

Specialized Physician Shortage in Rural Communities

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Abstract- The shortage of physicians in rural America has been an ongoing topic for decades. Most scientific literature has addressed the lack of primary care physicians in rural areas. However, there is a substantial amount of data which also shows a scarcity of specialty physicians in these regions. This shortage of specialized doctors has not been as represented in scientific research. Certain demographics in rural areas reveals the need for specific care which can only be provided by specialized physicians. The purpose of this article is to identify the current state of healthcare in rural areas and to identify solutions needed to increase specialized care in rural and underserved communities. This paper will serve as an excellent example not only to medical professionals and medical management teams, but also for legislatures approving the local and federal laws in the United States of America.

Index Terms- Specialized physicians; Rural Areas; Level 1/2 trauma centers; Physician Shortage.

I. INTRODUCTION

Within the last decade there has been a population decline in rural areas due to two main factors; negative net migration (more emigrants than immigrants) and natural decrease (deaths exceeding births). Negative net migration resulted from a lack of job opportunities, undeveloped cities, a shortage of economic and technological resources, and an unattractive lifestyle. These factors caused individuals who resided in rural areas to move to the cities in search of a better life and more opportunities. However, new research and data shows that the population shift may soon be going in the opposite direction. According to the Economic Research Service of the United States Department of Agriculture (USDA), the data from the U.S. Census Bureau demonstrates an increase in net migration in rural areas and the natural decrease has changed to a natural increase from 2013 to present (Cromartie, 2017). The USDA states "If current trends continue, both net migration and natural increase will contribute to a recovery of population growth in rural and small-town America in the coming years" ("Five Years", 2016).

Several factors have influenced the USDA to give a positive outlook on the population growth for rural areas. One of the main influences on the positive net migration is the decrease in unemployment in the rural communities. The USDA states that the rural communities' unemployment rate is on the decline from 9.9% in 2010 to 5.7% in 2015 ("Rural America at a Glance", 2016). The poverty rate in the rural areas are also decreasing. The rural areas showed a poverty level decrease of

0.9 %, compared to a poverty decrease of 0.8% for urban areas ("Rural America at a Glance", 2016). With unemployment and poverty on the decline, growing rural communities will be a viable option for people to live in. As these rural towns grow and expand there will be a need for more doctors in these areas, which are already dealing with a shortage of physicians.

The at Risk Rural Population

In the rural areas of America, there are specific demographics that place the population in an at risk category for many health conditions. According to the United States Census Bureau, the median age for people living in rural America is 51 years old compared to a median of 45 years old for their urban counterparts ("Measuring America", 2016). This age disparity can lead to more patients in rural areas requiring medical care as risk factors for certain diseases increase with aging. In fact, the National Rural Health Association reports that rural areas have more incidences of diabetes and coronary artery diseases than non-rural areas ("National Rural", 2017). Also, the percentage of older adults taking prescription medication is higher than their younger counterparts. According to the United States Census Bureau, 80% of adults 65 years or older reported regularly taking prescription medication, compared to 35% of adults younger than 65 years ("Americans Are", 2012). The Census Bureau also states that hospital stays among adults were higher for patients who were older than 65, at 83%, when compared to 8% for the rest of the population ("Americans Are", 2012). The mean age of the rural population is 6 years older, and statistics show that the older population is at risk for more diseases and ailments when compared to the younger population. These statistics along with the fact that there are more incidences of diabetes and coronary artery disease in rural areas, supports the standing correlation between age and risk for disease which plague this population.

Another factor to be considered is the lack of reliable transportation systems and internet connection in rural areas. According to the National Rural Health Association, the residents of rural areas have difficulties reaching healthcare providers due to a lack of public transportation, and having to travel longer distances to healthcare facilities ("National Rural", 2017). The association also reports that 53% of rural Americans lack the 25 Mbps/3 Mbps of bandwidth, which is the benchmark for internet speed according to the Federal Communications Commission ("National Rural", 2017). Lack of adequate internet speed can make it difficult for the citizens to receive health information via internet websites and other services such as telehealth. Without adequate internet speed and/or connection, it is important that there are a sufficient number of doctors to make

up for the lack of communication and health education that is facilitated through stable internet connection.

