



Avancement in Healthcare: Trens, Challenges, and Future Directions

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Chapter 1: Introduction to Healthcare Advancements

Healthcare has evolved considerably over the years, with advancements in technology and innovative approaches transforming the way care is delivered. A significant change in the healthcare landscape is the growing recognition of holistic health, which integrates physical, mental, emotional, and social well-being. This holistic approach extends to healthcare workers, whose demanding roles require them to balance work pressures with personal health. Holistic health promotes a balanced lifestyle that helps healthcare workers avoid burnout and maintain the vitality needed to deliver high-quality care. The implementation of such practices not only enhances individual health but also contributes to improved patient outcomes and overall system efficiency (Engle et al., 2021; Warner et al., 2020). This chapter explores how these advancements have shaped the healthcare workforce and their impact on patient care.

Holistic health is a cornerstone for healthcare workers' well-being, especially in an environment known for high stress and physical strain. Many healthcare professionals, such as nurses, doctors, and medical staff, work long shifts under demanding conditions that can compromise their health. The focus on holistic health emphasizes the importance of self-care for healthcare workers. Adopting a holistic health framework within healthcare organizations helps address their physical, emotional, and psychological needs, creating a healthier workforce. These initiatives support better job satisfaction and improved performance, which directly enhances patient care. By focusing on the overall health of healthcare workers, organizations ensure that their teams are better equipped to handle the stresses of their profession and deliver excellent service (Engle et al., 2021).

An essential element of holistic health is physical wellness. Healthcare workers often face physically demanding tasks, including long hours, heavy lifting, and extended patient contact, all of which can lead to fatigue and strain. Maintaining physical health is crucial to ensure that healthcare professionals can perform their duties effectively and safely. Programs that promote physical wellness, such as exercise routines, ergonomic workspaces, and proper nutrition, are necessary for maintaining a sustainable workforce. Healthcare institutions that support these programs help reduce the risk of workplace injuries and burnout, contributing to a safer environment for both staff and patients (Khanna & Srivastava, 2020). A physically healthy workforce improves the overall quality of care and ensures operational efficiency.

Mental health is another critical aspect of holistic health for healthcare workers. The emotional toll of caregiving, exposure to traumatic events, and the constant pressure of patient care can lead to mental health challenges such as stress, anxiety, and burnout. These mental health issues are pervasive in the healthcare sector, affecting both performance and job satisfaction. To address these challenges, healthcare organizations must prioritize mental health support by offering counseling, stress management programs, and peer support systems. By fostering a supportive work environment, organizations help reduce the stigma surrounding mental health and encourage healthcare workers to seek assistance when needed.

Providing mental health resources ensures healthcare workers are prepared to cope with the emotional demands of their roles (Zonnenshain & Kenett, 2020).

Emotional well-being plays an equally important role in the holistic health of healthcare workers. The ability to remain emotionally resilient is essential in maintaining positive relationships with patients, families, and colleagues. Without emotional support, healthcare workers may experience burnout, compassion fatigue, and feelings of isolation, all of which can compromise patient care. Healthcare organizations can foster emotional well-being by encouraging mindfulness, promoting team-building activities, and providing access to counseling services. A supportive work culture that values emotional health enhances interpersonal relationships and reduces workplace stress, ultimately benefiting both healthcare workers and the patients they care for (Davis et al., 2023). A workforce with strong emotional resilience is better equipped to handle the complexities of patient care.

The quality of care that healthcare professionals provide is intrinsically linked to their holistic health. When healthcare workers are physically rested, mentally focused, and emotionally supported, they are more likely to deliver high-quality care. A healthcare worker who is well-cared for is better positioned to communicate with patients, assess their needs, and implement evidence-based practices effectively. By integrating holistic health into workplace practices, healthcare organizations create an environment that fosters quality care and safety. Furthermore, patients benefit when healthcare providers are well-supported, as these professionals are more attentive, compassionate, and capable of offering optimal treatment (Nadziakiewicz, 2022). This interconnected approach underscores the importance of prioritizing the well-being of healthcare workers.

Healthcare organizations are pivotal in promoting holistic health among their workforce. Through various initiatives, such as flexible work schedules, wellness programs, and comprehensive health benefits, organizations can support the overall well-being of healthcare workers. Leadership also plays a crucial role in implementing these policies. Leaders who advocate for holistic health create an environment that prioritizes the health of their staff, fostering a culture of well-being. Investing in the holistic health of healthcare professionals benefits both employees and patients. By offering health and wellness programs, organizations not only improve the quality of care but also increase employee satisfaction, engagement, and retention (Proctor et al., 2021). These initiatives contribute to the overall efficiency and sustainability of healthcare systems.

Despite its significance, achieving holistic health for healthcare workers is not without its challenges. Factors such as time constraints, staffing shortages, and the emphasis on clinical productivity often hinder the implementation of wellness programs. Additionally, there are cultural barriers, such as the stigma surrounding mental health, which prevent many healthcare workers from seeking the support they need. Overcoming these obstacles requires a shift in organizational culture, where well-being is viewed as a vital component of healthcare delivery. Addressing these challenges requires comprehensive strategies, including providing adequate resources and fostering a supportive environment that encourages healthcare workers to prioritize their health (Fleming et al., 2022). Only by tackling these barriers can healthcare systems fully integrate holistic health practices into their culture.

