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Healthcare Inaccessibility in Rural Indiana: A Scoping Review

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ABSTRACT

The majority of Indiana residents live in rural areas and suffer from significantly lower access to healthcare than their urban counterparts, leading to decreased longevity and in many cases a lower quality of life. The challenges faced among this cohort include generally poor health, high poverty rates, geographical impediments, healthcare worker shortages, and great distances to healthcare facilities. As poor health among rural residents drives higher demand for healthcare, the low number of practitioners in rural areas are unable to cope with patient needs. At the same time, access to reliable transportation prevents many from gaining access to healthcare facilities. Based on a literature review, including published academic, state, national, and governmental articles regarding disparities between urban and rural healthcare access in Indiana, this study explores the general health conditions of rural Indiana residents, disparities in healthcare worker and healthcare facility access among rural and urban Indiana populations, and an assessment of many proposed solutions. Although some solutions have resulted in incremental improvements, most have yet to yield meaningful results. The most promising recommendations for lasting improved access to healthcare for rural Indiana residents involve rapidly increasing the number of healthcare workers and facilities through the expansion of mid-level provider roles, including nurse practitioners and physician assistants, to augment physician care. Concurrently, increasing awareness of the availability of healthcare by these types of providers will result in improved access and better health for patients.

Introduction

Indiana is a state in the Midwest that consistently suffers from a lack of quality healthcare access and generally poor wellness among its population when compared to other states. Rural populations are particularly affected by a lack of healthcare, reflecting similar areas across the country. This is substantial in Indiana, where most inhabitants live in rural counties. Those who are the most in need of healthcare in Indiana are left with few plausible options to treat their medical concerns due to socioeconomic limits, geographical obstacles, and low numbers of providers in their area.

Rural Indiana

Indiana consists of ninety-two counties, with about 6.8 million people living in the state. Only 13 of these counties have over 100,000 residents, only 4 have over 250,000 residents, and the remaining parts of the state are largely considered rural. In fact, rural dwellers account for 63% of all Indiana residents, or about five of every eight inhabitants (Zollinger et al., 2008).

Hoosiers - or those living in Indiana - who are rural dwellers face many obstacles in their daily lives relative to their urban counterparts. These challenges include the requirement to traverse great distances to gain access to resources and to travel back home afterward. Often, this travel consumes substantial time, energy, and financial resources. Access to reliable transportation can be a challenge for many rural Hoosiers, driven by higher poverty rates

in these areas. Additionally, Indiana is home to only three major interstate highways, and many smaller communities are located too far from these roads for them to be accessible. Finally, often harsh winters combined with two-lane roadways can pose formidable challenges to safe transportation.

Hoosier Health

Hoosiers are generally exposed to higher risk factors regarding wellness according to S. Keefer (2015). These include overall poorer health versus many national average benchmarks and severe shortages of healthcare workers. Indiana ranks almost last in the nation when it comes to healthy behaviors (Keefer, 2015), and the majority of Indiana is designated as a Health Professional Shortage Area (Sheppard, 2018).

The general wellness of Hoosiers is very poor when compared to inhabitants of other states nationally. Indiana consistently ranks very high in national rates of obesity; in fact, two out of every three residents are either overweight or obese (Keefer, 2015). The state also suffers from high rates of tobacco and illegal drug use (Keefer, 2015)

Concurrently, the state suffers from a severe lack of healthcare workers. Overall, the ratio of physicians per resident in Indiana lags behind the national average by 41% (Keefer, 2015). The situation is even more severe when it comes to registered nurses (RN); projections estimate that the state needs about 20,000 additional RNs just to bridge the gap between current demand and available nurses (Zollinger et al., 2008). The combination of higher rates of health conditions - presumably driving higher demand for healthcare services - and lower numbers of healthcare workers to service these needs has led to negative health consequences for the state.

Rural Health Disparities in the U.S.

The 46 million people living in rural areas across the United States have been identified by the Centers for Disease Control and Prevention (CDC) as more likely to experience health issues than those in urban areas (CDC, 2017a). This population is generally older and experiences increased mortality rates due to health issues such as heart disease (CDC, 2017a). The rate of accidental deaths is about 50% higher in rural parts of the U.S. than in more urban settings; contributing factors include generally higher risks for being involved in motor vehicle accidents and higher rates of illegal drug overdoses (CDC, 2017b). All of these factors contribute to lower life expectancy and higher mortality rates in rural areas (CDC, 2017b).

