

# **The Implications of the COVID-19 Pandemic on Telehealth Usage Within Rural Areas**

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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## **Introduction**

As a result of the COVID-19 pandemic, patient flow throughout health systems in the United States has been significantly disrupted with extreme staff shortages and an overflow of patients. Overall, Outpatient clinic visits have dramatically been impacted due to the pandemic with providers converting a majority of in person visits to tele-visits when possible as well as many patients wanting to avoid in person visits to limit potential exposure (Mehrotra et al., 2020). Hospitals have reported that telehealth practices have been beneficial stemming from the pandemic and something that they want to maintain long term despite some challenges faced such as lack of technological access for patients (Grimm, 2021).

Therefore, one of the biggest impacts in healthcare delivery due to the pandemic was seen through the rise of telemedicine as a healthcare delivery method for patients in need. Telemedicine can be defined as the use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or healthcare provider and for the purpose of improving patient care (Roh, 2008). Telemedicine is a form of technology that is revolutionizing healthcare delivery in the United States. Due to the COVID-19 emergency crisis, Congress, the administration, and states were allowed to temporarily eliminate many historical barriers to telemedicine thus allowing for unprecedented telemedicine utilization (Bhatnagar, 2022). A year after the COVID-19 pandemic, it was estimated that thirty percent of overall outpatient visits are telemedicine visits (Freehling, 2021). Studies have shown that widespread implementation of telemedicine can reduce health care costs overall by \$36 billion nationwide (Roh, 2008). The pandemic clearly indicated that rural America specifically faces many challenges to having telemedicine broadly implemented in all regions. Healthcare systems

must find a way moving forward in a post pandemic world to improve and address challenges that have existed prior to the pandemic, and those that have been magnified by the pandemic. Looking towards the future, the COVID-19 pandemic has shown the healthcare industry that telemedicine implementation in rural areas of the United States has a bright future with barriers that must be overcome for long term success. Some of the main challenges that need to be addressed are reducing the disparities in access to healthcare, building and maintaining a robust workforce, and strengthening the integrity and resilience of our healthcare systems.

Therefore, the research question to be addressed within this study is: What have the implications of the COVID-19 pandemic been on the rise of telemedicine in rural areas within the United States?

### **Telemedicine Implementation in Rural Areas of the United States**

Telemedicine usage due to the COVID-19 pandemic has created a viable alternative for outpatient clinic patients in rural areas of the United States. A large proportion of outpatient visits can be clinically managed effectively from a distance meaning that patients who do not require urgent care can count on telehealth without compromising the quality of the healthcare received. With the technological advances that we have seen with nearly everyone having access to smartphones and healthcare providers having electronic records already in place, the barriers of access to the necessary infrastructure must be removed for rural Americans for a broader expansion of telehealth visits throughout the United States to be successful. In West Virginia it was found that during the height of the pandemic telemedicine increased completion of patient appointments by twenty percent for all ages with working age patients between 18-49 being affected the most by the change (Haggerty et al. 2022). Telemedicine visits significantly

increased during the pandemic by 27 percent among patients in isolated rural areas (Larson et al., 2022). Specifically, within rural areas of the United States there are significant challenges regarding the wide implementation of telemedicine such as lack of internet service as well as low-income individuals who are unable to afford the necessary technology (Turner-Lee et al., 2020). Many rural hospitals in the United States currently also simply lack the technological capability of implementing telemedicine (Ftouni et al., 2022). Individuals who live within rural areas tend to be older and sicker with more pre-existing health conditions than individuals who live within urban areas (Hirko et al., 2020). During the height of the pandemic, it was found that hospitals indicated that the challenges were more severe for rural hospitals (Hirko et al., 2020). Worsening long standing challenges for rural hospitals that were exacerbated by the pandemic include staffing issues, limited patient capacity, and financial strain (Grimm, 2021). The number of urban patients who had a telemedicine visit during the pandemic period was twenty three percent higher than that of patients in isolated rural communities within the United States (Larson et al., 2022). Therefore, prioritization needs to be given towards the twenty percent of Americans who live in rural areas as only eleven percent of all practicing physicians are in rural America (Yang, 2016). This ensures that some of our most vulnerable and underprivileged citizens can have better access to healthcare in our country.

## **Literature Review**

A prior study was conducted in which it was argued that telehealth services can enhance healthcare quality especially within rural areas as it was estimated that about twenty one percent of all Americans live in rural areas of the United States. The report found that of the current practicing physicians in the United States only eleven percent practice in rural areas with fewer hospitals and specialists that overall are available to residents (Grimm, 2021). It was also