Injury related ailments and deaths are also a topic of concern in rural areas. More than 50% of vehicle crashes occur in rural areas ("National Rural", 2017). There is also a 22 % increase of injury related death in these areas ("National Rural", 2017). Primary care physicians are not usually trained to handle injuries related to the more complicated traumas such as fractures, torn ligaments, head trauma, nerve damage and vascular lacerations which are presented by car accident victims. Another alarming statistic is that the rural population is more at risk than the urban population for the five leading causes of death in America. According to the CDC, from 1994 to 2014, the rural areas had higher incidences of death from heart disease, cancer, chronic lower respiratory disease, cerebrovascular accident (stroke), and unintentional injuries (Phillips, 2017). All of these ailments will require interventions or consultations from specialty doctors; these doctors include but are not limited to cardiologists, oncologists, invasive oncologists, pulmonologists, neurologists and trauma doctors. The lack of primary care physicians in America has been an ongoing topic, but the statistics mentioned above stress the need for specialty doctors in the rural areas.

II. PRESENTATION & STATISTICAL DATA

According to the North Carolina Medical Journal, 19.8% of the population lives in rural areas, while only 8.9% of physicians practice medicine in these areas (Heck, Currie & Fagan, 2017). Furthermore, there are 380.5 physicians per 100,000 people in urban areas, compared to 118.3 physicians per 100,000 people in rural areas (Heck et al., 2017). The shortage of primary care physicians has been discussed several times over, with many initiatives to bring more of these doctors to rural areas. However, there hasn't been much discussion regarding the specialty physician shortage in rural areas. The National Rural Health Association states that there are 30 specialty physicians per 100,000 people in rural areas compared to 101 primary care physicians per 100,000 in the same areas (National Rural, 2017). Therefore, although there has been an emphasis on the shortage of primary care physicians, more attention should be given to the shortage of specialty physicians in rural areas. The Association of American Medical Colleges (AAMC) 2016 specialty data report showed that the specialties with the highest percentages of active physicians practicing in the same state where they trained were child and adolescent psychiatry (57.8%), family medicine/general practice (56.0%), and psychiatry (56.0%) (AAMC, 2016). The specialties with the least percentages were thoracic surgery (30.4 %), neurological surgery (33.6%), and plastic surgery (33.6%) ("Physician Specialty", 2016). So, not only is there a shortage in rural areas of specialty physicians, but specialty physicians are less likely to stay in the state where they trained. In other words, primary care physicians who complete residencies in rural areas will most likely stay in these areas, while certain specialty physicians will most likely practice elsewhere. Regarding the future outlook of the shortage of surgeons, which are much needed in the rural areas, the Journal of the American Medical Association states that the annual physician workforce indicates a shortage of surgical

specialties of 19,800 to 29,000 physicians by 2030 (Kirch & Patelle, 2017).

With more than 50% of vehicle crashes occurring in rural areas, and a higher incidence of death by unintentional injuries, the rural areas are especially in need of trauma centers. The parts of the United States that suffer the most from lack of specialty care which is provided at level 1 or 2 trauma centers are states in the western and midwestern regions. According to Traumamaps.org, the states lacking the most in these services are Utah, Nevada, Wyoming, Idaho and Montana ("Traumamaps," 2017). The website map displays the scarcity of level 1 or 2 trauma centers, showing many areas without these centers for miles. For example, going from west to east traveling through Utah and Nevada, there is over 400 miles without any level 1 or 2 trauma centers that are within 60 minutes distance via ambulance.

