

Consumer Health Informatics: A Study of the Telehealth Environment and Collection of Social Determinants of Health, Pre- and Mid-Pandemic

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Abstract

Background: Before COVID-19 telehealth was already in existence as a means to deliver healthcare remotely. During COVID-19 research has proven telehealth became a way of delivering care to reduce risk of exposure to disease within the in-person care environment.

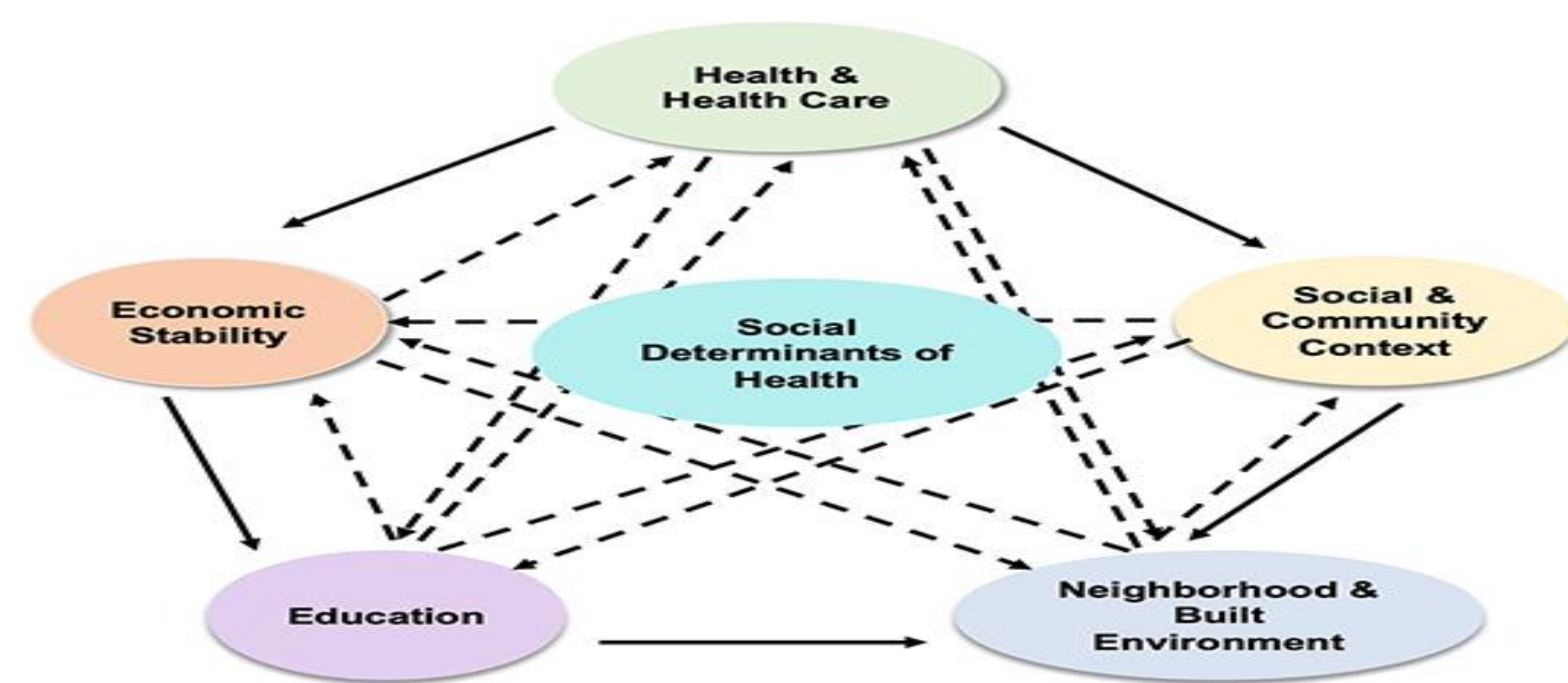
Objective: This study was done to research the collection of social determinants of health (SDOH) data and telemedicine in 2018 and 2021. It evaluates a lens into whether telehealth visits have impacted the collection of SDOH data by healthcare providers. This study aimed to assess and analyze whether the care environment of telehealth increased the collection of SDOH data during the COVID-19 pandemic. The study has a focus on data that can reveal if increasing use of telehealth during the pandemic has a correlation with increasing collection of SDOH data in the consumer health informatics (CHI) discipline.

