemingly did not affect their use of telemedicine or access to the Internet or Internet-capable technology. The results from this study are skewed due to the convenience sample being primarily from the student body of The USM College of Nursing and Health Professions, which is a majority 18–29-year-old female population with a low-income status.

Doctor of Nursing Practice Essentials were met in this project through the creation of a needs assessment tool, intervention implementation of the assessment tool, and interpretation of the data provided from the assessment tool. In utilizing a investigator-developed assessment tool with evidence-based literature related to the clinical question posed, DNP Essentials 1 and II. DNP Essential III was met by using

available knowledge from multiple sources and disciplines regarding the population studied and the clinical question presented through synthesizing the evidence outlined in this project. DNP Essential IV was met by creating an assessment tool to study the needs of the population of this study. Lastly, DNP Essential VII was met in addressing a clinical issue by assessing the need for a health care systems function improvement (Zaccagnini & Pechacek, 2021).

The next step for this project would be to utilize this questionnaire in the future with a larger sample size in a more population diverse location. Data obtained from a larger, more diverse population may improve upon the results of this project by better general population representation in the results. Another step to consider improvement upon this project is to have more physical sites available for participation, in addition to more widely promoting the online link for questionnaire completion to broaden research participant reach.

In conclusion, stakeholders such as health care institutions, as well as governmental health systems, can benefit from the data produced in this study, or from modifying and recreating the study for a larger population sample. In examining the results of this study, stakeholders wishing to increase participation in telemedicine could benefit from addressing patient concerns for unsecure personal information and decreased quality of care. Providing improvement solutions to technology access and incentivizing patients to participate in telemedicine use would also benefit stakeholders in increasing patient health outcomes through telemedicine.

APPENDIX A – Telemedicine Usage and Perception Questionnaire

This is a 15-question survey that should take 5-10 minutes.

You will be entered to win the 100$ VISA gift card on completion of this survey.
Your personal information is not included in data analysis or study outcome.

(Q1) What is your age? [Circle **one**]

- 18-29
- 30-49
- 50-69
- 70-85
- 85+

(Q2) In what state do you live? [Circle **one**]

- Alabama
- Louisiana
- Mississippi
- Other (Fill in Blank)

(Q3) What is your racial/ethnic background? [Circle **one**]

- African American/Black
- Caucasian/White
- Hispanic/Latino
- Asian
- American Indian or Alaskan Native
- Native Hawaiian or Pacific Islander
- Other (Fill in Blank)

(Q4) To which gender do you identify closest to? [Circle **one**]

- Female
- Makes
- Transgender
- Prefer not to answer

(Q5) What is your household income after taxes (not including governmental benefits)? [Circle **one**]

- Less than $10,500 per year
- $10,500-25,000 per year
- $25,000-35,000 per year
- $35,000-45,000 per year
- $45,000-55,000 per year
- More than $55,000 per year

(Q6) What type of insurance do you have? [Circle **one**]

- Medicare
- Medicaid
- Private
- Commerical
- None (self pay)

(Q7) What type of device(s) do you have access to that are internet capable? [Circle **All That Apply]**

- Smartphone
- Tablet
- Personal Computer
- Public computer (example: library)
- None

(Q8) Is your internet service reliable enough to conduct your healthcare visits electronically with minimal problems? [Circle **one**]

- Yes
- No
- Mostly
- Does not apply/ have no access to internet [**Fill in Blank**]
  - _____

(Q9) Did you know that your healthcare facility provides the option for Telehealth visits? [Circle **one**]

- Yes
- No

(Q10) Do you have an electronic healthcare account (IRIS, MyChart, etc.)? [Circle **one**]

- Yes
- No
- I don't know

(Q11) In general, what is your level of comfort with using technology? [Circle **one**]

- Extremely comfortable
- Moderately comfortable
- Slightly comfortable
- Neither
- Slightly uncomfortable
- Moderately uncomfortable
- Extremely uncomfortable

(Q12) How comfortable are you with the idea of instructions or process of logging in for a telehealth visit with your provider? [Circle **one**]