Leadership is a critical factor in promoting holistic health within healthcare organizations. Leaders who understand the importance of well-being set a positive example for their teams, encouraging a healthy work-life balance and advocating for wellness initiatives. Effective leadership involves not only offering resources for wellness programs but also creating an open and supportive work environment. Leaders who prioritize holistic health positively influence the morale and retention of their staff, thereby enhancing the overall efficiency and quality of care. A leadership approach that values the well-being of healthcare workers reflects an understanding of healthcare quality as a holistic concept that benefits both providers and patients (Aiyegbusi et al., 2023).

Investing in the holistic health of healthcare workers leads to long-term benefits for both the workers and the organizations they serve. Healthier healthcare professionals experience reduced absenteeism, increased job satisfaction, and improved productivity. For healthcare systems, these outcomes translate to

reduced operational costs, better patient satisfaction, and improved clinical outcomes. In addition, promoting holistic health fosters a culture of trust and collaboration, which strengthens the overall performance of healthcare teams. The long-term benefits highlight the importance of prioritizing holistic health as a strategic initiative within healthcare organizations (Al Munajjam et al., 2023). By recognizing the value of workforce well-being, healthcare organizations can build a more resilient and effective workforce.

As healthcare needs evolve, so too must the approaches to supporting the well-being of healthcare workers. The integration of technology, such as telemedicine, wearable devices, and personalized wellness programs, offers new opportunities to support healthcare workers' health. These innovations help address the unique challenges faced by healthcare professionals, particularly as they deal with high-stress environments and heavy workloads. Future research should focus on identifying evidence-based interventions that address the holistic health needs of diverse healthcare populations. By integrating holistic health practices into workforce development strategies, healthcare organizations can ensure that their employees remain resilient, engaged, and capable of delivering high-quality care (Alshammri et al., 2022).

These advancements, particularly in the realm of technology, hold great promise for supporting healthcare workers in their efforts to maintain balance between work and personal life. For instance, wearable technology can provide real-time feedback on physical health, helping healthcare workers manage stress and physical strain. Similarly, telehealth services can offer convenient access to mental health counseling, reducing barriers to care and improving overall well-being. These innovations, combined with ongoing support from healthcare organizations, can help ensure that healthcare workers have the tools and resources needed to maintain their health in an increasingly demanding profession (Alshammri et al., 2022). By prioritizing holistic health, healthcare systems can continue to adapt to the changing needs of their workforce.

Looking toward the future, healthcare organizations must embrace the ongoing advancements in both healthcare delivery and employee support. As healthcare systems become more complex, the need for a resilient and well-supported workforce is more critical than ever. By promoting holistic health, organizations not only ensure the well-being of their staff but also enhance the overall efficiency and effectiveness of healthcare delivery. The future of healthcare will depend on the ability to integrate technological advancements with a strong focus on workforce well-being, ensuring that healthcare professionals are prepared to meet the demands of an evolving healthcare landscape.

Chapter 2: Current Trends in Healthcare

Telemedicine Expansion

One of the most significant trends in healthcare today is the rapid expansion of telemedicine. Telemedicine allows healthcare providers to offer consultations, diagnoses, and treatment plans remotely, breaking down geographical and logistical barriers to care. This technology has become increasingly important in the context of the COVID-19 pandemic, where in-person visits were restricted to minimize exposure. Telemedicine not only enhances accessibility for patients in rural or underserved areas but also helps alleviate the burden on healthcare systems during times of crisis (Balogun, 2022). The continued growth of telemedicine will likely reshape patient-provider relationships and improve overall healthcare delivery, especially as the technology becomes more sophisticated and integrated with other digital health tools.

Artificial Intelligence in Diagnosis and Treatment

Artificial Intelligence (AI) is transforming how medical professionals diagnose and treat patients. AI-driven systems can analyze vast amounts of medical data, such as imaging scans, genetic information, and patient history, to identify patterns that may not be immediately apparent to human clinicians. This technology supports the development of precision medicine, enabling personalized treatment plans based on individual genetic profiles (Drummond et al., 2022). AI also helps reduce human error by assisting in decision-making, providing recommendations based on historical data and clinical guidelines. As AI evolves, its integration into healthcare workflows is expected to improve diagnostic accuracy, enhance treatment

outcomes, and streamline clinical processes, though ethical considerations surrounding data privacy and bias must be carefully addressed.

Personalized Medicine

Personalized medicine is another critical trend that tailors medical treatment to the individual characteristics of each patient. Advances in genomics and biotechnology have made it possible to analyze a patient's genetic makeup to determine how they may respond to specific drugs or treatments. This approach enables healthcare providers to create more effective and targeted treatment plans, minimizing adverse effects and improving patient outcomes. Personalized medicine also opens the door for preventive measures based on genetic risk factors, potentially reducing the need for more aggressive treatments later (Rahman et al., 2022). However, the widespread adoption of personalized medicine requires continued research, as well as the development of infrastructure to support genetic testing and data analysis on a larger scale.