The American College of Surgeons Health Policy Research Institute (ACSHPRI) shows the distinction between the urban and rural counties in each state, revealing that these aforementioned states are mostly rural based on the percentage of rural counties vs. percentage of urban counties. Statistics from ACSHPRI show that Utah consists of 65% rural counties, Nevada 76%, Idaho 73%, Montana 75%, and Wyoming 91% ("American College," 2012). These same states have the least amounts of trauma centers, which correlates negatively with the higher incidence of injury related deaths. Traumamaps.org displays the amount of injury related deaths per 100 thousand people, which reveals a negative correlation between the availability of level 1 or 2 trauma centers and incidences of injury related deaths in these rural areas ("Traumamaps," 2017).

The rural communities will be hit the hardest by the projected shortage of surgical specialties since there is already a severe shortage of surgeons in these areas. For instance, the ACSHPRI states that Utah has a total of 29 counties, 19 of these are rural counties; of these 19, only 1 county has 45 surgeons per 100,000 people, and 9 counties have 0 surgeons per 100,000 people ("American College," 2012). None of these rural counties have a neurosurgeon, and within the whole state of Utah, there is an average of 1.48 neurosurgeons per 100,000 people ("American College," 2012). Other states such as Idaho, Wyoming, Nevada, and Arizona all have under 2 neurosurgeons per 100,000 people ("American College," 2012). There is also a deficit in vascular surgeons in these states, they all have under 1 vascular surgeon per 100,000 people, with the exception of Wyoming, which has 1.06 vascular surgeons per 100,000 people ("American College," 2012).

Factors Contributing to Physician Shortage in Rural Areas

There are several reasons why there are less doctors coming to and staying in rural areas. The most notable reason is the deficiency of medical schools in rural areas. If students from rural areas have to go to urban areas for medical school, they are less likely to choose a residency in the rural area after doing clinical rotations in the urban areas. According to PBS.org, the state of Arkansas has one of the fewest physicians per capita and among the unhealthiest residents (Stateline, 2016). This correlates with the fact that Arkansas only has two medical schools per state. Another factor is the lack of residencies in the rural areas. This is due in part to the size of the hospitals in the

rural areas vs the urban areas. Larger hospitals in the big cities will require more residents to treat patients. Unfortunately, there has been a freeze on the cap for government funding for new residency spots nationwide. So, until this cap is lifted, and the government provides funding to the residency training programs, there won't be many new residency programs to train doctors in rural areas. The bigger more prestigious hospitals in the city generate more revenue, and can afford to have more residency spots open to pay the residents to train; however, the smaller hospitals in the rural areas are more dependent on government funding to finance residency programs. After training in residency for at least 3 years doctors have already begun to settle into working fulltime and creating a life in the city they do residency, and are less likely to leave. So, doctors who go to medical schools in urban areas and complete residencies in urban areas are likely to stay in the urban areas for the duration of their careers.

There are however, medical schools and residencies in rural areas that are appealing to future doctors; so why aren't doctors staying in the rural areas upon completion of residency? The most notable reason is a lack of developed infrastructural systems in the rural communities. The small rural towns of America are less developed, with a lack of roads and highways, which can make traveling difficult. The lack of access to markets, shopping malls, recreational centers, restaurants and social gathering areas can be unappealing to a physician looking to establish his/her career. The lack of technological advances in the rural area is also a reason that would deter doctors from practicing in the rural areas. Telehealth is now becoming a huge part of medicine due to the efficiency it adds to being able to communicate with and treat patients. Not only is it helpful to physicians, but it also aids patients to keep in contact with physicians, and keep up to date with follow up appointments among other things. But as previously mentioned in this article, many areas in the rural communities are without sufficient internet connection; this interruption in internet communication can be a hindrance to maintain patient-doctor relationships and be an additional hurdle to jump over when treating patients.

