


# Digital Disparities in Patient Adoption of Telemedicine: A Qualitative Analysis of the Patient Experience

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## ABSTRACT

Telemedicine's growth during the COVID-19 pandemic exposed digital and health disparities in U.S. communities. Public health advocates suggest disparities in healthcare access may be mitigated through free or low-cost broadband. However, prior research shows that many factors influence patient adoption of information technologies; therefore, increasing access to broadband alone is insufficient. This paper advances a patient-centered model of telemedicine (TM) adoption supported by qualitative interview data. The model illustrates that patient adoption of TM is driven by a complex sociotechnical system comprised of technology factors, structural factors underlying the provider's provision of TM, and individual patient factors. Findings highlight the importance of the physical place of the TM visit, the need for experienced TM healthcare workers and technology support for patients, the impact of provider-mandated technology on task-technology fit (TTF), and the strength of the patient-provider relationship. These factors affect patient perceptions of TTF and ultimately TM adoption.

## KEYWORDS

Adoption, Broadband, Digital Disparities, Healthcare, Interviews, Patient Perspective, Sociotechnical System, Task-Technology Fit, Telemedicine

## INTRODUCTION

Health care providers pivoted to offering telemedicine services as both patients and providers limited in-person medical visits at the onset of the COVID-19 pandemic. Growth in telemedicine services accelerated when U.S. payors and regulators rapidly relaxed allowable reimbursements and licensure requirements. Some individuals continue to take advantage of telemedicine care delivery, while others cannot, due to digital disparities. Digital disparities are the differences in access to technology between groups that are intricately linked with social, economic, or environmental status. A number of states

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have responded by approving legislation that increases broadband access for individuals, particularly in rural areas. The assumption appears to be that if broadband access is expanded, digital disparities in health care access will be reduced. The “if we build it, they will come” view assumes that once a technology is made available, access to the technology alone is sufficient to drive changes in social structures and people’s behavioral patterns.

While the potential for access to both broadband telecommunications and telemedicine has expanded because of COVID-19, benefits to patients only accrue through actual adoption and usage (Bostrom & Heinen, 1977). The most likely outcome of these new investments in telemedicine is that adoption and use will further ossify the healthcare and social systems already in place. The shift in health care service delivery from in-person visits to telemedicine may compound the negative impacts of both health and digital disparities for the most vulnerable populations, despite the intention to increase reach and access.

To explore this paradox, a theoretical model using a sociotechnical systems theory (STS) lens is developed based on a qualitative analysis of thirty-one semi-structured interviews of students, faculty, and their acquaintances located throughout the United States. The findings suggest that patient adoption of telemedicine is not influenced by technology alone but instead is affected by the complex interactions enabled by technology, healthcare system factors, and individual patient factors. This model is the first contribution of the paper, namely a theoretical framework that can be further empirically tested. This study’s second contribution is to illuminate a unique patient-centered perspective using an STS lens. Although the literature is replete with studies on telemedicine adoption and satisfaction (Andrews et al., 2020; Dobrusin et al., 2020; Holtz, 2020), along with some using a sociotechnical lens (Gagnon et al., 2003), research typically has focused on the provider’s perspective of telemedicine adoption.

## BACKGROUND

### Sociotechnical Systems Theory

Sociotechnical systems theory (STS) focuses on understanding how a social system incorporates new technologies, described as having both social and technical components that interact and influence each other (Bostrom et al., 2009). According to STS, the social and the technical should be allocated comparable emphases in understanding technology adoption and usage, where the interplay between the two results in unintended consequences and outcomes that cannot be completely planned, controlled, or understood in advance (Beath et al., 2013; Bostrom & Heinen, 1977). STS perspectives have a long history of application in the information systems field. Scholars have used STS to explain the use of technology in practice (Bostrom & Heinen, 1977; Orlikowski, 2000; Sarker et al., 2019), and, inspired by calls to action more than a decade ago (Whetton & Georgiou, 2010), health informatics research using an STS lens has expanded (e.g., Bernardo et al., 2020; Mohr & Dessers, 2019; Sittig & Singh, 2015).

In this paper, the authors explore the meaning of *task–technology fit* (TTF) in the context of health care service delivery from the patient’s perspective. The concept of TTF can be broadly applied to any situation in which individuals use technology to accomplish a specific task and is defined as the correspondence between task requirements, individual abilities, and the functionality of the technology (Goodhue & Thompson, 1995). An examination of the patient’s perception of TTF through an STS lens reveals that changing one part of the system alone—for example, by expanding access through broadband—may not have the expected positive impact on patient adoption and improved health care outcomes.

### Telemedicine

Reviews of telehealth and telemedicine have suggested that telemedicine is a subset of telehealth (Bashshur et al., 2011; Van Dyk, 2014). Just as *health* includes providing patient education,

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