Preventive Healthcare Models

Preventive care is becoming a central focus in modern healthcare systems, shifting the emphasis from treating illness to preventing it. Preventive healthcare involves interventions such as vaccinations, regular screenings, lifestyle counseling, and health education to reduce the incidence of chronic diseases like diabetes, heart disease, and obesity. The goal is to identify risk factors early and address them before they develop into more serious conditions. This trend is supported by advancements in digital health tools, which allow patients to track their health and receive personalized recommendations based on real-time data (Taylan & Weber, 2023). As preventive care becomes more ingrained in healthcare models, it could lead to lower healthcare costs and better long-term health outcomes.

Wearable Devices and Health Monitoring

Wearable devices, such as fitness trackers and smartwatches, have gained popularity in recent years as tools for monitoring health in real-time. These devices track vital signs like heart rate, blood oxygen levels, and sleep patterns, providing users with actionable insights into their health. In addition, wearable devices can be integrated with other healthcare technologies, enabling healthcare providers to remotely monitor patients with chronic conditions or those recovering from surgery (Lorkowski et al., 2021). This trend represents a shift towards more proactive, patient-driven healthcare, allowing individuals to take charge of their well-being while maintaining continuous communication with healthcare providers. The growing adoption of wearables is likely to drive a more personalized, data-driven approach to healthcare.

Interdisciplinary Collaboration

Interdisciplinary collaboration is becoming increasingly common in healthcare settings, as teams of healthcare professionals from various fields work together to provide comprehensive care. This approach is particularly evident in complex cases, where patients require input from multiple specialists. For instance, in oncology, a patient's treatment plan may involve oncologists, surgeons, radiologists, and nutritionists, all collaborating to ensure the best possible outcome. Interdisciplinary teams can also be more responsive to patient needs, offering holistic care that addresses not only medical conditions but also emotional and psychological concerns (Asamani et al., 2021). This trend is likely to continue as healthcare systems move towards more integrated, patient-centered care models that prioritize collaboration over siloed care delivery.

Blockchain in Healthcare

Blockchain technology, best known for supporting cryptocurrencies, is also making waves in healthcare. Blockchain offers a secure and transparent way to manage patient records, ensuring that sensitive health information is protected from unauthorized access while enabling seamless sharing among healthcare providers. This decentralized system could revolutionize health data management by reducing the risk of fraud, improving interoperability between systems, and enhancing patient privacy (Compton et al., 2023).

As blockchain adoption grows, healthcare systems may see improved efficiency in administrative tasks, better tracking of medications and treatments, and more accurate and accessible medical histories.

Robotics in Surgery and Rehabilitation

Robotic technology is increasingly used in surgery and rehabilitation, offering enhanced precision and reduced recovery times. In surgical settings, robotic systems assist surgeons in performing minimally invasive procedures with greater accuracy, reducing the risk of complications and improving patient outcomes. Robotic-assisted surgeries are especially beneficial in fields like orthopedics and neurosurgery, where precision is critical. Additionally, robotics is making strides in rehabilitation, with devices designed to help patients recover from injuries or surgeries more quickly (Pan et al., 2022). The continued advancement of robotic technologies promises to expand the capabilities of healthcare providers and improve the efficiency and effectiveness of treatments.

Integrated Care Models

The shift towards integrated care models is another prominent trend in healthcare. Integrated care involves coordinating services across different healthcare providers, ensuring that patients receive seamless and continuous care throughout their treatment journey. This model is particularly beneficial for patients with chronic conditions, who often require care from multiple specialists. By consolidating services and improving communication among providers, integrated care can lead to better health outcomes and a more patient-centered experience. It also promotes efficiency by reducing duplication of tests and procedures (Al-Worafi, 2023). As healthcare systems continue to focus on improving coordination, integrated care will play a pivotal role in streamlining care delivery.

Digital Health Records

The adoption of digital health records (EHRs) has revolutionized how healthcare providers store and share patient information. EHRs improve the accuracy and accessibility of medical data, enabling healthcare professionals to make more informed decisions. They also streamline administrative processes, reducing paperwork and improving efficiency. While there are challenges related to interoperability between different EHR systems, the overall trend toward digitization is clear, with healthcare systems around the world investing in EHR infrastructure (Rami et al., 2023). As EHR technology improves and becomes more integrated, patients and providers will benefit from more coordinated, timely, and accurate care.

Mobile Health Applications

Mobile health applications are increasingly being used to support both patients and healthcare providers. These apps range from simple tools that track physical activity and nutrition to more sophisticated platforms that monitor chronic conditions like diabetes or hypertension. Mobile health apps offer patients greater autonomy over their health, allowing them to make informed decisions based on real-time data. For healthcare providers, these apps can offer valuable insights into patient progress, facilitating more personalized care plans (Lan et al.,

References:

1. Ahmadi, A., & RabieNezhad Ganji, N. (2023). AI-driven medical innovations: transforming healthcare through data intelligence. *International Journal of BioLife Sciences (IJBLS)*, 2(2), 132-142..
2. Ahmed, A., van den Muijsenbergh, M. E., & Vrijhoef, H. J. (2022). Person-centred care in primary care: What works for whom, how and in what circumstances?. *Health & social care in the community*, 30(6), e3328-e3341.
3. Aiyegbusi, O. L., Hughes, S. E., Peipert, J. D., Schougaard, L. M. V., Wilson, R., & Calvert, M. J. (2023). Reducing the pressures of outpatient care: the potential role of patient-reported outcomes. *Journal of the Royal Society of Medicine*, 116(2), 44-64.
4. Al Munajjam, M. F. M., Albaqami, N. S., Alnashry, E. M., Zakaria, M. O., Almutairi, A. R., Alshhri, N. A., ... & Alhafi, M. S. B. (2023). Enhancing Patient Care: The Integral Role Of Nurses In Medical Hospital Settings. An Update. *Journal of Namibian Studies: History Politics Culture*, 38, 1798-1809.