Although a significant number of Americans are rural dwellers, very few healthcare workers practice within rural communities; in fact, less than 10% do so (Keefer, 2015). The relatively higher skill levels and licensure among many healthcare providers drive high salaries, and most appear to gravitate to more resource-rich, densely populated areas. The lower population density associated with rural areas of the country not only dissuades many high-earners from residing there, but also can make reaching individuals seeking healthcare services an arduous task for providers (Keefer, 2015). Additionally, the presence of few healthcare providers practicing in a rural facility at a given time tends to drive lower collaboration among colleagues, a vital component of delivering high-quality care.

Most of Indiana is rural, and Hoosiers suffer from poor health, especially in rural areas where access to healthcare providers is a significant hurdle. The demand for healthcare services far outstrips the number of healthcare practitioners among this cohort. Many challenges exist when it comes to healthcare access, and the most important factors driving these challenges are the rates of health conditions among this population, lack of access to healthcare workers and facilities, and limitations to health insurance coverage. However, some proposed solutions show promise to help overcome these issues.

Methods

The literature review conducted for this study includes published academic, state, national, and governmental articles about access to healthcare in Indiana focused on the disparities between urban and rural areas. The dates of publication range from April 2007 to February 2022. Literature databases utilized include Google Scholar and PubMed. Also included are publications released by the Centers for Disease Control and Prevention and the Health Resources & Services Administration. The search terms included "lack of healthcare"; "Indiana"; "rural"; "physicians per capita"; "access to healthcare Indiana"; and "rural healthcare." The literature selected specifically analyzed healthcare in rural settings. Topics chosen were the demand for healthcare among rural Indiana residents, the difference in distance to providers between urban and rural patients, and how the situation in Indiana mirrors national trends. Forty published articles were evaluated and five were included. Twenty government resources were viewed and seven were chosen for inclusion. A discussion of findings within this research is below.

Results

Need for Healthcare

Most Indiana residents reside in counties that have a physician shortage (Pope, 2020). Healthcare accessibility in Indiana, as defined by the physical distance of physicians and other healthcare providers to the patient population, is a significant issue for most rural Indiana residents. Two of the major obstacles are the lack of hospitals and the low number of healthcare facilities in non-rural areas. Since 63% of Indiana residents live in rural areas, it is important to recognize the negative impact the lack of access to healthcare has among this cohort, including decreased longevity and in many cases a lower quality of life. For example, 21.7% of cancer deaths in rural counties were preventable versus 3.2% in urban counties, and 37.8% of stroke deaths were preventable in rural counties versus 17% in urban counties (Lalani & Cai, 2022). K.J. Pope found that improving access will lead to meaningful results as different dimensions of healthcare must be provided to drive a significant and positive impact (Pope, 2020).

Rates of Conditions

The demand for healthcare in rural Indiana is rising and is driven by several significant factors, including a high rate of smoking (12th highest in the nation), obesity (9th highest in the nation), drug use (17th highest drug overdose mortality rate) (Keefer, 2015), and lower rates of seatbelt use (CDC, 2017a). Often, these conditions coexist among the population, resulting in dramatically higher demand for health services versus those in urban areas. In fact, about 6.3 million individuals in Indiana alone are suffering from at least one chronic illness; the main causes are socioeconomic limitations and a shortage of emergency and specialty care (Lalani & Cai, 2022).

Healthcare Worker Access

As can be seen in Figure 1, the ratio of physicians to residents is 90.5 in the United States (Keefer, 2015a). The ratio of physicians to residents of Indiana is consistently ranked very low compared to other states, with a ratio of 53.6 physicians to residents (Keefer, 2015a; Keefer, 2015b).

