

The Utilization and Effectiveness of Telemedicine in the Wake of COVID-19

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Thesis Summary

The COVID-19 pandemic devastated the world, in every industry. Almost none were hit as hard as the healthcare system. Through the use of telemedicine, healthcare providers were able to care for their patients without rise of infection. Through a review of published literature and interviews conducted with three practicing physicians of various specialties, a diagnosis was developed to determine if the care provided through telemedicine was as effective as in-person care. It was hypothesized that when used properly, telemedicine can be used as an effective replacement for in-person care across a wide range of specialties. After review of the literature and physician responses, it was determined that while telemedicine can be an effective replacement in specific fields, there are several in which it is unable to replace in-person care.

Introduction

The history of healthcare has changed throughout time, with the most drastic of these changes occurring in the last century. With the transition from a healthcare system centered around sickness and illness to one focused on prevention and wellness, the landscape of medicine changed. Whereas at the beginning of the century, many people often only went in for care as needed, the concept of the yearly check-up came to flourish. Just as that shift occurred in the 20th century, another shift is beginning in the 21st century. As with any other field, improvements in technology in the last several decades have altered the traditional methods of practice. In medicine, this has meant the rise of telemedicine. Telemedicine is the act of a healthcare provider virtually providing clinical care to their patients. Though sometimes used synonymously with “telehealth”, telemedicine is the act of providing care, whereas telehealth also includes remote health education. The use of telemedicine varies from specialty to specialty. Certain fields such as psychiatry use telemedicine more often than surgical specialties. According to a review of the American Medical Association’s 2016 Physician Practice Benchmark Survey, psychiatrists used telemedicine to connect with patients 12.7% of the time. compared to just 11.4% for surgical specialties. The adoption of telemedicine has steadily increased over the last 20 years until the COVID-19 pandemic greatly accelerated its use (Monaghesh & Hajuzadeh, 2020). Before the pandemic, telemedicine was used for mostly rural patients who had trouble reaching a physician. However, with the outbreak of COVID-19 in the spring of 2020, a need for contactless access to healthcare arose. Due to the high rate of transmission COVID-19 exhibits, telehealth has allowed physicians to interact with their patients without risking infection from the virus. One of the key benefits of telehealth in the face of the recent pandemic has been the ability for physicians to use telemedicine for regular and elective

care, therefore freeing up key resources needed for those who are severely affected by the virus. The increased use of telehealth as a result of the pandemic has laid the groundwork for the future of medicine. By developing the mechanisms and foundation for an electronic and virtual healthcare delivery system, the pandemic has allowed healthcare providers to remove much of the risk that comes from seeing patients afflicted with various illnesses (Monaghesh & Hajuzadeh, 2020).

The importance of telemedicine cannot be understated. One of the main aspects of telemedicine that makes it so attractive to patients is the total time of visits. This study showed that the average telemedicine visit lasted 39 minutes for patients, versus 126 minutes for in-person visits. The average time spent with physicians was 26 minutes for telemedicine versus 32 minutes for in-person. By simply having to switch from one video to another instead of move room to room, physicians save time between visits. On top of shorter visits, those who were seen virtually did not have to pay the average of \$49 for gas, parking, and tolls that the in-person patients did per visit. This cost and time-efficient method make telemedicine a very feasible and useful tool in the modern world (Robb, Hyland, & Goodman, 2019).

The quality of care provided by telemedicine has always been a questionable subject. Many people are curious if, in fact, patients can receive accurate and acceptable care from telemedicine compared to in-person care. In a study from the Cochrane Collaboration, it was determined that patients suffering from heart failure who received care via telemedicine did not experience any difference in mortality rate compared to those who received in-person care. (Flogren et al., 2015). The disease-specific quality of life for these patients was also shown to increase from the use of telemedicine. Other benefits correlated with telemedicine use were decreases in blood pressure and a decrease in LDL cholesterol. For those suffering from chronic

illnesses such as diabetes mellitus, hypertension, and chronic pain, telemedicine has been shown to have positive effects on response to care given (Seehusen & Azrak, 2019).