5. Al Yami, S. N. M., Alyami, S. H., Alajmi, J. M., & mohammad Alyami, A. (2023). Integrating skills: advancing patient care through combined expertise in nursing, emergency medicine, and health assistance. *Chelonian Research Foundation*, 18(1), 177-190.
6. Alayt, M. M. M., Alshallali, N. M., Alalawi, R. I., Alore, M. M., Al Roman, A. S., Ali, Z. O., ... & Algemele, A. H. N. (2022). INVESTIGATING THE ROLE OF NURSING INTERVENTIONS IN REDUCING HOSPITAL ACQUIRED INFECTIONS. *Chelonian Research Foundation*, 17(2), 3088-3098.
7. Alruwaily, S. A. T., Shammari, A. L., Ayed, A. S., Shammari, A. L., Ayed, S. S., Tamshan, A. R. F. A., ... & Rafi, A. (2022). CRITICAL IMPACT: THE INDISPENSABLE ROLE OF NURSING SERVICES IN ELEVATING HEALTHCARE QUALITY. *EPH-International Journal of Medical and Health Science*, 8(2), 39-44.
8. Alshammri, A., Almalki, A., Alasmari, M., Alshihre, M., Al-Qarni, H., Alqahtani, T., ... & Alotibi, M. (2022). The impact of patient-centered care at work: make a difference to the patient experience. *International Journal for Scientific Research*, 1(2), 171-187.
9. Alshareef, I. M. A., Al Shaman, H. M. H., & hadi Al Mansour, I. (2023). The Role Of Data Analytics In Medical Administration: Leveraging Information For Decision-Making. *Journal of Namibian Studies: History Politics Culture*, 36, 12-23.
10. Al-Worafi, Y. M. (2023). Healthcare facilities in developing countries: Infrastructure. In *Handbook of medical and health sciences in developing countries: Education, practice, and research* (pp. 1-21). Cham: Springer International Publishing.
11. Al-Worafi, Y. M. (2023). Quality of Healthcare Systems in Developing Countries: Status and Future Recommendations. In *Handbook of Medical and Health Sciences in Developing Countries: Education, Practice, and Research* (pp. 1-28). Cham: Springer International Publishing.
12. Al-Worafi, Y. M. (2023). Technology for Health: Overview. *Handbook of Medical and Health Sciences in Developing Countries: Education, Practice, and Research*, 1-23.
13. Al-Worafi, Y. M., Dhabali, A. A., Al-Shami, A. M., & Ming, L. C. (2023). Management for Healthcare Professionals. In *Handbook of Medical and Health Sciences in Developing Countries: Education, Practice, and Research* (pp. 1-22). Cham: Springer International Publishing.
14. Alyami, A. M., Alyami, S. M. S., Alotibi, A. O. M., Alkatheri, M. M., Almowalad, A. A. A., Alomiri, S. M. S., ... & Alsahli, M. A. (2023). Streamlining Medical Administration: The Role Of Electronic Or File Records In Enhancing Efficiency And Patient Care. *Journal of Namibian Studies: History Politics Culture*, 38, 1824-1836.
15. Alyami, N. H., Albahri, F. A., Alajmi, N. M., Alsaleam, A. M., Al Salah, A. M. H., Alyami, A. H. D., & Al Ishaq, I. A. M. (2023). Challenges And Solutions In Medical Clinic Workflow Management: A Critical Perspective. *Journal of Survey in Fisheries Sciences*, 10(5), 125-130.
16. Amri, S., & Sihotang, J. (2023). Impact of Poverty Reduction Programs on Healthcare Access in Remote Ar-eas: Fostering Community Development for Sustainable Health. *Law and Economics*, 17(3), 170-185.
17. Amri, S., & Sihotang, J. (2023). Impact of Poverty Reduction Programs on Healthcare Access in Remote Ar-eas: Fostering Community Development for Sustainable Health. *Law and Economics*, 17(3), 170-185..
18. Asamani, J. A., Ismaila, H., Plange, A., Ekey, V. F., Ahmed, A. M., Chebere, M., ... & Nabyonga-Orem, J. (2021). The cost of health workforce gaps and inequitable distribution in the Ghana Health Service: an analysis towards evidence-based health workforce planning and management. *Human Resources for Health*, 19, 1-15.
19. Aslam, M. Z., Trail, M., Cassell III, A. K., Khan, A. B., & Payne, S. (2022). Establishing a sustainable healthcare environment in low-and middle-income countries. *BJU international*, 129(2), 134-142.
20. Assiri, H., Mohammed, A., Alotaibi, A. M., Alameer, A., Hamran, A. I., Aloufi, K. A., & Alshammari, A. N. (2020). Strategies For Improving Health Administration In Rural And Underserved Areas: Bridging Gaps In Access To Care. *Journal of Namibian Studies: History Politics Culture*, 28, 142-166..
21. Atluri, H., & Thummisetti, B. S. P. (2022). A Holistic Examination of Patient Outcomes, Healthcare Accessibility, and Technological Integration in Remote Healthcare Delivery. *Transactions on Latest Trends in Health Sector*, 14(14)..