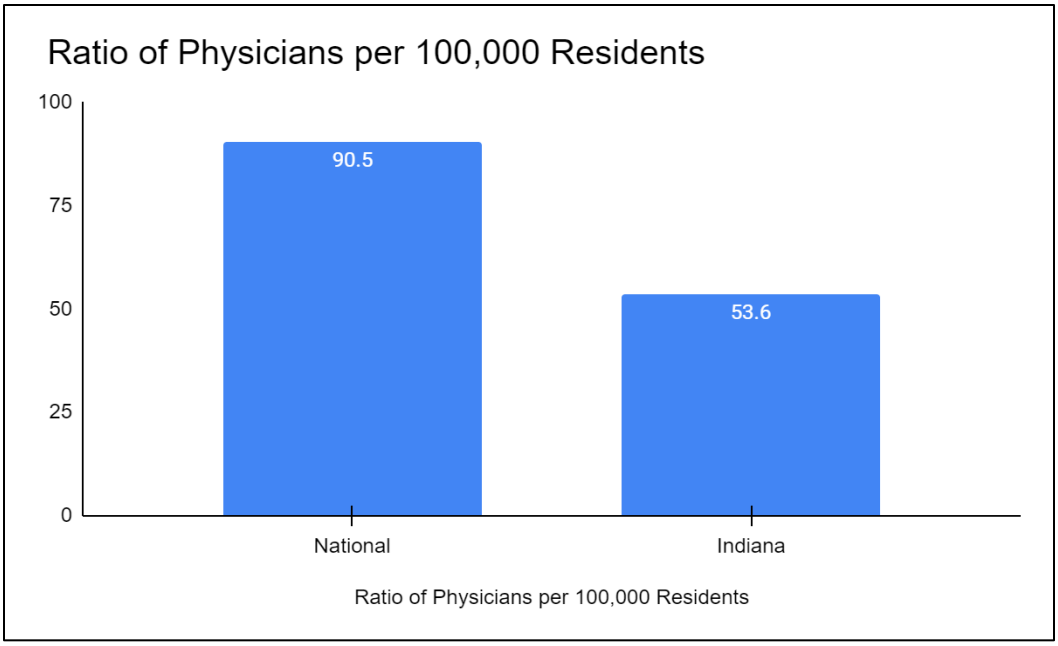

Figure 1: Ratio of Physicians per 100,000 Residents Nationally and in Indiana (Pope, 2020).

As can be seen in Figure 2, there are 1,331 residents per physician in rural parts of Indiana, compared to 566 residents per physician in urban Indiana counties and 295 residents per physician nationally. The lack of healthcare resources is further illustrated by the fact that 98% of rural counties fall short of the national benchmark for physician ratio, and 87% of rural counties do not have adequate registered nurse ratios according to this benchmark (CDC, 2017b).

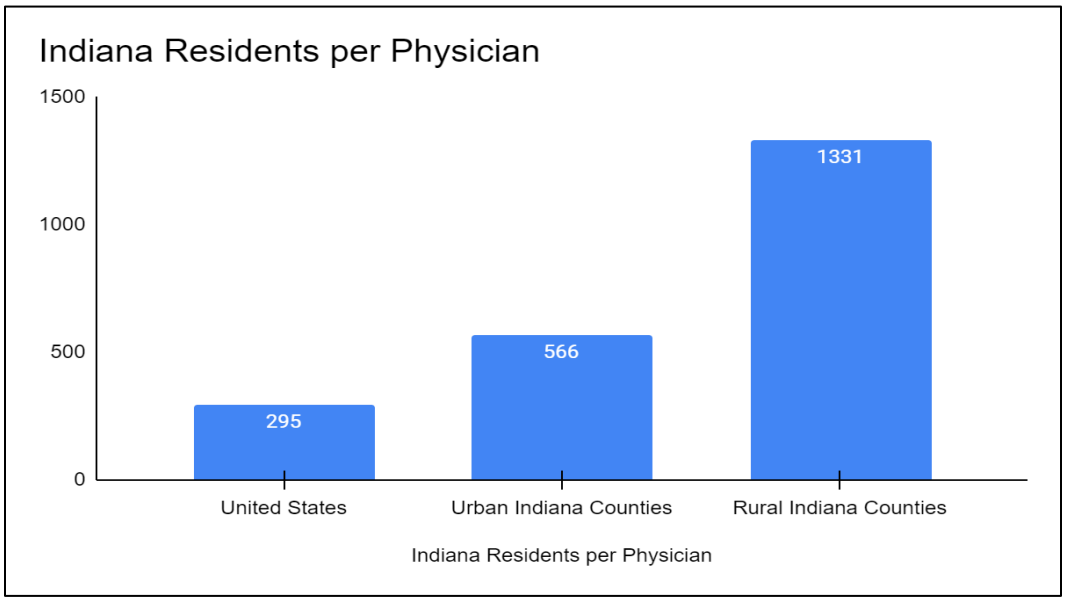

Figure 2: Number of Indiana Residents per Physician Statewide and Rural Counties (Zollinger et al., 2008).

