

Digital Divide in the Rural Healthcare Market in the United States: Health Equity and Inclusiveness

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Abstract

The digital divide has been extensively discussed in context with consumer shopping behavior and population health based on race and ethnic groups (Kwon & Kim, 2021; Qian, 2022). However, it has been rarely explored in terms of health disparity between rural area and the rest of the population. The pandemic provides a good opportunity for us to review the extent of telehealth practice in rural areas which play an important role in many aspects of our life. Telehealth if and when properly utilized could address health inequity that exists between rural communities and urban settings. Healthcare inclusiveness will be a by-product from telehealth deployment in rural communities. The purpose of this article is to present the current status of telehealth in rural areas of the United States and recommend a long-term solution to make telehealth a sustainable program. A short case study supplements this study. Our study finds that telehealth in rural area brought many potential customers to healthcare market especially those who were unable to receive care under traditional settings due to transportation, cost and lack of information readily available to the community. This study also uncovered that telehealth literacy training in the rural areas is a major pathway to successful utilization of telehealth potential. Due to a lack of comprehensive literature in rural telehealth, this study used current status of rural population and healthcare infrastructure in the United States as a source of study methodology.

Keywords: patient loyalty, Digital divide, consumerism, inequity, inclusiveness, health information technologies

1. Introduction

In spite of massive investment in digital health platform, the benefit has not been evenly distributed to among population. Most investment has been in urban areas where broadband is easily accessible to population. A lack of broadband hampers a full potential of telehealth and may discourage many people from taking advantage of technology-based healthcare management. Inadequate access to broadband technology for telehealth tends to reduce vulnerable groups from participating in telehealth treatment creating what we call “digital divide” (Kwon and Kim, 2021). In essence, digital divide separates those who “have” from those who “do not have” digital communication capability (Kwon & Kim, 2021, p. 2), thereby further deepening health disparity among the population. Geographical distance between rural communities and shortage of healthcare workforces in the rural areas requires to reorient rural healthcare practice more toward telehealth platform.

The purpose of this study is to review the current status of telehealth in the rural areas in the United States and outline possible solutions to minimize digital divide. A case study is used to support some of our recommendation. Literature citation was used to present the current status of telehealth in rural areas. This study consists of six sections; Section 2 describes characteristics of rural population where a brief landscape of people and community are discussed to better understand of healthcare customers. Section 3 discusses details of rural healthcare market which is followed by a status of digital healthcare in the rural area of the United States in Section 4. A short case study is presented in Section 5. Summary and future study are presented in Section 6.

2. Characteristics of Rural Population

Almost 60 million people live in a rural area (U.S. Census Bureau, 2017) and it covers almost 97 percent of the nation’s land but only 19.3 percent of the population (U.S. Census Bureau, 2016). The same report shows that compared with households in urban areas, rural households had lower median household incomes (\$52,386 vs.

\$54,296), lower median home values (\$151,300 vs. \$190,900), and lower monthly housing costs for households paying a mortgage (\$1,271 vs. \$1,561). A higher percentage owned their housing units “free and clear,” with no mortgage or loan (44.0% vs. 32.3%). Adults in rural areas had a median age of 51, making them older compared with adults in urban areas with a median age of 45. They had lower rates of poverty (11.7% vs. 14.0%) but were less likely to have obtained a bachelor’s degree or higher (19.5% vs. 29.0%) (U.S. Census Bureau, 2016).

One study further amplifies adverse attributes for people in rural areas. For example, older adults who reported excellent, very good, or good health were more likely to use health apps than those in fair or poor health (29% vs 21%). Those with an annual household income of \$100,000 or higher were more likely to use health apps than those with a household income of less than \$30,000 (43% vs 15%), as were those with at least a bachelor’s degree compared to those with a high school degree or less (40% vs 17%). Among those who do not currently use health apps, about half (51%) said it was because of a lack of interest. Others said they never thought about using health apps (32%), were unsure whether health apps could help them (20%), or that they were uncomfortable with technology (14%) (Lee, Aikens and Richardson, 2022). A deeper dive in each of the above areas reveals that population in rural areas are adversely affected by these attributes.

In addition, compared to those living in urban areas, rural residents have higher rates of mortality from heart disease, respiratory disease, cancer, stroke, and unintentional injury in the U.S (Chen *et al.*, 2019; Moy, 2017). Other areas of differences between rural residence and those of urban include poverty rate under 18 (22.9 vs. 7.7%), Internet access problems (24% vs. 13%), and College enrollments (59 vs 62%) (University of Washington, 2019).