Telemedicine has also shown great promise in the field of mental health. In recent years, the willingness of both physicians and patients to accept the use of telemedicine, in this sense often referred to as “telemental health”, has improved. Many of those dealing with mental health issues are uncomfortable seeking treatment in public places. By allowing them to receive care in their own home, they feel more at peace and free to discuss the issues they face (Bashshur et al, 2016). In a study taken by Dr. Rashid Bashshur at the University of Michigan School of Public Health, it was determined that the use of telemedicine on patients with mental health issues led to an increase in quality of life and symptomology. This was evident over a wide range of patients in terms of demographics and diagnostic groups. As with other fields, the use of telemedicine also showed positive benefits in terms of cost (Bashshur, 2016).

The use of telemedicine has the potential to change the entire way that healthcare is provided. In a similar sense to the rise of streaming services and deliverable groceries, the implementation of telemedicine allows patients to receive necessary services from the comfort of their homes. Telemedicine, when used properly, can be used as an effective replacement for in-person care across a wide range of specialties.

A History of Telemedicine

The use of telemedicine can be traced back to the 19th century. In 1879, an article was published discussing the use of the telephone to lower the number of visits patients had to take to the doctor’s office (Nesbitt, 2012). Much of the early origins of telemedicine came from Europe, such as the transfer of electrocardiograms by Dr. Willem Einthoven in 1905. Much of the current research on telemedicine agrees that the first clinical use of telemedicine came in cardiology

(Ryu, 2010). Soon after Einthoven, radios began to make an appearance in the field of medicine. The concept of a “radio doctor” originally came from the cover of *Radio News* in 1924, which depicted a doctor communicating with his patient not only vocally, but through a screen as well (Institute of Medicine, 1996). This concept began to be implemented in a practical sense in order to treat patients aboard ships at sea. Beginning in the United States in the 1950s, radiographic image transfer allowed for a patient living in a remote area’s X-rays to be seen by a doctor miles away (Ryu, 2010). From the Mercury Space program in the late 1950s came the emergence of long-distance physiological monitoring. This allowed physicians to keep track of the vitals of astronauts orbiting Earth, ensuring that exposure to zero-gravity and high-speed orbit did not harm them (Nesbitt, 2012). The rise of the digital age in the 1990’s allowed for the transfer of various information in a rapid and efficient manner. For example, direct digital capture allows radiologists across the globe to view radiographic film, regardless of the origin of the material. This is similarly used in telepathology, which, with the digitization of pathology slides, allows pathologists to view complex images virtually and make assessments remotely (Nesbitt, 2012). The rapid rise of technology has spread the use of telemedicine across the entire field of healthcare. However, its use is more applicable in some specialties than others.

The Use of Telemedicine

Throughout its existence, telemedicine has made the largest impact in home and community-based care. Over 100 million Americans suffer from chronic diseases and their disease has typically been managed through an intermittent series of office visits. Their care accounts for approximately 75% of all healthcare costs in the United States (Nesbitt, 2012). The use of technology to provide remote care can be traced to a care management program developed by the United States Department of Veterans Affairs in the early 21st century. This program gave

patients access to education, monitoring, and medical advice from a remote support team (Nesbitt, 2012). The use of this program and others like it has been associated with lower rates of hospitalizations, shorter stays, lower cost, and higher rates of patient satisfaction. In a review of data collected from the American Medical Association's Physician Benchmark Data Survey, the usage of telemedicine between physician and patient ranged from 6.1% in allergy/immunology to 39.5% in radiology (Kane & Gillis, 2018). Specialties such as psychiatry and pathology had high rates of use as well, while the fields of gastroenterology and obstetrics/gynecology had low rates of use. The specific type of telemedicine used varied greatly by specialty as well, with physicians using telemedicine for video-conferencing, data storage, and remote patient monitoring. For video-conferencing, emergency medicine had the highest percent of usage at 31.6%, while dermatology had the lowest at 3.5%. On the other hand, the use of telemedicine to store and forward data was used at a rate of 42.7% for radiologists, with allergy/immunology and gastroenterology reporting 0.0% usage (Kane & Gillis, 2018). These numbers are not extremely surprising given the nature of each specialty. For instance, it is much harder for an OB/GYN to perform a proper examination over video-conferencing than it is for a radiologist to view an X-Ray that was shared electronically.