The existing shortage of doctors in rural towns could mean that a rural doctor will be seeing more patients, because he/she will likely be the only doctor available to many patients. The higher the patient to doctor ratio could also mean that there will be a higher workload which could lead to burnout. In fact, specialists who practice in rural areas will be dealing with ailments outside of their scope of practice. This is because there won't be much other specialists to refer the patients to. The specialty of OB/GYN is one that is declining in rural areas. The Journal of Family Medicine Obstetrics states "Due to this lack of OB/GYN interest in practicing in rural areas, the primary medical physicians in these areas, which tend to be family physicians, should assume obstetrical care for these patients" (McCaleb & Wheat, 2013). This is an example of how lack of specialty care in the rural areas will spill over and burden the physicians with conditions outside of their scope of practice. This dilemma can and will deter physicians from practicing in rural areas.

Besides the possible burdens of work, one settling down in an area to make a living has to consider life outside of his/her career. Rural areas are often more attractive to the older

population, those who are retired and looking for a slower and relaxed life. Physicians completing residency are far from retiring, and the lifestyle of rural areas may not be appealing to those who are looking to start a life and family. Lack of places to go and things to do are a big factor in the unappealing status of the rural areas. For those with a family and/or children, lack of diversity in people and cultures of rural areas may deter physicians from staying in rural areas as well. When choosing a place to live, things to consider would be the amount of schools in the district for one's children, the distance from local supermarkets, and the ease of access to areas which would be frequently visited. Rural areas have less movie theaters, restaurants, and events that allow for a work and social life balance, when compared to the urban areas of America.

Suggestions and Possible Solutions

In order to solve the specialist physician shortage in rural areas, the issue must be addressed as two separate problems. First, the physician shortage in rural areas must be addressed as a general issue, then an emphasis must be placed on the shortage of specialty doctors. The most notable change that can be made to bring more doctors to rural areas would be to increase the amount of medical school admissions in these areas. This is because the doctors who are graduating from medical schools in these communities may acclimate to life in the rural areas and want to stay. This solution has been thought of before and implemented, but to no avail. Medical schools have increased admission by 25% since 2002, but there has been no significant change in the shortage since there has been no notable increase in the residency slots in America since 1997. Thus, a better answer to this problem would be to increase the federal aid in funding residency slots for hospitals, particularly in rural areas. According to the AAMC, there is a proposed bill called Training Tomorrow's Doctors Today Act that would provide the financial support from the federal government to enable the hospitals to train an extra 3,000 doctors per year ("GME Bill", 2016). This bill is a possible solution to the shortage, but it is still awaiting approval from Congress. Our suggestion would be to present the data from this article, along with other sources to the state senators, DOH and ACGME to paint a clear picture of where the healthcare system is heading. This research shows that it is only a matter of time until the rural areas of America are hit with a health crisis due to a lack of physicians. Hospitals and facilities must be transparent with the issue of understaffing, and show the correlation between high patient to doctor ratio and medical errors. Also, the people of these communities which face shortages must be made active in the process of persuasion to congress. Surveys and interviews can be performed to discuss issues such as wait times in doctor's office, lack of access to doctors in the immediate area and inability to have preferences when choosing doctors. All of these situations are related to physician shortage, which can be mitigated by opening up the cap for funding for residency slots. Along with new residency openings, the demographics for the rural areas must be presented to hospitals and institutions to allocate the appropriate specialty residencies in the at risk areas.

Another intervention that can be implemented is to open more level 1 and/or 2 trauma centers in rural areas. The higher incidences of injury related deaths in the rural areas are related to

the lack of trauma centers. Trauma centers can be affiliated with university hospitals so that medical students and residents can be trained in management and care of traumatic injuries in order to be well versed at dealing with these ailments. An increase in the number of trauma centers can also lead to jobs for physicians which will be an incentive for doctors to stay in rural areas.

