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Telemedicine for Healthcare Service Delivery and Applications

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Abstract: **This research article explores the expanded use of telemedicine in healthcare. Though telemedicine has been used in healthcare for many years, it has grown in popularity since the COVID-19 pandemic. Telemedicine has also become widely accepted in a variety of healthcare settings and has been used to treat many diseases. Telemedicine is used in general healthcare, specialized healthcare, and in rural and remote settings. Additionally, innovative telemedicine applications have been utilized across the lifespan from infants to elderly using various treatment modalities. Telemedicine legislation continues to evolve regarding licensing and clinical privileges of health professionals and online prescribing. To fully analyze the documented benefits of telemedicine, barriers to telemedicine services provision are also included.**

Keywords: **Healthcare, Telehealth, Telemedicine, Video-Based Healthcare Delivery.**

I. INTRODUCTION

"Prior to COVID-19, only a few providers or state agencies conducted services through telehealth (telemedicine) practices.[1][2] However, as the effects of the pandemic widened, health providers and medical institutions began to seek alternative options to deliver healthcare largely due to the need for social distancing and social isolation in an effort to moderate expansive COVID-19 infection rates. Thus, telemedicine began to evolve into the structure as we know it – including a wide variety of virtual medical services.[3] Spath (2022) reported that "new models of care, such as telemedicine, affect organizational dynamics and require new systems to be put in place. Managers charged with many of these changes must consider the needs of all stakeholders" (p. 40). [4] However, novel telemedicine models have taken shape in many healthcare settings through the collaborative efforts of managers, administrators and health professionals.

Definitions of Telemedicine

With the rise in the use of telemedicine, definitions of the popular technology also began to evolve. Haleem et al. (2021) stated that "telemedicine is a health-related service with the help of telecommunicating and electronic technologies. It refers to the whole collection of deliverables designed to enable patients and their physicians or health providers" (p. 2).[5] Nieto-Martinez et al. (2023) indicated that telehealth and telemedicine were similar terms – with telehealth being the use of electronic information and communication technologies to provide and support healthcare services when distance separates the participants – with telemedicine being "restricted to the practice of medicine at a distance" (p. 4).[6] Shi and Singh (2023) stated that "telemedicine, or distance medicine, also commonly referred to as telehealth, employs telecommunications technology for medical diagnosis and patient care when the client and provider are separated by distance. It also enables a generalist to consult with a specialist when a patient's illness and diagnosis are complex" (p. 106).[7]

Telemedicine Growth During the COVID-19 Pandemic

Hailu et al. (2024) stated that "COVID-19 has reduced the capacity for delivering essential health services due to lockdown restrictions" (p. 1).[8] Also, the authors described "telehealth (telemedicine) as an effective alternative option to improve

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healthcare access".[8] Haleem et al. (2021) described telemedicine as an innovative technology that caters to a distant patient and "employs a range of electronic communications media, ranging from teleconferencing to image sharing to remote patient surveillance" (p. 2).[5]

Chowell and Lawson (2024) reported that telehealth (telemedicine) "saw unprecedented uptake because of social distancing measures and healthcare access challenges during the COVID-19 pandemic generates vast amounts of data that can reflect real-time trends in symptoms reporting, healthcare demand, and the efficacy of interventions".[9] Shi and Singh (2023) also reported that the practice of telemedicine saw unprecedented growth during the COVID-19 pandemic.[7] Shacar et al. (2020) reported that the era of the pandemic also led payers to adopt payment parity or fair payment policies for telehealth (telemedicine) and in-clinic services.[10]

Fandim et al. (2023) also reported that telehealth (telemedicine) had emerged as an alternative model for health services and treatment delivery.[11] It was also reported that "since the onset of the COVID-19 pandemic, telehealth (telemedicine) utilization has skyrocketed from treating 13,000 Medicare beneficiaries before the public health emergency to nearly 1.7 million Medicare beneficiaries following the pandemic".[1][12]

Bashur et al. (2020) stated that there was a rush to implement telemedicine as an alternative to in-person care due to devastation from the COVID pandemic.[13] The authors suggested that standard procedures were needed for the use of telemedicine to triage patients to appropriate care levels and sources.[13] Bashur et al. (2020) noted that telemedicine was a novel experience for many providers and patients who embraced it out of necessity – though telemedicine videoconferencing rose to serve as an effective alternative to in-person encounters and visits.[13]

Despite the varied definitions and rapid growth of telemedicine – especially during the COVID pandemic, many authors agree that telemedicine effectively bridges the gap between the provider and patient using electronic means of communication.