One characteristic that has been correlated with an increase in the use of telemedicine is the size of the specific practice. For physicians working in a practice that is comprised of one to four doctors, telemedicine was used for patient interactions approximately 8.2% of the time, whereas for physicians working in practices of at least fifty physicians, telemedicine was used approximately 26.5% of the time (Kane & Gillis, 2018). It has shown that while overall use of telemedicine between physicians in metropolitan vs. nonmetropolitan does not vary by much, the use of video-conferencing does. In nonmetropolitan areas, video-conferencing is used at a rate of

18.8% compared to 12.2% in metropolitan areas. Another key factor in the use of telemedicine was the ownership of the practice. For those practicing in a single specialty, physician-owned group, telemedicine was used 10.2% of the time for physician-patient interactions. For those in practices owned by hospitals, telemedicine was used approximately 27.6% of the time for the same interactions (Kane & Gillis, 2018). Overall, the review showed that in 2016, 15.4% of physicians were apart of practices that used telemedicine to interact with patients. While many specialties had high rates of use for telemedicine, the specific purpose of that use varied. For radiologists, their use of telemedicine consisted of viewing various data and images about the patient. Their telemedicine use was not a direct connection with the patient. Alternatively, psychiatrists used video-conferencing to interact with their patients almost 26% of the time. This “face-to-face” interaction is more commonly associated with the providing of care. Finally, cardiologists may not have interacted with their patients “directly” through telemedicine as much as other specialties, however, they used telemedicine to remotely monitor their patients approximately 18% of the time (Kane & Gillis, 2018). The use of telemedicine varies specialty by specialty, both in the amount used and aspect of use. For the majority of physicians, telemedicine still remains the alternative, leaving the possibilities that its use could open behind a cracked door.

COVID-19 and Its Impact on Healthcare

In late 2019, the COVID-19 disease, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), arose in Wuhan, China. SARS-CoV-2 is a positive single-stranded RNA virus that has the ability to quickly translate and integrate itself into the host cell. This leads to a rapid infection. Spread by respiratory actions such as coughing, talking, and breathing, the virus is extremely transmissible (Vidal-Alaball, 2020). By January 2020, it had

spread to the United States, with the first case being confirmed in Washington. By mid-March, a travel ban was implemented in the United States, preventing non-US citizens from entering the country if they had been to Europe within 14 days. As March came to a close, the country slowly began entering a shutdown. States around the country put stay-at-home orders into effect, restricting travel outside of one's home except for essential needs such as food (A Timeline of COVID-19 Developments). Various jobs were considered essential, however, the ones that were not left millions unemployed. At its peak during the pandemic, the unemployment rate skyrocketed to 14.8% in April 2020. That month, every state and the District of Columbia experienced unemployment rates higher than any reached during the Great Recession (Congressional Research Service). This rapid surge in unemployment caused millions of Americans to lose their health insurance. This put incredible financial pressure on many hospitals around the nation (Blumenthal et al., 2020). The COVID-19 pandemic devastated the healthcare industry; according to the American Hospital Association, the American healthcare system as a whole lost over \$202 billion in revenue since the pandemic began (Kaye et al., 2020). One of the greatest obstacles that the healthcare industry faced during the pandemic was a lack of preparedness for such an event. The low supply of ventilators, personal protective equipment, beds, and testing materials led hospitals to become overwhelmed. The strain the pandemic placed on hospitals caused various changes to be made. Elective surgeries and procedures were canceled across the nation, as were most outpatient appointments (Kaye et al., 2020).

Due to the effects of the pandemic, many indirect costs and problems have arisen. For instance, hospitals build the financial cost of drug shortages into their budgets every year. However, the pandemic caused the supply of drugs to drop dramatically. This, combined with the increased need for drugs to combat COVID-19, led to a drastic shortage of many crucial

drugs, which in turn increased hospital costs. As hospitals filled to capacity and front-line workers became infected by the virus, hospitals struggled to find more workers. Various hospitals suffered from a rise in overtime costs as nurses and other front-line workers were stretched thin. The increase in the demand for healthcare workers led many hospitals to partner with staffing firms to fill the void of healthcare workers. In turn, the staffing firms raised their prices due to the increased demand and shortage of workers (Hospitals and Health Systems, 2020).