generally found that the COVID-19 pandemic has significantly strained and exacerbated recurring problems found in healthcare delivery, access, and health outcomes for patients especially within rural communities. According to the study, one of the significant challenges hospitals have faced and continue to face are extreme staffing shortages due to burnout, trauma, and high turnover rates (Grimm, 2021). These significant challenges were found to be most severe in rural hospitals. It was also pointed out that at the time of the pandemic many of these rural hospitals were unable to provide telehealth services due to remote locations as well as a lack of access to technology. Equitable access is cited as a major concern with patients in rural areas of the United States unable to receive the same quality of care as in more urban areas. For example, the report cites that in rural areas, they have a very limited number of physicians so if a physician becomes ill, they have no ability to replace the ill physician (Grimm, 2021). Within the study, an official within a critical access rural hospital noted that over fifty percent of the rural areas in the United States have a higher-than-normal proportion of low-income residents who do not have reliable transportation access. Therefore, allowing these residents access to telemedicine alternatives is of vital importance whenever possible. As a result of these issues faced, many rural hospitals have begun to implement more telehealth services to help fill the gap, however patients in these rural areas can sometimes lack access to the technology needed to access these telehealth services through significant barriers that need to be addressed.

### **Technical Momentum**

The STS framework of technical momentum will be used to analyze telemedicine implementation within rural areas of the United States. Telemedicine implementation in rural areas of the United States can be broadly seen and connected to a large technological system. Summarized from Thomas Hughes, technological systems are “both socially constructed and

society shaping” (Hughes, 1987). From a social aspect, the broad spread of the COVID-19 pandemic has highlighted a key need for a reliable system of surveillance when it comes to rapidly spreading infectious diseases. Big data and artificial intelligence have now allowed us to understand the deficiencies of our existing healthcare systems.

The specific properties of growth, development, and limits of control within the technological system of healthcare will be used to connect to telemedicine implementation within rural areas. The technological system property of growth can be defined as the expansion of a technological system due to the drive for high diversity and load factors (Hughes, 1987). As a result of the COVID-19 pandemic, the healthcare industry has been forced to grow and expand to unprecedented levels with telehealth expansion being among the leading categories of overall growth. The technological system property of development can be described as the phase in which the social construction of technology becomes clear (Hughes, 1987). The effects of the COVID-19 pandemic resulted in disruptions to the United States healthcare system which resulted in a significant increase in telemedicine usage which forced the development of technology to occur within the United States healthcare technological system. Thus, ensuring telemedicine technology will continue to develop to encompass rural patients within the United States so that they can be afforded the same technological healthcare delivery access as those who live within urban areas is crucial. The technological property limits of control can be defined as the bounds placed on a technological system by humans, technological artifacts, or other systems (Hughes, 1987). The COVID-19 pandemic has magnified the social and ethical issue of data collection and the availability of information regarding individuals and their health information. An argument can be made that anonymizing this information is best practice in this regard going forward in a post pandemic world.

## Research Question and Methods

The research question being answered in this study is: What have the implications of the COVID-19 pandemic been on the rise of telemedicine in rural areas of the United States? This question has been answered through a broad review of secondary sources like research journals relating to the implementation of telemedicine and the effect of the COVID-19 pandemic on telemedicine in rural areas of the United States. A literature review was also completed on a full US Department of Health and Human Services report on the strain caused by the COVID-19 pandemic on health delivery within the United States. Rural Americans face significant barriers in terms of access to healthcare which include far geographic distance from hospitals, lack of public transportation, and a lack of overall healthcare providers (Ralls & Moran, 2020). The implementation of telemedicine has been argued by the US Department of Health and Human Services to narrow the health care disparity faced for rural American citizens. At a federal level, the CARES Act was passed which included additional funding of \$29 million towards the Telehealth Network Grant Program which currently awards 8.7 million dollars a year for telehealth technologies specifically within rural medically underserved areas (Weigel et al., 2020). Therefore, the viability of telemedicine implementation for rural areas has support from the federal level in the United States. However, in the United States, at a state level, the support level is not equal to the federal level. Twenty-two states changed their laws or policies during the COVID-19 pandemic to require more comprehensive insurance coverage for telemedicine (Volk, Palanker, O'Brien, & Goe, 2021). Parity laws are defined as laws that ensure that health plans reimburse an individual for telemedicine healthcare services on the same basis as for in person healthcare services. In this post-pandemic world, twelve states still currently do not have parity laws in place with many rural states being included such as Alabama, Florida, South Carolina,

and North Carolina. Also, healthcare patients who are covered by Medicare are severely limited for telemedicine reimbursement to only select live video encounters with the patient at a clinic or facility in a rural area (Mehrotra et al., 2016). The COVID-19 pandemic has shown us that for telemedicine to be expanded successfully several key barriers must be addressed. First, broadband access for rural residents must be increased. Without broadband access rural residents have no ability to use telemedicine services as a health care delivery method. Next, parity laws must be established in each state to ensure proper reimbursement for the use of telemedicine services. These structural changes must be made for a broader implementation of telemedicine in rural America to be successful in the post pandemic future.

### **Discussion/Results**

After a thorough review of secondary sources such as scholarly journal articles and agency reports and conducting a thorough literature review relating to improving telemedicine implementation and the effect of the COVID-19 pandemic on telemedicine in rural areas of the United States several possible solutions were found that could be used for improvement.