Biblical Foundation for Telemedicine in Healthcare

Though the Bible does not directly use the term telemedicine, it speaks volumes about inventions and universal healing. The Bible clearly highlights the value of God-inspired witty inventions.[14] It can be assumed that God-inspired inventions will be profitable for mankind. Similarly, the Bible refers to the word of God as being inspirational for instruction and correction. Telemedicine can be viewed as a Godly invention as its growth and uses have expanded to include people with varied health conditions from all levels of society.

Likewise, the Bible makes many scriptural references to universal healing through various means. Some of the scripture passages are as follows:

. "And Jesus went about all Galilee, teaching in their synagogues, and preaching the gospel of the kingdom, and healing all manner of sickness and all manner of disease among the people". [15]

. "And they departed, and went through the towns, preaching the gospel, and healing everywhere".[16]

. "And Jesus answering said unto them, They that are whole need not a physician; but they that are sick;[17] and

. "Is there no balm in Gilead; is there no physician there? Why then is not the health of the daughter of my people recovered?[18]

All of the scriptures cited denote the fact that healing should not be limited to geographical boundaries. The scriptures show that healing should take place universally – as denoted by Galilee, Gilead and everywhere – even in remote and rural areas.

Conventional means, pandemics and other adversities sometimes limit the human or natural reach of medicine to needy populations. It is in such instances that the Lord is needed to aid health providers in finding out the knowledge of witty inventions like telemedicine. Though telemedicine may have some shortcomings, it has answered the call to expand the reach of health services to needy groups worldwide. The Bible supports the use of inventions, such as telemedicine, to advance universal healing initiatives.

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Human Resource Management Concepts on the Use of Telemedicine

According to McConnell (2021) as medicine met business in the 1960s, healthcare organizations were encouraged to adopt cost-control practices.[19] According to Atkinson et al. (2023), telemedicine may be useful in controlling costs in some specialty areas such as antenatal care.[20] Haleem et al. (2021) also reported that telemedicine saves both the patient and the provider time and treatment costs – since the services can be provided through videoconferencing or other virtual technologies – reducing the frequency of medical visits.[5] Haleem et al. (2021) also reported that telemedicine aids in the exchange of health records over long distances such as "imaging photographs, blood analysis and other data in real-time for proper patient evaluation" (p. 5).[5]

Additionally, McConnell (2021) reported that "many of today's privacy issues arise from the ever-expanding use of electronic means of creating, capturing, storing and transmitting information" (p. 260).[19] Though means of securing electronic information have improved, hackers also use sophisticated methods to breach data and health information.[19] Further, McConnell (2021) reported that "patient records, results of tests, diagnoses, and other information relating to or concerning individuals to whom the organization is providing or has provided service should be held in the strictest confidence" (p. 320).[19] Haleem et al. (2021) stated that telemedicine systems should aim to prevent "privacy loss, confidentiality revealing, fraud and abuse, and inaccurate solutions" (p. 4).[5] Taylor et al. (2024) also indicated privacy and security remain concerns in telehealth training of rural doctors.[21] Rural doctors also indicated issues with the management of privacy and security covering all aspects of telehealth (telemedicine) services.[21]

Fields (2020) stated that "providers' approach to protected health information (PHI) during telemedicine should be the same as it is for in-person visits. Health Insurance Portability and Accountability Act requirements must be followed in addition to any state, local or institutional/organization standards" (p.413).[22]

II. ENHANCED HEALTHCARE SERVICE DELIVERY THROUGH TELEMEDICINE

Telemedicine has enhanced health service delivery through reduced costs, increased access, general health service and through the expansion of specialty health services. Many services once confined to a physical building can now be provided through telemedicine services.

Reduced Costs and Increased Access to Healthcare Services Through Telemedicine

Luscombe et al. (2021) presented evidence that virtual models of care like telemedicine may "facilitate greater continuity of care and reduce costs in service provision" (p. 743).[23] Haleem et al. (2021) also reported that overall, the cost of telemedicine treatment is cheaper – and thereby results in cost savings.[5] Haleem et al. (2021) also reported that "telemedicine can save money for both the individual seeking treatment and the provider when opposed to conventional care" (p. 5).[5] Practices may also extend weekend hours without the added cost of having the actual office open to patients.[5] Additionally, Haleem et al. (2021) stated that "telehealth may be making health more affordable and, as a result, growing healthcare's importance and getting immediate treatment to patients" (p. 9).[5]

Likewise, Idris et al. (2024) reported that telehealth (telemedicine) has improved patient access to healthcare services and has been shown to have a positive impact on various healthcare settings.[24] It was also reported that telehealth (telemedicine) has the potential to reduce barriers to accessing healthcare services and enhance clinical outcomes for patients.[24][25] Atkinson et al. (2023) reported that "generally telehealth (telemedicine) is shown to increase access to antenatal care" (p. 12).[20] Luscombe et al. (2021) stated that "rural allied health and nursing staff viewed telehealth (telemedicine) as having many benefits for pediatric patients and their families, including improved access to specialist services" (p. 743).[23]