3. Characteristics of Rural Healthcare

That US health care spending increased 9.7 percent to reach \$4.1 trillion in 2020 (Hartman *et al.*, 2022) does not seem to alleviate health stress in rural areas. Multiple barriers create challenges for rural residents to access and use reliable health information, including digital divide, barriers such as geographical distance, and lack of financial resources and specialty health care services (McIlhenny, 2018). Overall, rural populations are older and sicker than those in urban areas and face an increasing gap in life expectancy. These disparities are increasing over time (Schroeder, 2018). At the heart of many rural-urban health disparities is the lack of access to quality health care. Rural communities often lack basic health care facilities, and they face chronic shortages of doctors, nurses, pharmacists, allied health workers and non-physician providers (Iglehart, 2018). The problem of health care access is also worsening, as the rate of rural hospital closures has accelerated in the last 10 years, further reducing access to emergency care and other health services (United States Government Accountability Office, 2018). More than half of all rural counties in the United States lack a single local hospital where a pregnant woman can get prenatal or labor and delivery care (Kozhimannil *et al.*, 2018).

Nevertheless, telehealth use was less common among patients who were older or living in rural areas compared to urban settings. In addition, there may also have been a disproportionate impact of the pandemic on care utilization by historically disadvantaged groups, such as those with advanced age (86+ years), racial/ethnic minorities, low income, disabled, and rural/suburban residents (Cao *et al.*, 2021). One research reveals that only 70% of households in rural area have broadband access as opposed to almost 81% in urban settings (Zahnd, Bell and Larson, 2021). Some argue that there may be structural barriers such as shortage of specialist doctors and limited media exposure that make it harder for rural residents to access health information, especially those with limited health literacy (Chen *et al.*, 2019; Holko, *et al.*, 2022).

4. Digital Health and Rural Health Care

The increase in use of health information technologies (HIT) presents new opportunities for patient engagement and self-management. Patients in rural areas stand to benefit most especially from increased access to health care tools and electronic communication with providers. It is reported that the digital divide between rural and urban residents extends even to health information technologies (Greenberg, 2018).

Telehealth for rural areas is an ideal tool to address some of the health challenges as populations scatter miles apart with limited healthcare providers and services in between. Although rural America plays a vital role in feeding our nation, millions of rural residents remain without access to broadband which is a critical requirement for effective telehealth execution. A lack of broadband and other information technologies created a digital divide in rural population as they are seeking affordable healthcare.

Researchers have concentrated issues related to digital divide mainly on race and ethnic groups (Kwon and Kim, 2021). Yet, such a digital divide also exists in rural healthcare markets due mainly to a lack of broadband. In addition, people in rural areas consider personal and intimate relationships with care providers as one of the most

important attributes in selecting and a maintaining healthcare provider in general and physicians in particular. The process of building a long-term relationship requires patient royalty. Patient royalty is a commitment between a customer (patient) and a brand that causes the customer to make repeat purchases (visits). Royalty eventually leads to a stable financial reward for healthcare providers. Yet, telehealth rarely addresses this critical issue. In addition, telehealth, when utilized in accordance with health equity principles, can reduce disparities and inequities in health (Henderson, Winkler, & Wyatt, 2021).

Furthermore, telehealth can assist healthcare systems, organizations, and providers in expanding access to and improve the quality of rural healthcare. Using telehealth in rural areas can reduce or minimize burdens that patient encounters, such as transportation issues related to traveling for specialty care. For provider's prospective, telehealth can also improve monitoring, timeliness, and communications within the healthcare system. For example, using telehealth to provide specialty services is more feasible for rural healthcare facilities than staffing those rural facilities with specialty and subspecialty providers. Telehealth allows specialists and subspecialists to visit rural patients virtually, improving access as well as making a wider range of healthcare services available to rural communities. Frequent and intimate consultations with patients through virtual care improves the opportunity to open series of dialogues with patients and would lead to a trust-building process. Building and maintaining trust with patients also decreases transaction cost in health system that may lead to lowering operating costs (Kwon, Hamilton, & Hong, 2012).

However, a recent study warns that among the 51 percent of clinicians who participated in a worldwide survey raised concerns that telehealth would adversely affect their ability to show empathy to their patients (Clinician of the Future Report, 2022). The same study further reports that 82% of clinicians agreed that soft skills such as listening and being empathetic have become increasingly important among clinicians in the last decade. Relationship based trust is not given, it has to be earned.

On the workforce side, preserving and training the health care workforce in rural areas has become imperative due to the shortage of health care workers serving rural populations. A recent study shows that 70% worked only in urban locations, 13% worked only in rural locations, and 17% worked in both rural and urban locations during their health care career (Jonk et al., 2020; Walker, Quaile, & Tumin, 2020). In addition, almost 70% of areas that are designated as primary medical health professional shortage areas were rural or partially rural areas (Health Resources and Services Administration, 2020). Rural healthcare providers, including home health agencies, are struggling by staffing and resource constrictions and travel or transportation barriers. Those challenges, together with the already poorer health rural patients tend to have, could keep rural home health providers from seeing positive outcome measures (Ma, Devoti and O'Connor, 2022). Shortage of qualified workforces in rural areas who are up-to-dated technology background make sustainable operations in healthcare in rural areas almost unsustainable.