The Rise of Telemedicine During the COVID-19 Pandemic

The rise of the COVID-19 pandemic caused a dramatic shift for the nation. Devastating financial loss for hospitals placed the healthcare system in shambles. The crippled system was forced to focus on the problem at hand, pushing other issues that existed before the pandemic to the backburner. Combined with social distancing and safety requirements, many aspects of healthcare were forced to find an alternative. The pandemic led to the increase of telemedicine use nationwide. Analysts believe that going forward, telemedicine could account for up to \$250 billion a year, up from \$3 billion before the pandemic (Henry, 2020). That is not to say that telemedicine was not already making its way into the healthcare system. In 2017, 76% of hospitals offered some form of telemedicine (Mills et al., 2020). The overall use of telemedicine increased dramatically in 2020 compared to 2019. In 2019, only 11% of patients used telemedicine to replace previously canceled in-person appointments. In 2020, that number jumped up to 46% (Henry, 2020). The increase in use has been met with positive sentiment from providers. 57% of healthcare providers look at telemedicine more positively than they did before the pandemic; 64% report that they are more comfortable with the usage of it as well. The concept of being able to abide by social distancing laws while also being able to provide some

level of care was very enticing to many providers during the beginning of the pandemic. In a report by the American Medical Association, it is estimated that the shift towards telemedicine can lead to 20% less emergency room visits, 35% of home health attendant services becoming virtualized, and 24% of healthcare office visits and outpatient volume delivered virtually (Henry, 2020). One of the first steps toward providing access to telemedicine was taken by the Trump Administration in the spring of 2020. The action put forward a significant expansion of telemedicine, allowing those enrolled in Medicare to speak to a physician through the phone, electronic chat, or video-conferencing at no extra cost (Vidal-Alaball, 2020).

The increased use of telemedicine is not without its limitations. Technological difficulties such as inconsistent clarity of images, sound issues, and unreliable internet connection can lead to improper delivery of care. For those living in rural areas or of lower socioeconomic status, lack of access to technology presents a disadvantage. Another common issue that is commonly noted by provider and patients alike is the lack of a personal connection between the provider and patient. Many providers claim that in order to properly deliver care, the relationship must be built on trust, which is difficult to build with the use of telemedicine (Mills, 2020). The inconsistent level of financial support by various insurances, both public and private, makes the process of using telemedicine increasingly difficult for both providers and patients. Telemedicine is also not applicable in a variety of medical situations. Although it is possible for a physician to deliver certain methods of care over a video-conference or phone call, it may be difficult in serious situations. In moments where wound assessment is required, the lack of being in person can present a challenge to the physician. Without being able to assess temperature difference, undermining, and odor, the physician may not be capable of providing proper care. Additionally, if the injured person or a present caregiver is unable to perform proper care at the instruction of

the physician, telemedicine would not be effective (Mills, 2020). Another drawback of the rapid integration of telemedicine into the healthcare system is the time and money required to train providers to use telemedical systems. During a time where healthcare systems are financially strained, time is a scarce resource (Mills, 2020). One of the downsides to telemedicine use is the rates of disintegration by patients. Many studies have shown that the use of telemedical technology slowly wanes down after the initial use. This presents an issue for various specialties including family medicine, where follow up visits are commonplace (Nesbitt, 2012).

While there are certain drawbacks to telemedicine, here are a multitude of advantages that come with its use. For the provider, cost effectiveness is also a benefit. By having more appointments virtually, they are able to save money in office space, number of nurses, and for those that rotate location to location, travel costs. Additionally, the high patient satisfaction rate that typically accompanies the use of telemedicine makes the overall provision of care easier (Boxer & Ellimoottil, 2019). Before the pandemic, telemedicine provided those living in rural areas to have access to care they would normally have to travel long distances for, or possibly not receive at all. It also provided those who were immobile or unable to travel for other reasons the same access. For those unable to attend normal clinical hours due to work or familial requirements, telemedicine provided an accessible alternative (Mills, 2020). By removing the need to travel for care, costs for the patient decreased, while time efficiency for both the patient and the provider increased. The use of telemedicine also allows patients who were averse to seeking care due to having to be present the opportunity to receive care from their home (Hasselfeld, 2021). With the rise of COVID-19, telemedicine filled a much-needed hole. The presence of a highly transmissible and infectious disease left healthcare providers unsure how to properly provide care while maintaining social distancing and adhering to safety guidelines. For