Hailu et al (2024) reported telehealth (telemedicine) as an effective alternative option to increase healthcare access – also citing high levels of patient satisfaction (87.9%) with two-thirds of patients (65.1%) reporting that the telehealth (telemedicine) visit was just as beneficial as a traditional visit.[8] Nieto-Martinez et al. (2023) reported that telehealth (telemedicine) outcomes were "comparable to those of traditional healthcare with the advantage of having better accessibility for difficult-to-reach populations such as forcibly displaced migrants and reducing associated costs" (p. 1).[6]

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Variety of Healthcare Services Using Telemedicine

In recent years, the use of telemedicine has expanded to include a wide range of healthcare services. Haleem et al. (2021) provided research on the use of telemedicine as an excellent choice for mental health services and indicated that telemedicine may assist patients and physicians with the management of health problems such as diabetes and asthma.[5] Other treatment options for telemedicine included primary care consultations, psychotherapy, physical therapy and more.[5] Nieto-Martinez et al. (2023) highlighted the use of telemedicine for the treatment of diabetes and hypertension in forcibly displaced migrants.[6] Other reports of conditions effectively treated with telemedicine include hypertension[24]; diabetes, anxiety, mental health, coronary artery disease, asthma, hypertension, skin lesions and rashes.[26]

Also, Luscombe et al. (2021) described specialty and allied health services provided through telemedicine including dietetics, speech pathology, occupational therapy, child health, family nursing, and infant feeding clinics.[23] Haleem et al. (2021) also described how telemedicine could help radiologists "collect high quality photographs and obtain input from anywhere using telemedicine" (p. 5).[5] There have also been reports of specialized teams of physicians, nurses, pharmacists and other health professionals using their expertise to collaborate on patient decisions and provide direct care through telemedicine.[24][27] Haleem et al., 2021 shared that telemedicine is now used in medical areas such as dermatology, mental health, medicine and cardiology – and with conditions such as asthma, diabetes and sleep apnea.[5]

Shi and Singh (2023) described the use of telemedicine with intensive care units called Tele-ICU.[7] Tele-ICU was described as "a relatively new development that links intensivists and other critical care professionals to a network that enables remote monitoring of intensive care units (ICUs)" (p. 106).[7] There have been related reports that the real-time Tele-ICU assessments may lead to shorter patient stays, lower patient mortality and increased patient safety.[7]

III. INNOVATIVE TELEMEDICINE APPLICATIONS IN HEALTHCARE

Since the origination of telemedicine, many innovative applications have come into being. Haenchen et al. (2024) described how telehealth (telemedicine) information was used for early detection and forecasting during the COVID-19 pandemic.[28] Likewise, Chowell and Lawson (2024) suggested that telehealth-based probable COVID-19 cases had the potential to improve short-term disease forecasts leading to inspiration for "subsequent analyses to understand the optimal methods for leveraging telehealth data in predictive modeling" (p. 146).[9] Chunara et al. (2021) reported on the role of telemedicine in the New York City healthcare system during COVID using a cohort study.[29] The study presented the benefit of telemedicine in diagnosis, triage and treatment – despite the emergence of health disparities.[29]

Other innovative telemedicine applications reflected in the literature were video tour conferences with doctors when children became ill at school; digital health monitoring; medication tracking and teledentistry.[5] Jagielo et al. (2024) reported on telehealth (telemedicine) tobacco cessation treatment being offered as a covered benefit for patients at the Stanford Cancer Center in Palo Alto, California.[30] Other innovative uses of telemedicine included the provision of care to infants using a model pilot Virtual Pediatric Feeding Clinic.[23] Chan et al. (2023) demonstrated how telemedicine could be used with the elderly through tele-exercise to reverse muscle atrophy and relieve sarcopenia.[31] Innovative telemedicine applications have also been used to aid the elderly in residential aged facilities and emergency departments[32] and with adult trauma patients in emergency departments.[1]

Other reports of innovative telemedicine applications include telehealth (telemedicine) delivery in Part C of the Individuals with Disabilities Education Act to individuals who were eligible for early intervention services.[33] Gauert et al. (2023) reported on parental implementation of Discrete Trial Training for individuals with autism spectrum disorder (ASD) following telehealth (telemedicine) instruction.[34] Additionally, Chowell and Lawson (2024) reported that epidemic prediction and response could be improved by harnessing telehealth (telemedicine) data for predictive modeling.[9] While many examples of the innovative use of telemedicine have been presented, the extent of the potential use of telemedicine is yet to be discovered.