Beyond access to general healthcare professionals and providers, specialist inaccessibility is often more pronounced, particularly in palliative care and emergency medicine (Eliacin et al., 2018; Lalani & Cai, 2022). There are several important factors relating to palliative care among Indiana residents. First, rural Indiana residents are identified as more likely to have chronic diseases due to generally poor health and lack of access to healthcare facilities, particularly medical specialties. Additionally, these patients may not even realize the resources potentially available to improve their quality of life due to poor education and awareness in rural areas surrounding palliative care (Lalani & Cai, 2022). Second, many rural clinics do not have the funding or expertise to provide these services, creating more barriers to community hospice services (Lalani & Cai, 2022). As far as emergency medicine access, rural dwellers face many of the same challenges, as ER doctors are often a great distance away.

Healthcare Facilities and Service Access

The CDC highlights that only 8% of the rural population in Indiana lives within 3.87 miles of any healthcare facility or service (CDC, 2017a). These statistics emphasize the concern for the healthcare deficiencies rural Indiana residents face. A lack of transportation options combined with great distances to healthcare facilities leads to lower access for patients. As described in Table 1, the median distance traveled per patient to healthcare facilities in the United States by those residing in urban areas is 6.79 miles, while rural inhabitants travel 32.13 miles, a more than fourfold increase (Weiss, 2021). Eliacin's findings suggest that considering the round-trip nature of healthcare facility visits, this issue becomes particularly salient for rural dwellers, as securing reliable transportation for the needed distances is often a significant hurdle (Eliacin et al., 2018). This disparity that exists on the national scale also exists in Indiana. Additionally, language barriers and healthcare illiteracy driven by poverty leave patients fearing discrimination (CDC, 2017a).

United States	Urban Dwellers	Rural Dwellers
Driving Distance	6.79 miles	32.30 miles
Straight-Line Distance	4.99 miles	26.05 miles

Table 1: Driving Distance and Straight-Line Distance to Healthcare Facilities in the US (Weiss, 2021).

Considering the Traumatic Brain Injury research published by Johanne Eliacin, Sarah Fortney, Nicholas A. Rattray, and Jacob Kean and the conclusions drawn, the shortcomings of emergent care in Indiana calls attention to the life-threatening consequences of inadequate transportation to health care services (Eliacin et al., 2018). Trauma centers in the state are very centralized, meaning that in urgent cases, the long distances these residents must travel often turn a severe injury into a fatal one (Eliacin et al., 2018). Challenges include too few trauma centers and the lack of dependable transportation to these facilities for medical emergencies that occur in rural areas (Eliacin et al., 2018). Additionally, one in three Indiana counties - all of them rural - lack any obstetric services, so any pregnancy complications would put these residents at severe risk (Pope, 2020).

Health Insurance Coverage

Affordability of healthcare and minimal healthcare coverage – as one in eleven rural residents lack any healthcare coverage (Pope, 2020) – all contribute to diminished, or often nonexistent, access to healthcare services for many such residents (Sheppard, 2018). The mindset of not being able to afford care prevents many rural patients from traveling to healthcare facilities in the first place, especially over long distances to and from appointments (CDC, 2017b). Although policies such as the Healthy Indiana Plan have somewhat increased the rates of insurance coverage among

Hoosiers, many rural residents are still left with jobs that offer no health insurance, leaving them fearful of hospital costs and consequently avoiding appointments despite their needs (CDC, 2017a; CDC, 2017b).

Proposed Solutions

The literature includes various proposed solutions to address the issue of healthcare access for rural Indiana residents. S. Keefer says that attempts at opening school-based health centers and expanding rural healthcare programs through medical schools have been funded and implemented statewide (Keefer, 2015). For example, the Indiana University School of Medicine has created programs that include an emphasis on rural medicine for medical students to gain clinical experience that concurrently combat the healthcare worker shortage in rural areas (CDC, 2017a). However, these methods have been only mildly impactful, as significant disparities between urban and rural inhabitants persist. More recently, research by K.J. Pope identifies that proposed solutions involving the use of technology such as telehealth have shown merit (Pope, 2020). However, widespread adoption of these technologies has yet to materialize. Forced adoption among many practitioners during the COVID-19 pandemic may go a long way in terms of proving the concept of wider usage of remote office visits. Incentives for healthcare workers to practice in rural areas appear to align with both provider and state-based goals but have also yet to demonstrate a significant impact. Limits to compensation exist and are likely compounded by generally high practitioner pay in urban areas to begin with.