22. Avula, R. (2020). Overcoming data silos in healthcare with strategies for enhancing integration and interoperability to improve clinical and operational efficiency. *Journal of Advanced Analytics in Healthcare Management*, 4(10), 26-44.
23. Ayaz, O., & Ismail, F. W. (2022). Healthcare simulation: a key to the future of medical education—a review. *Advances in medical education and practice*, 301-308.
24. Bachmann, N., Tripathi, S., Brunner, M., & Jodlbauer, H. (2022). The contribution of data-driven technologies in achieving the sustainable development goals. *Sustainability*, 14(5), 2497.
25. Bailey, J. E., Gurgol, C., Pan, E., Njie, S., Emmett, S., Gatwood, J., ... & Shah, V. O. (2021). Early patient-centered outcomes research experience with the use of telehealth to address disparities: scoping review. *Journal of medical Internet research*, 23(12), e28503.
26. Balogun, J. A. (2022). A Qualitative Investigation of the Barriers to the Delivery of High-Quality Healthcare Services in Nigeria. In *The Nigerian Healthcare System: Pathway to Universal and High-Quality Health Care* (pp. 345-359). Cham: Springer International Publishing.
27. Abbasi, N., Nizamullah, F. N. U., & Zeb, S. (2023). AI in Healthcare: Integrating Advanced Technologies with Traditional Practices for Enhanced Patient Care. *BULLET: Jurnal Multidisiplin Ilmu*, 2(3), 546-556.
28. Abiri, A., Patel, T. R., Nguyen, E., Birkenbeuel, J. L., Tajudeen, B. A., Choby, G., ... & Kuan, E. C. (2023, January). Postoperative protocols following endoscopic skull base surgery: an evidence-based review with recommendations. In *International Forum of Allergy & Rhinology* (Vol. 13, No. 1, pp. 42-71).
29. Abu-Odah, H., Molassiotis, A., & Liu, J. (2020). Challenges on the provision of palliative care for patients with cancer in low-and middle-income countries: a systematic review of reviews. *BMC palliative care*, 19, 1-16.
30. Adams, K., & Engelhardt, N. (2022). *VALUE-BASED CONTRACTING. Nurse Leadership and Management: Foundations for Effective Administration*, 171..
31. Ahmad, Z., Rahim, S., Zubair, M., & Abdul-Ghafar, J. (2021). Artificial intelligence (AI) in medicine, current applications and future role with special emphasis on its potential and promise in pathology: present and future impact, obstacles including costs and acceptance among pathologists, practical and philosophical considerations. A comprehensive review. *Diagnostic pathology*, 16, 1-16.
32. Barral, N., Corpuz, A. C., Lagcao, J. A., Poblete, M. L., Seno, R., Paler, E., & Ramel, Q. J. (2023). Cultural Competency and Quality of Care of Nurses in a Public Hospital in Southern Philippines. *The Malaysian Journal of Nursing (MJN)*, 15(2), 10-20.
33. Batool, A., & Lopez, A. (2023). Healthcare Access and Regional Connectivity: Bridging the Gap. *Journal of Regional Connectivity and Development*, 2(2), 260-271.
34. Baumann, A. A., Shelton, R. C., Kumanyika, S., & Haire-Joshu, D. (2023). Advancing healthcare equity through dissemination and implementation science. *Health services research*, 58, 327-344.
35. Berry-James, R. M., Blessett, B., Emas, R., McCandless, S., Nickels, A. E., Norman-Major, K., & Vinzant, P. (2023). Stepping up to the plate: making social equity a priority in public administration's troubled times. In *Social Equity in the Public Administration Classroom* (pp. 10-20). Routledge..
36. Boutros, P., Kassem, N., Nieder, J., Jaramillo, C., von Petersdorff, J., Walsh, F. J., ... & Barteit, S. (2023, November). Education and training adaptations for health workers during the COVID-19 pandemic: a scoping review of lessons learned and innovations. In *Healthcare* (Vol. 11, No. 21, p. 2902). MDPI.
37. Brottman, M. R., Char, D. M., Hattori, R. A., Heeb, R., & Taff, S. D. (2020). Toward cultural competency in health care: a scoping review of the diversity and inclusion education literature. *Academic Medicine*, 95(5), 803-813.
38. Chhetri, D., & Zacarias, F. (2021). Advocacy for evidence-based policy-making in public health: experiences and the way forward. *Journal of Health Management*, 23(1), 85-94.
39. Chimezie, R. O. (2023). Health Awareness: A Significant Factor in Chronic Diseases Prevention and Access to Care. *Journal of Biosciences and Medicines*, 11(2), 64-79.
40. Cole, C. L., Cheriff, A. D., Gossey, J. T., Malhotra, S., & Stein, D. M. (2022). Ambulatory Systems: Electronic Health Records. In *Health Informatics* (pp. 61-94). Productivity Press.