IV. TELEMEDICINE USE IN RURAL AND REMOTE AREAS

Several authors have highlighted the use of telemedicine in rural and remote settings. Graham et al. (2024) conducted a quantitative study on the experiences of Aboriginal and Torres Strait Islander people using real-time video-based telehealth services for diabetes in a hospital-based Vascular Services Clinic.[35] The purpose of the intervention was to improve access to specialist services for individuals in remote communities.[35] Haleem et al. (2021) stated that "the most extensive

telemedicine application can get health coverage closer to people who live in rural areas where quality treatment is otherwise impossible to access" (p. 9).[5] There have also been reports of telehealth (telemedicine) interventions that have included the management of hypertension which often involved remote patient monitoring (RPM) devices, such as blood pressure monitors to track patients' blood pressure levels.[24,36] Klee et al. (2023) reported on telehealth (telemedicine) use with rural patients during the COVID-19 pandemic in a large healthcare system.[26] According to the authors, "over 73% of rural patients had favorable perceptions of telehealth (telemedicine) visits, and satisfaction was generally higher among younger patients" (p. 1).[26] Likewise, "over 80% of the 219 providers responding to the survey reported that telehealth (telemedicine) added value to their practice, while 36% agreed that telehealth (telemedicine) visits are more efficient than in-person visits" (p. 1).[26]

Benefits of Telemedicine Use in Rural and Remote Settings

Authors such as Luscombe et al. (2021) and Nieto-Martinez et al. (2023) have presented studies on the benefits of telemedicine use in rural and remote areas.[23][6] Luscombe et al. (2021) reported on the expansion of caseloads related to feeding difficulties of children in rural Australia.[23] In response to the service access issue, a telehealth (telemedicine) outreach service called a Virtual Pediatric Feeding Clinic (VPFC) was piloted using an interdisciplinary team including a clinical psychologist, speech pathologist and pediatric dietician.[23] According to Luscombe et al. (2021), the telehealth (telemedicine) sessions were used for collaborative assessments, case discussions, treatment planning with families, and to provide specialist education on feeding challenges.[23] The Virtual Pediatric Feeding Clinic was described as having a significant positive impact on the clinicians' professional skills.[23]

Nieto-Martinez et al. (2023) demonstrated that telehealth (telemedicine) could be used to optimize preventive care in forcibly displaced migrant populations – who may be difficult to reach.[6] Outcomes of the study in providing cardiometabolic care "demonstrated significant outcome benefits, which are comparable to those of traditional healthcare" (p.4).[6] In addition to service provision, Taylor et al. (2024) conducted a survey of rural doctors to determine their needs for training in the provision of remote telehealth consultations.[21] Taylor et al. (2024) reported that the telehealth (telemedicine) training program improved the trainee's confidence and competence in the provision of remote consultations using telehealth (telemedicine) video technologies.[21]

V. EMPLOYMENT LEGISLATION FOR TELEMEDICINE USE IN HEALTHCARE

United States employment legislation has been expanded to include telemedicine use in healthcare. Fields (2020) stated that "telemedicine has been regulated almost as long as it has existed" (p. 409).[22] However, additional federal legislation and uniform state laws will be needed for telemedicine regulation and to support uniformity and quality of care in telemedicine practices.

Interstate Medical Licensing for Telemedicine Provisions

Fields (2020) highlighted the need for health professionals to know the rules regarding telemedicine use in their state – or "know the state's rules (distant site) and the rules pertaining to the states in which your patients reside (originating sites)" (p. 409).[22] Though all states have laws pertaining to telemedicine, "telemedicine practitioners should follow applicable practice regulations at the facility, state, and federal levels" (p. 409).[22] According to Fields (2020) "in general practitioners must be licensed in the states in which their originating site patients reside.[22] Licensing requirements vary significantly by state; knowing both the originating site and distant state rules before implementing a telemedicine program is essential" (p. 410).[22] Fields (2020) reported that "streamlined multistate licensing now exists through the Interstate Medical Licensure Compact" (p. 409).[22]

Healthcare Clinical Privileges for Telemedicine

Fields (2020) reported that "like traditional care providers, telemedicine providers must obtain treatment privileges and be credentialed at any health facility in which they practice" (p. 411).[22] "In 2011, Centers for Medicare and Medicaid Services (CMS) decreased the burden on both distant-site providers and Critical Access Hospitals (originating sites) by allowing providers' distant-site credentials to be accepted at originating sites" (p. 411).[22] "Practitioners should collaborate with their malpractice insurers to ensure appropriate coverage" (p. 409).[22] "Telemedicine-related claim coverage should be stipulated

explicitly in policy documents" (p. 412).[22] The issue of clinical privileges and malpractice claims merge because liability for malpractice sometimes lies with the provider or health professional, but on some occasions may also extend to the larger health facility or health system in which a health professional holds clinical privileges. Therefore, clarification regarding the clinical privileges and malpractice insurance needs in the use telemedicine is vital.