those who are high risk to the disease, such as those who are elderly, obese, immunocompromised, or pregnant, COVID-19 presents an even larger risk. In-person care puts not only the patient at risk, but also the providers themselves (Hasselfeld, 2021). By shifting towards telemedicine, the need for contact was drastically lowered. For clinical visits, a large majority of care could be provided virtually. This freed up medical resources for serious cases, such as PPE and hospital space (Mills 2020). The rise of telemedicine in the face of the pandemic allowed physicians and other healthcare providers the ability to connect with their patients without the risk of exposure for either party.

Telemedicine in Specific Fields

In approaching the concept of how telemedicine works, there is no better place to look than the viewpoints of physicians themselves. Three physicians of different specialties were interviewed to see how they view telemedicine, both before and during the COVID-19 pandemic. The three specialties chosen were psychiatry, obstetrics and gynecology, and family medicine. These three were chosen due to the wide range of differences in their practice. The variety of patients, daily tasks, and level of hands-on interaction were all taken into account when selected. Each physician was given the questions in advance and allowed to craft responses themselves. In the case of the family medicine physician, he opted to answer the questions over the phone, while the other two physicians chose to write their responses out and send them in over email. By taking the opinions of physicians from each field, a holistic diagnosis of telemedicine in practice was developed.

The entire basis of the psychiatric field is the relationship between the patient and physician. While that holds true to some degree for other specialties, it carries extra weight in psychiatry. This is because the illnesses and wounds that psychiatrists provide care for are not

necessarily visible to the naked eye. Instead, diagnosis must come from empathetic dialogue established over time. By developing a strong relationship and connection with their patients, psychiatrists can dive into what it is that causes the patient's problems and work their best to treat them. The COVID-19 pandemic presented a possible problem for the maintenance of these important relationships. The pandemic threw the entire healthcare industry into turmoil. For psychiatrists, they were physically cut off from their patients. This presented a risk because those suffering from psychiatric disorders have high rates of obesity, poor self-care, and other medical conditions (Öngür, Perlis, & Goff., 2020). Additionally, the number of patients seeking psychiatric care rose during the pandemic. In a study taken by Boston University, 27.8% of adults reported symptoms of depression, compared to just 8.5% before the pandemic (Van Beusekom, 2020). In a poll taken by the Kaiser Family Foundation, 64% of houses with healthcare workers said that stress from COVID-19 caused them to experience negative effects concerning their mental health. This included sleeping and eating issues, substance abuse, and worsening chronic conditions (Panchal, Kamal, & Cox., 2020) The increase in overall patients and lack of physical access to patients made for a very difficult beginning to the pandemic for psychiatrists. However, the use of telemedicine was rapidly adopted by many in the field. The use of telemedicine was very effective in its ability to provide effective care. Dr. Kelly Hobgood, a psychiatrist in Charlotte, North Carolina stated that telemedicine offered many benefits in comparison to in-person care. By providing the provider the ability to connect with the patient in a time-efficient manner, waiting times are reduced greatly. As an emergency psychiatrist, telemedicine allows Dr. Hobgood to connect with a patient in a rural area, reducing the need for transfer to a psychiatric hospital and in some cases, removing the need for additional care entirely (Hobgood, 2021). The use of telemedicine is not without its limitations in psychiatry.