Since access can largely be defined as a transportation problem, proposed solutions focused on enhancements to public transit, increasing the number of healthcare facilities in an area if there are none within a reasonable driving distance, or both can be provided through additional funding, as well as the incorporation of shared appointment strategies, and appear to likely be among the most impactful. Regarding access to specialists in healthcare, proposed solutions involving the decentralization of trauma centers to provide more equitable coverage of service to rural areas are likely cost-prohibitive, again when considering the scope of the issue and the widespread geography involved. Alternatively, providing access to dependable, timely transportation for patients requiring specialists to care facilities is likely a more realistic approach. From a cost standpoint, it is more applicable to trauma-driven scenarios than overall, because it is very expensive to transport individual patients over long distances and therefore is generally used only in emergency situations (Eliacin et al., 2018). However, pooling patients for transport along with group-oriented appointment planning may prove beneficial in these scenarios to reduce costs.

Once patients are connected with healthcare services, providing them with nutritional education to combat obesity and with information about the negative consequences of certain lifestyle choices, such as smoking and minimal seatbelt use, will enhance efforts to improve wellness among this cohort (Sheppard, 2018).

Among the most promising solutions are those that include expanding mid-level provider roles, including nurse practitioners and physician assistants, that augment physician care in rural areas, and increasing awareness of the availability of healthcare by these types of providers (Lalani & Cai, 2022). Expanding the roles of nurse practitioners to address the unequal distribution of primary healthcare, particularly in rural areas, appears plausible, especially when considering projections for widening gaps between the number of physicians practicing primary care and the increased demand for services (Keefer, 2015). Similarly, other mid-level providers are likely to be equally effective in solving accessibility issues. Although aimed at specific specialties initially, such as palliative care, such programs could easily be expanded to include local screening for early disease detection, improved access to programs for children with special needs, and the promotion of wellness and vehicular safety (CDC, 2017a).

Discussion

The literature shows that access to healthcare among rural Indiana residents is a major issue. Demand for health services is significant and rising, driven by high rates of smoking, obesity, and drug use, as well as low rates of seatbelt use (Keefer, 2015; CDC, 2017a). Importantly, the vast majority of Hoosiers live in rural areas (Keefer, 2015). These

obstacles clearly contribute to the number of people suffering from preventable illnesses in rural Indiana that may be avoidable if they had access to the proper resources and coverage to afford treatment.

Significant issues these residents face include a lack of access to healthcare workers and facilities, including both primary care and specialists. Disparities between urban and rural counties are highlighted by the vastly lower ratio of physicians per patient for the rural population (Keefer, 2015). Transportation and geographical barriers are also of concern, severely limiting access, which often allows treatable diseases and injuries to become severe or even life-threatening (Eliacin et al., 2018). Many other obstacles are present, including healthcare illiteracy or limited knowledge of resources, along with the financial burdens associated with healthcare, especially in light of the limited healthcare insurance coverage (Sheppard, 2018).

Many solutions have been proposed to address these problems, but implementation has been met with a range of success. Methods driven by statewide communication efforts have not yielded meaningful results (Keefer, 2015). Other approaches that involve technology, such as telehealth programs, show promise but have not yet shown meaningful success rates (Pope, 2020). Conversely, the expansion of mid-level provider roles is proving to be effective in compensating for the physician shortage in rural areas (Pope, 2020).

Counteracting the immense challenges in providing adequate healthcare access to the rural Indiana population has proven to be a long and difficult process. Given the geography of the state and limited financial resources available, it would be impossible to completely solve this problem from a transportation perspective. There are simply too many people that are too far away from providers and facilities to make this approach feasible. Instead, the best way to move forward is to rapidly increase the number of healthcare workers and facilities in rural Indiana through the expansion of mid-level provider roles. This approach will be more efficient because it involves deploying relatively few trained providers into a very large geographically dispersed population, rather than trying to bring all the patients into existing facilities. For example, additional training for RNs already practicing in rural areas in palliative care would result in significant benefits for patients and their families (Lalani & Cai, 2022). These practitioners generally do not formulate and promote care plans but could take on larger roles in recognizing when palliative care should be deployed as well as in planning for and managing this type of patient care (Lalani & Cai, 2022). Utilizing resources already in place aligns with lowering the costs of access.

Limitations

This literature review has a few limitations. Rural Indiana residents are an understudied population, meaning the number of sources on this topic was limited. Furthermore, some of the data sources used in this study are old, ranging from 2004 - 2022, which means they might be unrepresentative of the current situation in Indiana. However, this was addressed by looking at a wide set of data along with more recent trends in other parts of the United States.

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