Online Prescriptions and Telemedicine

Hoffman (2021) reported that online prescribing through telemedicine raises ethical issues – due to the absence of federal regulations and uniform state laws.[37] Hoffman (2021) called for a need to balance healthcare and quality of care in relation to online prescribing through telemedicine – in light of evidence of overprescribing.[37]

Fields (2020) reported that "as telemedicine has grown, so have concerns about practitioners' prescribing controlled substances for patients whom they have never physically seen or examined. States vary in their internet-based prescribing regulations, especially when the prescriber resides out of state. Any policies from both the medical and pharmacy boards should be reviewed before implementing a telemedicine program in any state in which the care occurs" (pp. 411, 412).[22]

Fields (2020) reported further that "federal law overlays state policy. The Ryan Haight Online Pharmacy Consumer Protection Act of 2008 regulated this area. The act, designed to prevent illegal distribution and dispensing of controlled substances via the Internet, added new provisions to the already-established Controlled Substance Act" (p. 412).[22] Issues related to online prescriptions and telemedicine continue to evolve.[37]

VI. BARRIERS TO THE USE OF TELEMEDICINE IN HEALTHCARE

While telemedicine remains a viable alternative to traditional healthcare delivery, barriers persist that inhibit the effective and efficient delivery of telemedicine services. Among the barriers are file management and payment gateways[5]; internet connectivity in some areas, technical illiteracy among select populations and willingness to seek out services[6]; limited technical proficiency among older patients[30]; lack of training and internet access[33]; lack of training and limited technology literacy[20]; and technical quality.[21]

Other barriers include "difficulties with scheduling follow-up appointments, lack of personal contact and technology challenges".[26] Set-up time, privacy, interaction with and examination of patients[21]; patient privacy loss, confidentiality revealing, fraud and abuse, inaccurate solutions, data security, and hacking also remain barriers to the use of telemedicine in healthcare.[5]

Atkinson et al. (2023) also reported a study where expectant parents in the United Kingdom experienced heightened anxiety and felt that telehealth (telemedicine) was less personal than traditional health care services.[20] Bashshur et al. (2020) reported telemedicine deployment during the pandemic as rushed – with unintended consequences of substandard care to patients.[13] Additionally, Bashur et al. (2020) stated that in some rural areas telemedicine competes for patients, resulting in a loss of patients to rural hospitals and clinics, leading to additional financial challenges.[13]

Shi and Singh (2023) reported "other barriers to telemedicine, such as licensure of physicians and other providers across state borders and concerns of legal liability..." (p. 106).[7] Shi and Singh (2023) also reported that until recent years (during the pandemic and post-pandemic), reimbursement of telemedicine providers for healthcare services also remained a major barrier to care delivery via telemedicine channels.[7] It is in recent years that insurance companies have accepted telemedicine as an authentic measure for health care delivery.

VII. ANALYSIS OF TELEMEDICINE IN HEALTHCARE ORGANIZATIONS

When the word telemedicine is mentioned, one tends to think of telemedicine being administered through a local or regional hospital. However, Idris et al. (2024) reported that "telemedicine has improved patient access to healthcare services and has been shown to have positive impact in various healthcare settings" (p.1).[24] Idris et al. (2024) went further to "identify and classify information about types of interventions and types of telehealth (telemedicine) technology in hypertension management in primary healthcare" (p. 1).[24]

Chunara et al. (2021) provided highlights of the use of telemedicine in a New York based health system to diagnose and treat COVID-19.[29] Alter et al. (2023) presented highlights of telehealth (telemedicine) utilization with adult trauma patients

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during emergency department care based on eleven studies including 59,319 patients.[1] Outcomes of the studies revealed that "telehealth (telemedicine) practices resulted in comparable or reduced emergency department length of stay (ED-LOS) for trauma patients admitted to the ED (emergency department)" (p. 4830).[1] Alter et al. (2023) also reported that costs incurred were reduced following the implementation of telehealth (telemedicine) services.[1] Non-hospital settings such as ambulatory care[8], hospitals[29], dentistry[5], primary care[24], obstetrics[20], emergency departments[1] and residential aged facilities[32] actively utilize telemedicine services for healthcare delivery services.

Telemedicine use spans a wide range of healthcare organizations and services. The benefits of telemedicine have also been noted in relation to convenience, increased access and cost reductions – in urban, rural and remote areas.