Since many of the observations a psychiatrist makes are subtle, telemedicine may act as a barrier during sessions. Other issues that arise are of a technological side, as poor connection and malfunction can lead to a less effective appointment. Yet, when asked about the enhancements telemedicine provided, Dr. Hobgood stated “Some people are less intimidated by a virtual examination than by a live examination. Patients may be more open to disclosing information in the comfort of their own home versus the perceived sterile environment of a hospital ED or office. As noted above, patients’ lives can be enhanced by the time efficiency of telemedicine. Professionally, telemedicine can also be more time efficient as well” (Hobgood 2021). However, Dr. Hobgood’s personal use of telemedicine has not changed. “For me in my role as an emergency psychiatrist, I was using telemedicine/telepsychiatry routinely for shifts involving telepsychiatry in hospitals without a live psychiatrist/consultant. MY use has not changed, though I think PATIENT use of presenting to an ED for psychiatric care in the era of COVID-19 has certainly increased due to social distancing and many outpatient offices being closed or having limited live hours available” (Hobgood, 2021). He did note that before the pandemic, telemedicine was used in his practice as a whole in very specific instances, and there are now seven eight-hour shifts dedicated specifically for telemedicine, specifically telepsychiatry, in over 20 hospital emergency rooms that he is connected with (Hobgood, 2021). COVID-19 presented a difficult challenge for psychiatrists across the nation, but the use of telemedicine has allowed these physicians to provide care for their patients at a level of effectiveness not seen in many other fields.

One of the most up-close and personal of specialties, obstetrics and gynecology faced many challenges in the face of the pandemic. A specialty which requires hands on examination at almost every appointment, obstetricians and gynecologists (OB/GYNs) were left with very few

options once the pandemic made most physical appointments very difficult, if not impossible. Contrary to the field of psychiatry, obstetrics and gynecology had difficulty at providing effective care with the use of telemedicine. Dr. Dao Vuong, an OB/GYN in Charlotte, North Carolina, found that while telemedicine was useful in certain areas, it did not provide the factors necessary to deliver proper care in others. For cases requiring no hands-on examination, such as simple medical illnesses or appointments following up an in-person appointment, telemedicine can be very helpful. However, for instances that involve physical evaluation by the physician, such as a pap smear, pelvic pain examination, etc., telemedicine is not a useful tool (Vuong, 2021). The loss of physical access is not limited to the lack of examination ability, as Dr. Vuong cites the loss of personal human touch and nuances as other drawbacks from the use of telemedicine. However, when faced with the use of telemedicine or the risk of COVID-19 infection, OB/GYNs chose the former. The use of telemedicine provided them with a method of providing care, albeit a less effective one, that eliminated the risk of infection. At the peak of the shutdown in 2020, Dr. Vuong estimated that approximately 70% of her cases used telemedicine, with that number lowering to roughly 30% as the nation slowly opened up in 2021. One positive aspect of the use of telemedicine in obstetrics and gynecology is the patient response. For Dr. Vuong, her patients responded positively to the use of telemedicine, citing increased levels of freedom, the ability to have multiple parties present, and safety from COVID-19 as benefits. Today, having the option to still use telemedicine is a benefit for both OB/GYNs and their patients, as it allows for care while ensuring safety as the nation slowly begins to return to normalcy.

The field of family medicine can be considered similar to both psychiatry and obstetrics and gynecology. Like psychiatry, a strong personal relationship between physician and patient is

key to a productive experience. As with obstetrics and gynecology, hands-on examination is a common and necessary aspect of the role. Dr. David Cook, a family medicine physician in Mooresville, North Carolina, looked at telemedicine as a useful tool in the wake of the pandemic. Effective in specific circumstances such as medication refill or follow-up appointments, telemedicine is a valuable addition to the medical field. One of the most helpful aspects of telemedicine is how it provides patients with a method of contact to the physician for small issues that do not necessarily require a full-scale appointment (Cook, 2021). However, as an overall tool, telemedicine lacks the personal touch that is so crucial in medicine. As with Dr. Vuong and Dr. Hobgood, Dr. Cook understands the limitations of telemedicine. One of Dr. Cook's qualms with the use of telemedicine is that it does not allow the physician to pick up on the subtle energy that the patient gives off during an appointment. By not being able to pick up on that energy, the physician may miss a key detail relating to the patient's well-being (De Sutter et al., 2020). As noted in a study taken by Emily Mills, by not being present with the patient, the rapport that physicians seek to develop with the patient. This leads to a less than successful relationship, lowering the effectiveness of the visit (Mills, 2020). Many family medicine physicians have viewed the sudden surge of telemedicine as the "dumbing down" of medicine. Before the pandemic, family medicine physicians provided their patients with a multifaceted, personal healthcare experience, compared to the simple and mundane method that telemedicine offers. However, telemedicine's benefits in family medicine cannot be ignored. It allows patients easier access to their physician, while allowing them to remain safe from COVID-19. This ability has made more patients willing to "come in" for an appointment. Before the pandemic, Dr. Cook and other physicians had many patients skip out on their appointments

because it required them to be there physically. However, with the emergence of telemedicine, many of those same patients adhere to their appointments.