Keywords: COVID, pandemic, Social Determinants of Health, SDOH, telehealth, telemedicine, Consumer Health Informatics, CHI

Introduction

In the current health care system, the discipline of biomedical and health informatics has seen an increasing interest in CHI. Telehealth as a CHI tool has taken on an increasing role during the pandemic. Does this environment create more adoption of collection of SDOH? SDOH are influenced by the strong relationship between socio-economic factors and overall health. [3] It is assumed that patients who are assessed for SDOH will have improved health when their social requirements are identified and appropriately met. According to Perrin 2020, social determinants of health take into account the complex relationships of factors that influence an individual's or population's health, such as safe and affordable housing, access to education, public safety, availability of healthy foods, local emergency/health services, and environments free of life-threatening toxins. [6]

By mandating the evaluation of patients for SDOH using screening assessments in patients' electronic health records (EHR), there will be a targeted baseline for healthcare providers to screen patients as part of providing care services. Currently, this mandate does not exist. Datasets were sought to analyze, evaluate, and synthesize the responses of providers who have been surveyed by the National Electronic Health Records (NEHRS) survey. To provide a lens into how healthcare outcomes in our communities are influenced, this study will consider if the collection of SDOH has changed over time with the increased use of telehealth. It is necessary to address intricate interconnected issues that have a detrimental impact on a patient's health, such as housing affordability and safety, access to healthcare, public safety, food, health emergency services, and other pollutants that pose a threat to life. [6]



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Methods and Criteria

Research Question and Hypothesis

The focus of this research is the following question: Has there been a statistically significant increase in the collection of SDOH data between 2018 pre-COVID and 2021 mid-COVID by providers who have utilized telehealth according to responses on the NEHRS survey?

- The hypothesis *Null*: With regard to utilization of telehealth by providers there has not been a statistically significant increase in collection of SDOH between 2018 and 2021.
- The *Alternative*: With regard to utilization of telehealth by providers there has been a statistically significant increase in collection of SDOH between 2018 and 2021.