VIII. CONCLUSION AND NARRATIVE ON TELEMEDICINE

"Telehealth (telemedicine) is described as the use of telecommunication and digital communications to deliver and facilitate health and health related services".[8] Telehealth (telemedicine) technologies include a variety of delivery and receptor modes including video conferencing, mobile health, and remote patient monitoring.[8][38] Reflections of the impact and barriers to telemedicine are as follows:

Reflections on the benefits of telemedicine include reduced costs, increased access and increased general health and specialty service delivery. Many authors reported that healthcare costs were positively affected by the use of telemedicine. Oftentimes cost savings were reflected based on limited travel needs and the quality of telemedicine services initiated. Additionally, there were reports of telemedicine being available in a variety of health care settings – treating multiple health conditions and providing specialized services with diverse teams of health professionals.[20][5][23][6][24][26]

Reflections on innovative telemedicine applications are widespread including tobacco cessation, use with the elderly, early intervention use, infant feeding services, COVID detection, diagnosis and treatment, doctor training programs and more.[5][30][23][31][32][1][33][9][28][13][21]

Reflections on telemedicine include increased access to services and training in rural and remote areas including migrants, geographically remote, forcibly displaced populations and rural doctors.[35][5][24][26][23][6][21]

Reflections on expanded employment legislation to support and regulate telemedicine utilization in healthcare includes legislation related to interstate licensing, clinical privileges and online prescribing.[22][37] Consistency and guidelines for all of the areas presented need to be addressed expeditiously as the telemedicine era continues to advance and will likely continue throughout the duration of health service delivery in the United States of America.

Reflections on telemedicine use also includes barriers that need to be addressed for the continuation of effective telemedicine services such as file management, payment gateways, internet access and connectivity, technical literacy and proficiency, privacy and confidentiality, lack of personal contact, data security and hacking and more.[5][30][21][33][20][26]

Telemedicine has taken somewhat of a heroic role due to its impact and relevance during and since the COVID pandemic. It came to the rescue when individuals were required to socially isolate and were unable to seek health services in the traditional ways. Thus, telemedicine's growth, service areas, innovative applications, barriers and impact in health care organizations have been presented.

Additional federal and state legislation will certainly be needed to provide regulations on clinical privileges, licensing of health professionals, on-line prescribing, uniformity of care, quality of care, data security and patient safety. Specifically, with the advent of online prescribing, many organizations are available to provide prescriptions that may not have sufficient patient historical data and information. The regulation of international prescriptions through telemedicine also adds an additional dimension to the discussion of patient safety and quality of care.

Rural areas tend to be in a dilemma regarding the use of telemedicine services. While the benefits of access to health services have been noted by several authors, other authors indicate that telemedicine sometimes forces rural areas to compete with a greater range of providers for the delivery and financing of health care services to individuals in their regions. Also, internet availability in rural and remote areas remains an issue in the wake and rise of telemedicine services.

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As the definition of telemedicine and telehealth also includes remote services, often in home settings, additional attention will need to be given to enhancing technical literacy and utilization skills among elderly populations. Several authors reported that younger adults were highly satisfied with the services offered through telemedicine. While information on satisfaction among older populations was not as promising – based on several studies.

The future of telemedicine seems to be promising, despite identified barriers and limitations. Telemedicine, as we know it, is poised to continue its revolution of unique healthcare delivery modalities, among diverse populations in the United States of America. This is the time for politicians, health administrators, health insurers and health professionals to convene to determine uniform interstate guidelines for telemedicine delivery and regulation.

REFERENCES

[1] Alter, N., Arif, H., Wright, D., Martinez, B., & Elkbuli, A. (2023). Telehealth utilization in trauma care: The effects on emergency department length of stay and associated outcomes. *The American Surgeon, 89*(11), 4826-4834. https://doi.10.1177/00031348231173944

[2] Shaver, J. (2022). The state of telehealth before and after the COVID-19 pandemic. *Primary Care, 49*(4), 517-530.https://doi.10.1016/j.pop.2022.04.002

[3] Doraiswamy, A. A. (2020). Use of telehealth during the COVID-19 pandemic: scoping review. *Journal of Medical Internet Research, 22*(12), e24087.

[4] Spath, P. (2022). *Applying quality management in healthcare: A systems approach*. (5th). Health Administration Press.

[5] Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2021). Telemedicine for healthcare: Capabilities, features, barriers and applications. *Sensors International, 2021*(100117). https://doi.org/10.1016/j.sintl.2021.100117

[6] Nieto-Martinez, R., De Oliveira-Gomes, D., Gonzalez-Rivas, J. P., Al-Rousan, T., Mechanick, J. I., & Danaei, G. (2023). Telehealth and cardiometabolic-based chronic disease: optimizing preventive care in forcibly displaced migrant populations. *Journal of Health, Population & Nutrition, 42*(93), 1-10. https://doi.org/10/1186/s41043-023-00418-x

[7] Shi, L. & Singh, D. (2023). *Essentials of the U. S. health care system*. (6th edition). Jones & Barlett Learning.