First, improving broadband access for underprivileged residents in rural populations of the United States. According to (Nania, 2021) twenty percent of all rural residents do not have access to high-speed internet with rural adults aged seventy and older with lower incomes and worse health the least likely to have access to it. Another research journal corroborated this report by stating that technical issues were the most common barrier found to telemedicine implementation in rural America in twenty one of twenty-seven studies surveyed within the medical journal (Ftouni, AlJardali, Hamdanieh, Ftouni, & Salem, 2022). Therefore, the evidence correlates with the fact that the elderly rural citizens with the highest health risks are the ones



with the least capability of accessing telehealth services (Nania, 2021). Increasing broadband access for greater access to telemedicine coverage within rural America can also be connected to growth within the technical momentum framework. Since the healthcare system within the United States as a whole can be seen as a large technological system with complex problem-solving components, increasing broadband access for rural residents allows for the growth of the healthcare technological system due to load factors caused as a result of the COVID-19 pandemic pressure on the healthcare technological system as a whole.

Another necessary solution that must be adopted in order for telemedicine access to be increased within rural areas of the United States comes from the legalization of parity laws in each of the fifty states. Parity laws focus on commercially insured individuals, however according to (Mehrotra et al., 2013) they encourage an overall higher interest in telemedicine and thus also allow for a higher utilization rate of Medicare. Ensuring parity laws are passed nationwide will take away all the doubts from rural residents regarding payment coverage for telemedicine appointments. As rural residents are generally lower income, to ensure equitable access to telemedicine health delivery, adopting parity laws for insurance payment coverage for visits is a necessity. The adoption of parity laws can also be connected to Hughes's technical momentum framework through the development subcategory. Development within a technological system can be defined as the point at which an invention actualizes itself within society and begins to evolve to fit the different needs of social groups. The adoption of parity laws can be seen as significant improvements that need to be made for the development of the current healthcare technological system that we have in the United States.

The last solution that should be adopted in order for telemedicine access to be increased within rural areas of the United States is ensuring patient security and confidentiality. Ten of

twenty-one studies conducted with rural Americans found that data privacy and security was the second most common barrier facing telemedicine implementation behind technological access (Ftouni, AlJardali, Hamdanieh, Ftouni, & Salem, 2022). The study cites that to ensure data privacy, healthcare providers should notify patients whenever possible about the use of any third-party application and its potential cybersecurity risk. Formal agreements between the health care providers and the third-party applications providing the telemedicine service need to be made to ensure the confidentiality and preservation of patient's personal health data. Health care providers need to make sure patients are aware of the potential privacy and security risks of telemedicine especially as rural American residents tend to be more technologically illiterate than urban residents (Hall & McGraw, 2014). Ensuring patient security and confidentiality also connects to the idea of limits of control within the technological momentum framework. Limits of control can be defined in that humans do not have complete control over technological systems as they exist within other hierarchical systems that control them as well. The healthcare technological system within the United States exists within the data privacy realm. Within the telemedicine service, healthcare providers do not have complete control over their patients' privacy and security. They are forced to rely on third party software on which both the patients and the healthcare provider have no ability to control how the patients' healthcare data is being used or will be used in the future.

### **Research Limitations**

The findings within this research paper were used to answer the question of how telemedicine can be further implemented within rural areas of the United States. However, due to time constraints and lack of direct access to healthcare providers within rural America the research could only be conducted at a broad scope. Due to the recent nature of the COVID-19

pandemic, conducting a literature review was difficult due to sparse amounts of research journals and agency reports on telemedicine implementation in rural America following COVID-19.

Time constraint also did not allow for surveys or interviews to be conducted with primary care providers in rural areas of the United States to get a current picture of how telemedicine is being used and how the pandemic has impacted its utilization. There were still ample amounts of research journals and agency reports from which to draw data and information from to come up with potential solutions towards furthering telemedicine for Americans in rural areas.

## **Conclusion**

The COVID-19 pandemic has significantly impacted the way outpatient care is being delivered in healthcare practices by healthcare providers. One of the big prominent technological changes to come out of the pandemic was the rise of telemedicine usage for outpatient primary care patients. Improving healthcare systems in the United States remains a challenge we are facing everyday as the COVID-19 pandemic proved. The research highlights that there are several challenges to implementing telemedicine in rural areas, including limited broadband availability, lack of healthcare providers overall, comfort with technology including privacy concerns, and challenges in obtaining reimbursement for telemedicine services through private insurance. Despite these challenges, the research also provides evidence that telemedicine has been successfully implemented in some rural areas and has shown promising results.

Implementing telemedicine access in all possible outpatient clinics to the twenty percent of the United States population who live in rural areas will allow the rural residents to have more equitable access to healthcare that they deserve. Telemedicine cannot and should not be substituted for a doctor's visit but needs to remain a viable alternative to higher risk and lower income rural citizens (Anderson & Singh, 2022). The expected results of this research paper

concluded that healthcare providers in rural areas of the United States should implement the three potential solutions to broaden the scope of telemedicine access within rural America. These additional efforts will be needed to increase the accessibility of both telemedicine and in person healthcare visits for rural Americans.

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