41. Compton, M. E., Young, M. M., Bullock, J. B., & Greer, R. (2023). Administrative Errors and Race: Can technology mitigate inequitable administrative outcomes?. *Journal of Public Administration Research and Theory*, 33(3), 512-528.
42. Coombs, N. C., Campbell, D. G., & Caringi, J. (2022). A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. *BMC Health Services Research*, 22(1), 438..
43. Corvalan, C., Villalobos Prats, E., Sena, A., Campbell-Lendrum, D., Karliner, J., Risso, A., ... & Vinci, S. (2020). Towards climate resilient and environmentally sustainable health care facilities. *International Journal of Environmental Research and Public Health*, 17(23), 8849.
44. Das, K. P., & Chandra, J. (2023). A survey on artificial intelligence for reducing the climate footprint in healthcare. *Energy Nexus*, 9, 100167.
45. Davey, F., McGowan, V., Birch, J., Kuhn, I., Lahiri, A., Gkiouleka, A., ... & Ford, J. (2022). Levelling up health: a practical, evidence-based framework for reducing health inequalities. *Public Health in Practice*, 4, 100322.
46. Davis, S., Higgs, P., Jones, L., Greenslade, L., Wilson, J., Low, J. T., & Principal Research Fellow. (2023). "I am in other people's hands as regards my health" A sociological critique of health care encounters of people with cirrhosis. A secondary analysis. *Chronic Illness*, 19(1), 102-117.
47. Dawkins, B., Renwick, C., Ensor, T., Shinkins, B., Jayne, D., & Meads, D. (2021). What factors affect patients' ability to access healthcare? An overview of systematic reviews. *Tropical Medicine & International Health*, 26(10), 1177-1188 .
48. De Rosis, S., Ferrè, F., & Pennucci, F. (2022). Including patient-reported measures in performance evaluation systems: patient contribution in assessing and improving the healthcare systems. *The International Journal of Health Planning and Management*, 37, 144-165..
49. DeHaven, M. J., Gimpel, N. A., Gutierrez, D., Kitzman-Carmichael, H., & Revens, K. (2020). Designing health care: A community health science solution for reducing health disparities by integrating social determinants and the effects of place. *Journal of evaluation in clinical practice*, 26(5), 1564-1572.
50. Dilles, T., Heczkova, J., Tziaferi, S., Helgesen, A. K., Grøndahl, V. A., Van Rompaey, B., ... & Jordan, S. (2021). Nurses and pharmaceutical care: interprofessional, evidence-based working to improve patient care and outcomes. *International journal of environmental research and public health*, 18(11), 5973.
51. Dion, H., Evans, M., & Farrell, P. (2023). Hospitals management transformative initiatives; towards energy efficiency and environmental sustainability in healthcare facilities. *Journal of Engineering, Design and Technology*, 21(2), 552-584..
52. Drummond, D., Sinclair, D., & Gratton, J. (2022). Troubles in Canada's Health Workforce: The Why, the Where, and the Way Out of Shortages. *Commentary-CD Howe Institute*, (630), 0_1-40.
53. Dutta, P., Choi, T. M., Somani, S., & Butala, R. (2020). Blockchain technology in supply chain operations: Applications, challenges and research opportunities. *Transportation research part e: Logistics and transportation review*, 142, 102067.
54. Ebrahimi, Z., Patel, H., Wijk, H., Ekman, I., & Olaya-Contreras, P. (2021). A systematic review on implementation of person-centered care interventions for older people in out-of-hospital settings. *Geriatric Nursing*, 42(1), 213-224.
55. Eijkelboom, C., Brouwers, M., Frenkel, J., van Gurp, P., Jaarsma, D., de Jonge, R., ... & de la Croix, A. (2023). Twelve tips for patient involvement in health professions education. *Patient Education and Counseling*, 106, 92-97.
56. El-Rashidy, N., El-Sappagh, S., Islam, S. R., M. El-Bakry, H., & Abdelrazek, S. (2021). Mobile health in remote patient monitoring for chronic diseases: Principles, trends, and challenges. *Diagnostics*, 11(4), 607.
57. Engle, R. L., Mohr, D. C., Holmes, S. K., Seibert, M. N., Afbale, M., Leyson, J., & Meterko, M. (2021). Evidence-based practice and patient-centered care: doing both well. *Health care management review*, 46(3), 174-184.