[8] Hailu, B. Y., Berhe, E., Yemane, A., Abera, M. A., Berhane, S., Berhe, F., Belay, S. A., Hailu, A. G., Abreha, B. B., Haileeyesus, H, G., & Gidey, K. (2024). Patient satisfaction with the implementation of telehealth in ambulatory care during the COVID-19 pandemic: A single institution experience. *BioMed Research International, 2024*(6800057), 1-6. https://doi.org/10.1155/2024/6800057

[9] Chowell, G., & Lawson, A. (2024). Harnessing telehealth: Improving epidemic prediction and response. *American Journal of Public Health, 114*(2), 146-148. https://doi.org/10.2105/AJPH.2023.307547

[10] Shacar, C., Engel, J., & Elwyn, G. (2020). Implications for telehealth in a postpandemic future: Regulatory and privacy issues. *JAMA*, 323(23), 2375-2376.

[11] Fandim, J., Hinman, R. S., Overas, C. K., Sharma, S., Belton, J., Oliveira, V. C., Dear, B. F., Parker, R., Ghai, B., Bennell, K. L., Ferreira, P., Hartvigsen, J. & Saragiotto, B. (2023). One step at a time: Shaping consensus on research priorities and terminology in telehealth in musculoskeletal pain: an international modified e-Delphi study. *BMC Musculoskeletal Disorders, 24*(783), 1-15. https://doi.org/10.1186/s12891-023-06866-0

[12] Le, V. T., Fulton-Kehoe, D., Sears, J. M. et al. (2022). Trends and disparities in the use of telehealth among injured workers during the COVID-19 pandemic. *Journal of Occupational and Environmental Medicine, 64*(4), e249.https://doi.10.1097/JOM.0000000000002520

[13] Bashshur, R., Doarn, C., Frenk, J., Kvedar, J. C., Shannon, G. W., & Woolliscroft, J. (2020, November). Beyond the COVID pandemic, telemedicine, and health care. *Perspective, 26*(11). https://doi.org/10.1089/tmj.2020.0328

[14] KJV. (2024a). https://www.biblegateway.com/passage/?search=Proverbs+8%3A12&version=KJV

International Journal of Novel Research in Healthcare and Nursing
Vol. 11, Issue 2, pp: (71-80), Month: May - August 2024, Available at: www.noveltyjournals.com

[15] KJV. (2024b). https://www.biblegateway.com/passage/?search=Matthew+14%3A23&version=KJV

[16] KJV. (2024c). https://www.biblegateway.com/passage/?search=Luke+9%3A6&verse=KJV

[17] KJV. (2024d).https://www.biblegateway.com/passage/?search=Luke+5%3A31&version=KJV

[18] KJV. (2024e). https://www.biblegateway.com/passage/?search=Jeremiah+8%3A22&version=KJV

[19] McConnell, C. (2021). *Human resources management in health care: Principles and practice*. (3rd edition). Jones and Barlett.

[20] Atkinson, J., Hastie, R., Walker, S., Lindquist, A., & Tong, S. (2023). Telehealth in antenatal care: recent insights and advances. *BMC Medicine, 21*(332), 1-17. https://doi.org/10.1186/s12916-023-03042-y

[21] Taylor, A., Connolly, J., & Pearce, C. (2024). A rural doctor's telehealth training program during the COVID-19 pandemic. *Rural and Remote Health, 8032*, ISSN 1445-6354. https://doi.org/10.22605/RRH8032

[22] Fields, B. G. (2020). Regulatory, legal and ethical considerations of telemedicine. *Sleep Medicine Clinic, 15*, 409-416. https://doi,org/10.1016/j.jsmc.2020.06.004

[23] Luscombe, G. M., Hawthorn, J., Wu, A., Green, B., & Munro, A. (2021). 'Empowering clinicians in smaller sites': A qualitative study of clinician's experiences with a rural Virtual Paediatric Feeding Clinic. *Australian Journal of Rural Health, 29*, 742-752. https://doi.org/10.1111/ajr.12781

[24] Idris, H., Nugraheni, W. P., Rachmawati, T., Kusnali, A., Yulianti, A., Purwatiningsih, Y., Nuraini, S., Susianti, N., Faisai, D. R., Arifin, H., & Maharani, A. (2024). How is telehealth currently being utilized to help in hypertension management within primary healthcare settings? A scoping review. *International Journal of Environmental and Public Health, 21*(90), 1-18. https://doi,org/10.3390/ijerp21010090

[25] Jackson, T. N., Sreedhara, M., Bostic, M., Spafford, M., Popat, S., Beasley, K. L., Jordan, J., & Ahn, R. (2023). Telehealth use to address cardiovascular disease and hypertension in the United States: A systematic review and meta-analysis 2011-2012. *Telemed Rep, 4*, 67- 86.