Overall, the use of telemedicine has been more applicable in some specialties than others. One thing most physicians agree on is that while telemedicine may not have provided the same level of care during the pandemic as in-person care would have, it helped save the healthcare industry from total collapse.

The Future of Telemedicine

Telemedicine usage has been on the rise since the beginning of the 21st century. Prior to the pandemic, the majority of its use was to provide patients in rural areas with access to care. With the emergence of the COVID-19 pandemic, the usage shifted to encompass a majority of healthcare that was provided. Going forward, the factors that made telemedicine so valuable, such as the time efficiency, the cost effectiveness, and increased patient comfort all will be considered when choosing between in-person care and telemedicine. One of the difficult tasks that lies ahead in the use of telemedicine is how payment methods work in comparison to in-person care. During the pandemic, many states required Medicaid and other forms of health insurance to coverage for telemedicine. Many also temporarily suspended deductibles and copayments (Strazewski, 2020). One of the biggest questions is whether or not this coverage will continue following the pandemic. For many, the use of telemedicine makes life much easier, yet without coverage they would not be able to afford it. Similar concerns have arisen at the federal level. For those on Medicare, telemedicine is at risk to only be covered for those in rural areas following the end of the pandemic. There is a push by many for the restrictions to be raised to allow telemedicine to be delivered regardless of the patient's location (Strazewski, 2020). In short, the largest barrier to the future of telemedicine is legislative. Until government and private

insurance providers alike are required to treat telemedicine the same as in-person care, it may never reach its full potential as an effective and useful compliment to in-person care.

Conclusion

This paper examined the history of telemedicine, the usage difference between specialties, the COVID-19 pandemic, how telemedicine rose during the pandemic, how certain specialties adopted telemedicine in the pandemic, and the future of telemedicine. Through review of previously published literature, combined with the interviewing of practicing physicians, the overall use and effectiveness of telemedicine was determined. The research conducted helped support the initial hypothesis that telemedicine can replace in-person care when utilized effectively. However, it must be noted that there are several specialties where telemedicine is unable to provide the same level of care as in-person. Telemedicine offers new and fascinating methods of healthcare that would not be possible without its utilization.

The benefits of telemedicine cannot be ignored. Not only does its usage provide patients with an easier method of access to healthcare, their overall health is shown to improve as a result of its usage. Lower blood pressure and cholesterol, as well as improvements in chronic disease such as diabetes and hypertension, are some of the benefits correlated with increased use of telemedicine (Seehusen & Azrak, 2019). The overall cost benefit for the patient is another excellent factor to telemedicine. By eliminating the need for a patient's travel costs, telemedicine provides a cheaper alternative. One of the most beneficial aspects of telemedicine is the increased comfort it provides for the patient. For many psychiatric patients, care from their own home provides them with a more relaxing and comfortable environment, which leads to a more effective appointment with their physician (Hobgood, 2021).

Telemedicine is not without its drawbacks. For specific fields that require physical examination more often than not, telemedicine leaves the physician at a disadvantage. By not allowing the physician to examine the patient in person, certain details may be missed that would not have been missed otherwise. Additionally, the lack of being in the same room can lead to small nuances being missed that would allow the physician to provide better care (Vuong, 2021).

Overall, the use of telemedicine has been a saving grace in the face of one of the most impactful situations since the Second World War. By allowing the healthcare industry to still operate at a manageable level, telemedicine saved the nation and the world from a complete healthcare collapse. Its usage provides many benefits, and, while not a perfect replacement for in-person care, acts as a useful tool in the provision of healthcare, now and in the future. The possibilities that telemedicine opens up are endless and one can only guess where those possibilities will take us.

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