- Extremely comfortable
- Moderately comfortable
- Slightly comfortable
- Neither
- Slightly uncomfortable
- Moderately uncomfortable
- Extremely uncomfortable

(Q13) If accessing or utilizing technology for a telehealth visit, who would utilize the technology to do so? [Circle **one**]

- Myself
- A family member would help me
- A friend/neighbor would help me
- If you would **not use telehealth**, why? **[Fill in Blank]**
    - _____

(Q14) How likely are you to try to use telehealth in the future? [Circle **one**]

- Extremely likely
- Somewhat likely
- Not likely
- Somewhat likely
- Extremely likely

Use the rating system for the next question:

(0) being "not at all important,"

(1) being "somewhat important,"

(2) being "does not apply to me," *choose **(2)** if you already use telehealth

(3) being "very important,"

(4) being "most important,"

(Q15) Please rate the importance of factors below that may contribute to you NOT using Telehealth services.

[Please **circle** a number using the rating scale above for each statement]

o	Unfamiliar with the internet.	(0	1	2	3	4)
o	Unfamiliar with using internet capable technology.	(0	1	2	3	4)
o	Limited finances for internet access [data plans/ prepay]	(0	1	2	3	4)
o	Limited access to transportation [to libraries/ etc.]	(0	1	2	3	4)
o	Fear of "messing something up,"	(0	1	2	3	4)
o	Fear of unsecure personal information.	(0	1	2	3	4)
o	No one to help you access or use telehealth.	(0	1	2	3	4)
o	Minimal or no internet access .	(0	1	2	3	4)
o	Minimal or no access to internet capable technology.	(0	1	2	3	4)
o	Concern for inadequate care or healthcare services.	(0	1	2	3	4)

*Please provide your e-mail on the next page to be entered to win the 100$ VISA gift card on 09/10/2022. Your e-mail and phone number are not included in the data analysis or study outcome.

DO NOT INCLUDE YOUR NAME UNLESS IT IS A PART OF YOUR CONTACT INFORMATION (I.e., in your email address).

Contact information for 100$ VISA gift card drawing

Please provide a valid e-mail address: _____

Please provide a valid phone number:

- (Cell phone) _____
- (Home phone) _____
- (Work phone) _____

Please return the completed survey to the receptionist at the front desk when convenient.

APPENDIX B – Research Site Promotional Signage

APPENDIX C – Research Participant Consent Form

Telehealth Usage Survey Consent Form

Study Purpose: The purpose of this study is to evaluate the patient's acceptance and feasibility of use for a telemedicine program and telehealth. The title of this study is *Telemedicine Avoidance: Evaluating Factors Contributing to Patient Usage of Telemedicine* and will be made publicly available after presenting and publishing.

Description of Study: Patients will have access to a link and access code made available at various locations requesting patient participation in this research study disseminated through the participating clinic This survey, which focuses on patient perception of telehealth services and telehealth-based healthcare, takes less than 20 minutes to complete. Participants must be 18 years of age or older. Patients completing the Qualtrics survey will have the opportunity to be entered into winning a [$100] VISA gift card draw for their participation.

Benefits of Study: Study participants will provide information regarding their perception and preferences for telehealth visits that will be used to help the participating clinic and the researcher improve patient participation and satisfaction pertaining to telehealth services. This information will help the participating clinic and the researcher better understand patient perceptions and preferences. A goal of better understanding these factors is to help improve future telehealth visit participation and ensure that these services will continue to be available for patients.

Risks of Study: There are no known risks involved with this research study.

Confidentiality: Participants of this study will be patients who have or have not already completed a telehealth visit with a healthcare provider at the participating clinic. An access code will be available at Hattiesburg Clinic Plastic Surgery requesting patient participation in the research study. If patients choose to participate, the link will access the survey in Qualtrics, which contains a section on informed consent. In order to complete the survey, clients must first indicate their understanding of the study and consent to participate by clicking the appropriate button.