58. Fleming, P., O'Donoghue, C., Almirall-Sanchez, A., Mockler, D., Keegan, C., Cylus, J., ... & Thomas, S. (2022). Metrics and indicators used to assess health system resilience in response to shocks to health systems in high income countries—A systematic review. *Health Policy*, 126(12), 1195-1205.
59. Frazier, T. L., Lopez, P. M., Islam, N., Wilson, A., Earle, K., Duliepre, N., ... & Thorpe, L. E. (2023). Addressing financial barriers to health care among people who are low-income and insured in New York City, 2014–2017. *Journal of Community Health*, 48(2), 353-366..
60. Gao, H., Yous, M. L., Connelly, D., Hung, L., Garnett, A., Hay, M., & Snobelen, N. (2023). Implementation and impacts of virtual team-based care planning for older persons in formal care settings: A scoping review. *Digital Health*, 9, 20552076231151567.
61. Garchitorena, A., Ihantamalala, F. A., Révillion, C., Cordier, L. F., Randriamihaja, M., Razafinjato, B., ... & Bonds, M. H. (2021). Geographic barriers to achieving universal health coverage: evidence from rural Madagascar. *Health Policy and Planning*, 36(10), 1659-1670.
62. George, A. S., & George, A. H. (2023). Telemedicine: A New Way to Provide Healthcare. *Partners Universal International Innovation Journal*, 1(3), 98-129.
63. Ghasemi, M., Amini-Rarani, M., Zadeh, N. S., & Karimi, S. (2022). Role of public-private partnerships in primary healthcare services worldwide: A scoping review. *Health scope*, 11(3).
64. Grover, S., Fitzpatrick, A., Azim, F. T., Ariza-Vega, P., Bellwood, P., Burns, J., ... & Ashe, M. C. (2022). Defining and implementing patient-centered care: An umbrella review. *Patient education and counseling*, 105(7), 1679-1688.
65. Gupta, H., Kusi-Sarpong, S., & Rezaei, J. (2020). Barriers and overcoming strategies to supply chain sustainability innovation. *Resources, Conservation and Recycling*, 161, 104819.
66. Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2021). Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors international*, 2, 100117.
67. Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2022). Medical 4.0 technologies for healthcare: Features, capabilities, and applications. *Internet of Things and Cyber-Physical Systems*, 2, 12-30.
68. Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2022). Medical 4.0 technologies for healthcare: Features, capabilities, and applications. *Internet of Things and Cyber-Physical Systems*, 2, 12-30..
69. Harrill, W. C., & Melon, D. E. (2021). A field guide to US healthcare reform: The evolution to value-based healthcare. *Laryngoscope investigative otolaryngology*, 6(3), 590-599.
70. Harry, A. (2023). Revolutionizing Healthcare: How Machine Learning is Transforming Patient Diagnoses-A Comprehensive Review of AI's Impact on Medical Diagnosis. *BULLET: Jurnal Multidisiplin Ilmu*, 2(4), 1259-1266.
71. Hemel, D. J., & Ouellette, L. L. (2023). Valuing Medical Innovation. *Stan. L. Rev.*, 75, 517.
72. Hernandez, M. (2021). Enhancing Patient Care through Electronic Health Records (EHR) Systems. *Academic Journal of Science and Technology*, 4(1), 1-9.
73. Hu, H., Cohen, G., Sharma, B., Yin, H., & McConnell, R. (2022). Sustainability in health care. *Annual Review of Environment and Resources*, 47(1), 173-196..
74. Hussain, H. K., Tariq, A., Gill, A. Y., & Ahmad, A. (2022). Transforming Healthcare: The Rapid Rise of Artificial Intelligence Revolutionizing Healthcare Applications. *BULLET: Jurnal Multidisiplin Ilmu*, 1(02).
75. Hussain, S., & Reza, M. (2023). Environmental damage and global health: understanding the impacts and proposing mitigation strategies. *Journal of Big-Data Analytics and Cloud Computing*, 8(2), 1-21.
76. Ibn-Mohammed, T., Mustapha, K. B., Godsell, J., Adamu, Z., Babatunde, K. A., Akintade, D. D., ... & Koh, S. C. L. (2021). A critical analysis of the impacts of COVID-19 on the global economy and ecosystems and opportunities for circular economy strategies. *Resources, Conservation and Recycling*, 164, 105169.
77. Ibrahim, T., & Ali, H. (2023). The Impact of Wearable IoT Devices on Early Disease Detection and Prevention. *International Journal of Applied Health Care Analytics*, 8(8), 1-15.
78. Jat, A. S., & Grønli, T. M. (2023, August). Harnessing the Digital Revolution: A Comprehensive Review of mHealth Applications for Remote Monitoring in Transforming Healthcare Delivery. In *International Conference on Mobile Web and Intelligent Information Systems* (pp. 55-67). Cham: Springer Nature Switzerland..