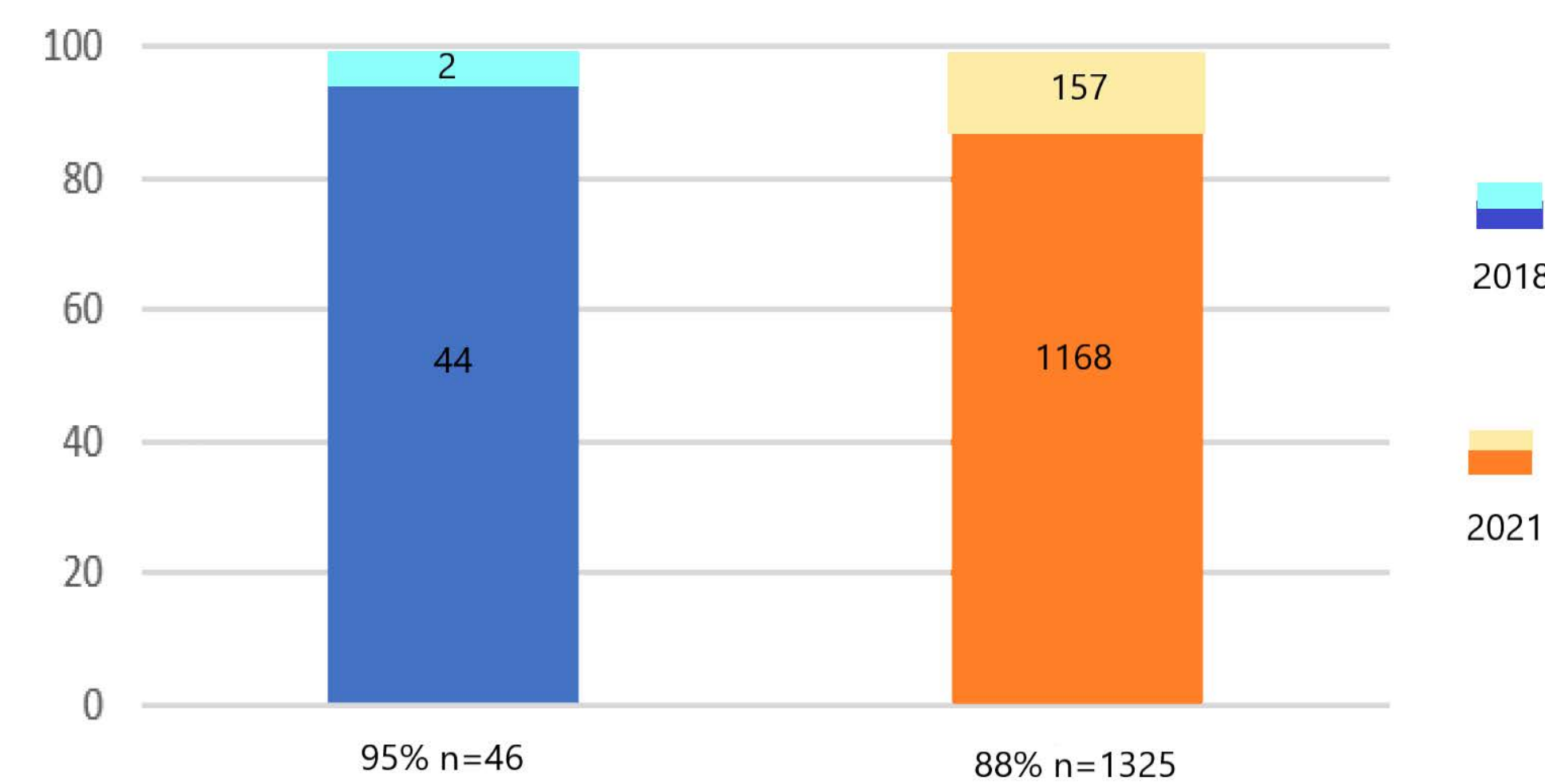
Methodology

The design of the study indicates and identifies if a statistically significant increase in the collection of SDOH data has occurred with the increased use of telehealth. First, it was important to sort the dataset containing telehealth visits and SDOH data collection by examining and understanding the data dictionary from the NEHRS public use file for the years 2018 and 2021.

The data collected was downloaded, categorized, and filtered to reflect two variables for the years 2018 and 2021: SDOH collected and providers using telehealth. The SAS on Demand for Academics, which is a statistical analysis system, was used to extract the data for 2018 (ns2018.sas7bdat) and 2021 (ns2021.sas7bdat). Microsoft Excel files for 2018 and 2021 were exported from the NEHRS dataset via the SAS studio software. Two .xlsx files were downloaded showing all the tables and fields from the NEHRS dataset. Microsoft Excel files for 2018 and 2021 were then sorted and filtered to reflect the two variables needed and filtered to correspond with the information from the NEHRS data dictionary for 2018 and 2021.

Results

Mean of Population by date of Survey



This information was then entered into R Studio to test for proportion comparison by using code `>prop.test(x=c(44, 1168), n=c(46, 1325), alternative='greater')` to evaluate for our alternative being an increase compared to the null.

The *P* value was 0.09212, indicating that the null hypothesis should be accepted and the alternative hypothesis should be rejected.

There is a 95 percent confidence interval. So, we are 95% confident that the true proportion of physicians who are collecting SDOH in 2021 and who also offer telehealth did not increase in a statistically significant way in comparison to 2018.

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Discussion

Telehealth includes using technology to directly deliver care, but it can encompass broader applications of technologies to health care functions such as consultation, distance education, or mentoring, monitoring and data collection as well as consumer outreach. [1]

Telehealth grew significantly as a delivery method of care from 2018 to 2021. Once someone has access to a phone or device connected to the internet, access to telehealth is attainable. However, not every community had the same telehealth transformation as another.

According to Brennen and Starren, "Telehealth and telemedicine approaches have the ability to bring professionals and patients closer together, and CHI innovations insure that the patient has access to the information resources necessary for them to participate fully in the health care process. [2]

Research of provider-to-provider telehealth highlights opportunities to synthesize the available evidence about the use of telehealth as a means of addressing rural health disparities. This research would support ongoing spread, conversion of telehealth friendly pandemic policies to permanent support, and the identification of potential new areas and approaches for the expansion of telehealth in underserved areas. [1]

Awareness of the impact of data collection for SDOH to improve health outcomes is an opportunity.

A limitation of the study is small sample size.

Conclusions

This study has not determined that the increasing use of telehealth during the pandemic correlates with the collection of SDOH data driven by the consumer health informatics discipline. By analyzing and comparing the datasets for the years 2018 and 2021, this study has not proven the collection of SDOH has increased in a statistically significant way based upon the increased use of telehealth. The literature research shows in order to improve healthcare outcomes in our communities, consideration may be made as to whether telehealth increases the collection of SDOH data. Inequities in education, poverty, unemployment, economic opportunities, and other social determinants contribute to persistent health disparities between those living in America's rural and urban regions. [4]

With standardization of data definitions, data becomes information gleaned from the patient medical records. After data definitions, collecting the data is the next step. Then interoperability and the use of data by patients, providers, researchers, and agencies will be enabled for attainment of knowledge. The COVID pandemic revealed opportunities for use of CHI. Social determinants of health when considered have proven to improve patients' health outcomes [5]. Therefore, the direct correlation between telehealth use and collection SDOH data may be an area of interest for continued study. However, SDOH continues to face challenges; yet there have been significant improvements and telehealth continues to be a more convenient way for patients receiving health care during and post COVID-19. Consistency issues in data collecting, interoperability, and data use by patients, clinicians, researchers, and organizations are still considered to be serious issues. In the future, it will be advantageous to implement a thorough mandatory aspect of care inside the EHR systems to address SDOH screening and subsequent use of health exchange at the point of care with clinicians across the continuum of care. It will require data analysis and coordination with providers, agencies, and patients, to address the importance of collecting SDOH data, which may also influence an improvement in accessibility to telemedicine by underserved patients affected by the digital divide.