Consent will explain to participants that confidentiality is assured, and they will be reminded that participation in the research study is voluntary, and that non-participation will not affect future services with their healthcare providers in any way. All files related to this research study will be saved on a password protected computer. Should copies of the transcripts be printed for coding and analysis, all hard copies will be stored in a locked filing cabinet in the researcher's office, which is behind a locked door, in an office suite with an additional locked door. Once data analysis and reporting of this research study are completed, all data files will be destroyed.

Alternative Procedures: There are no alternative procedures available in this study.

Participant's Assurance: This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations and guidelines. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5125, Hattiesburg, MS 39406-0001 and telephoned at 601-266-5997.

Any questions regarding this research project should be directed to the Principal Investigator using the contact information: Katherine Lewing, katherine.lewing@usm.ed[redacted]

This study has been approved by the University of Southern Mississippi's IRB

Protocol # 22-237

CONSENT: please mark with an (**X**) below in the parentheses if you agree to the following.

( ) I understand that participation in this research study is completely voluntary, and I may withdraw at any time without penalty, prejudice, or loss of benefits. I agree to participate in this research study. Unless described above, all personal information will be kept strictly confidential, including my name and other identifying information. All procedures to be followed and their purposes were explained to me. Information was given about all benefits, risks, inconveniences, or discomforts that might be expected. Any new information that develops during the project will be provided to me if that information may affect my willingness to continue participation in the project.

( ) I understand I must answer all questions and submit the survey in order to be entered into the drawing for [$100] VISA gift card, which will be mailed to the name and address I provide. NOTICE: YOUR IDENTIFICATION AND INFORMATION WILL NOT BE USED IN THE SURVEY RESULTS; THE CONTACT INFORMATION PROVIDED IS FOR DRAWING ONLY.

HATTIESBURG CLINIC

RE: Letter of Support for Katherine Ekes BSN, RN

Attn: Facility Nursing Research Council Application Process-DNP BSN-DNP Student

To: Nursing Research Council Chair and Committee

This letter is in reference to Katherine Ekes, BSN, RN who is applying to the University of Southern Mississippi for application and approval of her Clinical Doctoral Project. The focus and title of her evidenced-based project is "Telemedicine Avoidance: Identification of Factors Contributing to the Rejection of Telemedicine in South Mississippi."

I have discussed this topic with Katherine and support and recommend the need for data regarding the status of use and preference regarding telehealth among our patients. I understand that the patient-centered survey would be done for a maximum of 5 weeks, or 35 days. After data analysis, I understand that Katherine will present her findings to her corresponding research team at USM, including higher faculty and research coordinators.

I understand that following approval by the Nursing Research Council, she will seek approval from the to The University of Southern Mississippi Institutional Review Board (IRB) for final approval of her Clinical Doctoral Project proposal. At present, I understand that Katherine is a full-time BSN-DNP (Family Nurse Practitioner) student in the Doctor of Nursing Practice Program at the University of Southern Mississippi, Hattiesburg campus.

I understand that participation by this study's research team members are completely anonymous and voluntary. There is no compensation for their participation.

I understand the planned dates are January 17, 2022 through February 21, 2022 pending USM IRB approval.

I understand that this letter of support will be included in the University of Southern Mississippi Institutional Review Board (IRB) application.

Her Chair contact information is [redacted]

As Director of the Surgery Service Line at Hattiesburg Clinic, P.A., I offer this letter of support for Katherine Ekes to achieve her academic endeavor in this clinical practice project. I look forward to hearing the results of this study and the implications for clinical practice.

If there is any other information you should need, please do not hesitate to contact me.

Sincerely,

[redacted]

415 SOUTH 28TH AVENUE • HATTIESBURG, MS 39401 • 601.264.6000 • www.hattiesburgclinic.com

APPENDIX E – IRB Approval Letter

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	22-237
PROJECT TITLE:	Telemedicine Avoidance: Evaluating Factors Contributing to Patient Usage of Telemedicine
SCHOOL/PROGRAM	Leadership & Advanced Nursing
RESEARCHERS:	PI: Katherine Lewing Investigators: Lewing, Katherine~Jordan, Marti~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	12-Jul-2022 to 11-Jul-2023

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

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