5. Case Study (Note 1)

A literature review reveals that limited access to broadband and literacy of using technologies especially for older populations in rural areas became the main obstacle in maximizing telehealth platform. Most if not all telehealth technologies are designed for Generation Y who are tech savvy in every aspect of their life. Many seniors especially those who live in rural areas have been discouraged from using technology. A search for simple and interactive technologies has been a challenging task for many communities especially in rural and remote areas. Among many technologies, a simple interactive conversational device would give seniors a platform to engage with healthcare providers in remote settings to discuss their health issues and subsequent treatment without costly and time-consuming trips to healthcare facilities. Such scenario was especially relevant during the outbreak of the pandemic.

5.1 Issues and Setting

The Nebraska Urban Indian Health Coalition (NUIHC) is a non-profit 501© (3) organization that provides community health care and services targeting the urban American Indian and Alaska Native population in the greater Omaha and Lincoln metro regions in Nebraska, and Sioux City, Iowa metropolitan area. When faced with a pandemic and the need to provide behavioral health services remotely, the NUIHC researched solutions that would enable them to continue to serve the community safely and effectively.

The leadership at the NUIHC were aware that telehealth was a great option to keep their community connected to support services during the pandemic. However, they were not sure how much their organization would utilize telehealth for the long term and sustainable period.

In order to justify the telehealth platform, the solution had to satisfy two major requirements; easy access to

simple technologies and these technologies should be compatible with the technology currently being leveraged by the community (NUIHC). This meant whether potential participants had a smartphone, a computer, or a tablet so that they could access their therapy and health sessions easily and securely. These two requirements (easy access in a secure platform) are critical to attract people in the community who are either not technology savvy and/or unsure about privacy and security of their health records. The NUIHC searched for an organization that would provide telehealth platform with conditions that satisfy two requirements listed above. They secured Let's Talk Interactive (LTI) services.

Let's Talk Interactive (LTI), founded in 2001, is a technology company that develops technology solutions that empower providers to improve access to quality healthcare. LTI is a leader in creating custom, cutting-edge telemedicine solutions, including HIPAA-compliant video conferencing software that pairs seamlessly with a host of hardware solutions and peripheral options. LTI is a resource to organizations especially in rural areas, helping them to transform their access to quality healthcare, enabling rural providers and clinics to access specialists and support from offsite health teams. In addition, LTI is also increasing access to much-needed mental health care via provider networks and telehealth solutions. For their pioneering invention in telehealth technologies, especially for communities and people in remote areas, LTI was recognized by Zoom Video Communications, Inc. with its global inaugural ISV Trailblazer Award. In 2021, LTI was recognized by Healthcare Tech Outlook as a Top Telemedicine Solution Provider, and its Founder and CEO was recognized by the Charlotte Business Journal with a Healthcare Hero Award.

5.2 The Solution

After researching telehealth training and hardware solutions, NUIHC learned about LTI virtual conferencing software which is compatible with any device with an internet or cellular connection. NUIHC entered into an agreement with LTI offering around-the clock support to enable NUIHC to set a simple workflow that worked for NUIHC organization.

To ensure that the community was able to access telehealth sessions, NUIHC purchased tablets and data for the community members to support usage of virtual care solutions during the pandemic. LTI also provided one-on-one training session for members of the community who were not familiar with the devices or internet to make sure they were confident in accessing their providers.

5.3 The Results

Despite reopening their doors to in-person treatments in Spring 2021, NUIHC reports that virtual sessions remain consistent; with roughly 85% of total sessions continuing to be conducted via telehealth in the fall of 2021. It is indeed remarkable to maintain such a high percentage of members still engaged in online telehealth even though many healthcare facilities open their doors for in-person consultation and subsequent treatments. During short period time frame, LTI provided 105,419 minutes of telehealth training in 1,966 telehealth sessions.

A post session survey reveals that many of their clients prefer telehealth sessions because it saves so much of their personal time to meet virtually from wherever they are on that particular day.

On the administrative side, the platform has made sessions easy to schedule and improved documentation, while providing the necessary security features for a HIPAA-compliant solution. Having the notes section available digitally makes reporting at the end of the day so streamlined. Other benefits of the NUIHC experiencing include an improvement in no-show rates, consistency in length of treatment time in both telehealth and in-person appointments, and reimbursement rates that are just as good for telehealth sessions as in-person.

6. Summary and Future Study

This study summarized the characteristics of rural population and healthcare system from telehealth perspective. Compared to their urban counterpart, people in general in rural communities are lacking healthcare services due in part to inherited economic and social characteristics. The imbalance in healthcare services between urban and rural communities' open opportunities for rural communities to enhance health status by relying on telehealth technologies. This study suggests that infrastructure in telehealth especially improving broadband is the most critical aspect of telehealth approach. This study also reveals that technologies alone may not solve the pressing issues. Soft skill such as workforce development and community trust between providers and users of this technology has to be in place before any serious attempt to invest in technologies. Without such soft skill, the potential benefit from telehealth may not be fully utilized.

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Note

Note 1. This case study is provided by Let's Talk Interactive (LTI) services.

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