[26] Klee, D., Pyne, D., Kroll, J., James, W., & Hirko, K. (2023). Rural patient and provider perceptions of telehealth implemented during the COVID-19 pandemic. *BMC Health Services Research, 23*(981), 1-10. https://doi.org/ 10.1186/s12913-023-09994-4

[27] Drake, C., Lewinski, A. A., Rader, A., Schexnayder, J., Bosworth, H. B., Goldstein, K. M., Gierisch, J., White-Clark, C., McCant, & F., Zullig, L. L. (2022). Addressing hypertension outcomes using telehealth and population health managers: Adaptations and implementations considerations. *Current Hypertension Rep., 24*, 267-284.

[28] Haenchen, S., McCabe, B., Mack, W., Doctor, J., Linder, J., Persell, S., Tibbels, J., & Meeker, D. (2024). Use of telehealth information for early detection: Insights from COVID-19 pandemic. *American Journal of Public Health, 114*(2), 218-225. https://doi.org/10.2105/AJPH.2023.307499

[29] Chunara, R., Zhao, Y., Chen, J., Lawrence, K., Testa, P., Nov, O., & Mann, D. (2021). Telemedicine and healthcare disparities: a cohort study in a large healthcare system in New York City during COVID-19. *Journal of the American Medical Informatics Association, 28*(1), 33-41. https://doi.org/10.1093/jamia/ocaa217

[30] Jagielo, A. D., Chieng, A., Tran, C., Pirkl, A., Cao-Nasalga, A., Bragg, A., Mirkin, R., & Prochaska, J. J. (2024). Predictors of patient engagement in telehealth-delivered tobacco cessation treatment during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health, 21*(131), 1-12. https://doi.org/10.3390/ ijerph21020131

[31] Chan, K. O. W., Yuen, P. P., Fong, B. Y., Law, V. T. S., Ng, F. S., Fung, W. C. P., Ng, T. K. C., & Cheung, I. S. (2023). Effectiveness of telehealth in preventive care: a study protocol for a randomized controlled trial of tele-exercise programme involving older people with possible sarcopenia or at risk of fall. *BMC Geriatrics, 23*(845), 1-14. https://doi.org/10.1186/s12877-023-04535-4

International Journal of Novel Research in Healthcare and Nursing
Vol. 11, Issue 2, pp: (71-80), Month: May - August 2024, Available at: www.noveltyjournals.com

[32] Sunner, C., Giles, M., Ball, J., Barker, R., Hullick, C., Oldmeadow, C., & Foureur, M. (2023). Implementation and evaluation of a nurse-led intervention to augment an existing residential aged care facility outreach service with a visual telehealth consultation: stepped-wedge cluster randomized controlled trial. *BMC Health Services Research, 23*(1429), 1-13. https://doi.org/10.1186/s12913-023-10384-z

[33] Bravo, A., Ibanez, L., Scott, S., Dick, C., Carpentier, P., & Stone, W. (2023). Telehealth delivery in Part C Early Intervention: Provider and caregiver perspectives. *Journal of Autism and Developmental Disorders, 53*, 4545-4559. https://doi.org/10.1007/s10803-022-05734-5

[34] Gauert, S., Rittenhouse-Cea, H., & Rittenhouse-Shaw, K. (2023). Parent implementation of DTT following telehealth instruction. *Journal of Autism and Developmental Disorders, 53*, 3980-3986. https://doi.org/10.1007/s10803-022-05693-x

[35] Graham, K., Fitzpatrick, K., Agius, J., Loughry, C., Ong, E., McMillan, N., Gunn, K., & Fitridge, R. (2024). A qualitative exploration of the experiences of Aboriginal and Torres Strait Islander people using a real-time video-based telehealth service for diabetes-related foot disease. *Rural and Remote Health, 7970*. https://doi.org/10.22605/RRH7970

[36] Heizelman, R. J. (2022). Telehealth and hypertension management. *Primary Care: Clinics in Office Practice, 49*, 621-629.

[37] Hoffman, L. C. (2021). Shedding light on telemedicine & online prescribing: *The need to balance access to health care and quality of care*. Cambridge University Press.

[38] Gajarawala, S. N., & Pelkowski, N. (2021). Telehealth benefits and barriers. *The Journal for Nurse Practitioners, 17*(2), 218-221.