Physicians such as cardiologists, endocrinologists and gastroenterologists are primary care physicians who further their education and training through fellowships to become specialized in a specific area. The benefits of having these doctors is that they have a foundational training in primary care, along with specialized training. So, a suggestion would be to increase the number of fellowship training in the rural areas. A pay increase to the physicians who chose fellowships in areas that would treat at risk patients in the respective community could also be allotted. As previously stated in the article, rural areas are at higher risks for chronic lower respiratory disease, cancer, heart disease, CVA and unintentional injuries. Out of these five ailments, four of them can be treated by a primary doctor who completed a fellowship; these specialties are cardiologists, pulmonologists, oncologists and physiatrists. Also, there are dual residency programs such as internal medicine/emergency medicine and anesthesiology/ emergency medicine which provide physicians with two certifications. Physicians with multiple certifications are valuable when treating patients in trauma centers, because they can treat more patients with different ailments than physicians with one specialty.

Attracting doctors to rural areas is another way to fix the physician shortage. There are two possible approaches. One way is to advertise and endorse working in rural hospitals and communities, and the other way is to advertise the positive aspects of living in rural areas. As a healthcare provider in the rural community, there are various benefits that can make the career worthwhile. For instance, there are several loan forgiveness and scholarships programs for health care practitioners who practice medicine in rural areas. One program is the Health Professions Loan Forgiveness Program; this program is eligible to healthcare practitioners who practice medicine in a designated shortage area. The program allocates up to \$100,000 in education loan assistance for physicians who practice medicine in designated areas such as Wisconsin, which has a lack of specialty physicians. With a majority of physicians graduating medical school with an enormous amount of debt, this program is an incentive to come to and stay in rural areas. These programs must be emphasized when advertising the benefits of practicing in rural areas.

Another benefit is the lower cost of living when compared to urban areas. Urban areas such as New York City, Chicago and Los Angeles are experiencing an increase in cost of living. This could be too expensive for a medical school graduates with over 100,000 dollars in student loans. According to BLS.gov, urban households spent 18% more than rural households; which consisted of expenses on food, housing, apparel and education (Hawk, 2013). The main expenditure difference between rural and urban areas was the cost of housing. Houses in urban areas have an average market value of \$153,147 when compared to \$129,111 for rural areas (Hawk, 2013). The cost to rent per month in an urban area is \$699 per month compared to \$354 per month in rural regions (Hawk, 2013). The loan forgiveness

programs combined with the cheaper cost of living in rural areas can be a great way to attract doctors to rural areas and keep them there.

Another benefit to practicing medicine in a rural area is the ability to form more personal relationships with one's patients. Rural areas offer a more close-knit community when compared to urban areas. Doctors often know their patients very well, and are more respected within the community as a professional of high status when compared to doctors in urban areas. For physicians who entered medicine with a passion for impacting lives on a more personal level, rural communities may be a more favorable option.

Attracting specialized physicians to rural areas can be difficult, because the rural areas lack the population size that urban cities provide for a more profitable practice. Also, the hospitals and facilities are usually older and less up to date with medical technology that some specialties require, such as the newest operating utensils which make surgeons' jobs easier. These factors can be overlooked by specialists when the data displaying the lack of specialties are made available and aware to these physicians. The data showing the correlation between lack of specialists in the rural areas and the increase in morbidities and deaths can be an incentive for these physicians to go where they are needed.

III. CONCLUSIONS

The current notion regarding the physician shortage focuses on the lack of primary care doctors in rural areas; although this is true, this article has displayed multiple examples of research and statistics which shows that specialty physicians are also needed in these rural areas. Not only is there a shortage, but the rural area's population presents with specific demographics which makes this shortage especially concerning. Along with the demographics of the population, there are complex living conditions in rural areas that make it imperative to have the right types and adequate amount of doctors to provide care for this population. Upon implementation of the proposed strategy, the rural and underserved communities will not only get a better reputation in the healthcare system, but a better patient outcome and recognition within current and graduated medical students pursuing residency in the United States.

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