79. Jensen, N., Kelly, A. H., & Avendano, M. (2022). Health equity and health system strengthening–time for a WHO re-think. *Global Public Health*, 17(3), 377-390.
80. Jimenez, G., Matchar, D., Koh, C. H. G., van der Kleij, R., Chavannes, N. H., & Car, J. (2021). The role of health technologies in multicomponent primary care interventions: systematic review. *Journal of medical Internet research*, 23(1), e20195..
81. Joynt Maddox, K., Bleser, W. K., Crook, H. L., Nelson, A. J., Hamilton Lopez, M., Saunders, R. S., ... & American Heart Association Value-Based Models Learning Collaborative. (2020). Advancing value-based models for heart failure: a call to action from the value in healthcare initiative's value-based models learning collaborative. *Circulation: Cardiovascular Quality and Outcomes*, 13(5), e006483.
82. Kalusivalingam, A. K., Sharma, A., Patel, N., & Singh, V. (2021). Leveraging Federated Learning and Explainable AI for Advancing Health Equity: A Comprehensive Approach to Reducing Disparities in Healthcare Access and Outcomes. *International Journal of AI and ML*, 2(3).
83. Khanna, S., & Srivastava, S. (2020). Patient-centric ethical frameworks for privacy, transparency, and bias awareness in deep learning-based medical systems. *Applied Research in Artificial Intelligence and Cloud Computing*, 3(1), 16-35.
84. Koorts, H., Cassar, S., Salmon, J., Lawrence, M., Salmon, P., & Dorling, H. (2021). Mechanisms of scaling up: combining a realist perspective and systems analysis to understand successfully scaled interventions. *International Journal of Behavioral Nutrition and Physical Activity*, 18, 1-16..
85. Kuipers, S. J., Nieboer, A. P., & Cramm, J. M. (2021). Making care more patient centered; experiences of healthcare professionals and patients with multimorbidity in the primary care setting. *BMC family practice*, 22, 1-15.
86. Kumar, R., Gupta, S. K., Wang, H. C., Kumari, C. S., & Korlam, S. S. V. P. (2023). From Efficiency to sustainability: Exploring the potential of 6G for a greener future. *Sustainability*, 15(23), 16387.
87. Lan, Y., Chandrasekaran, A., Goradia, D., & Walker, D. (2022). Collaboration structures in integrated healthcare delivery systems: an exploratory study of accountable care organizations. *Manufacturing & Service Operations Management*, 24(3), 1796-1820.
88. Lateef, A., & Mhlongo, E. (2020). A literature review on people-centered care and nursing practice in primary health care setting. *Global Journal of Health Science*, 12(2), 23.
89. Latimer, K. (2020). The Art of Care: A Report on the 2019 Vizient Connections Education Summit. *American Journal of Medical Quality*, 35(1_suppl), 5S-111S.
90. Lloyd, H. M., Ekman, I., Rogers, H. L., Raposo, V., Melo, P., Marinkovic, V. D., ... & Britten, N. (2020). Supporting innovative person-centred care in financially constrained environments: the WE CARE exploratory health laboratory evaluation strategy. *International Journal of Environmental Research and Public Health*, 17(9), 3050.
91. Lorkowski, J., Maciejowska-Wilcock, I., & Pokorski, M. (2021). Overload of medical documentation: a disincentive for healthcare professionals. *Medical research and innovation*, 1-10.
92. Lutz, J. A., Zalucki, P. M., & Finarelli, M. (2021). Service lines: Working toward a value-based future. *Frontiers of Health Services Management*, 37(3), 14-28.
93. Mallinson, D. J., & Shafi, S. (2022). Smart home technology: Challenges and opportunities for collaborative governance and policy research. *Review of Policy Research*, 39(3), 330-352.
94. Manohar, B., & Keerthana, C. H. (2023). Effective strategies for public health management using data and analytics. *Journal of healthcare and life-science research*, 2(9), 83-93.
95. Mariani, L., Trivellato, B., Martini, M., & Marafioti, E. (2022). Achieving sustainable development goals through collaborative innovation: Evidence from four European initiatives. *Journal of Business Ethics*, 180(4), 1075-1095..
96. Marín-González, F., Moganadas, S. R., Paredes-Chacín, A. J., Yeo, S. F., & Subramaniam, S. (2022). Sustainable local development: consolidated framework for cross-sectoral cooperation via a systematic approach. *Sustainability*, 14(11), 6601.
97. Masefield, S. C., Msosa, A., & Grugel, J. (2020). Challenges to effective governance in a low income healthcare system: a qualitative study of stakeholder perceptions in Malawi. *BMC health services research*, 20, 1-16.

98. Mishra, P., & Singh, G. (2023). Internet of medical things healthcare for sustainable smart cities: current status and future prospects. *Applied Sciences*, 13(15), 8869.
99. Mustafa, R., Mahboob, U., Khan, R. A., & Anjum, A. (2023). Impact of language barriers in doctor–patient relationship: a qualitative study. *Pakistan Journal of Medical Sciences*, 39(1), 41..
100. Nadziakiewicz, M. (2022). THE QUALITY AND SAFETY OF MEDICAL SERVICES AND THE PATIENS RIGHTS. *Scientific Papers of Silesian University of Technology. Organization & Management/Zeszyty Naukowe Politechniki Slaskiej. Seria Organizacji i Zarzadzanie*, (165).
101. Narayan, M. C., & Mallinson, R. K. (2022). Transcultural nurse views on culture-sensitive/patient-centered assessment and care planning: A descriptive study. *Journal of Transcultural nursing*, 33(2), 150-160.
102. Natarajan, A. (2022). Reference class forecasting and machine learning for improved offshore oil and gas megaproject planning: Methods and application. *Project Management Journal*, 53(5), 456-484.
103. Nundy, S., Cooper, L. A., & Mate, K. S. (2022). The quintuple aim for health care improvement: a new imperative to advance health equity. *Jama*, 327(6), 521-522
104. Odulaja, B. A., Nnabugwu, O. C., Abdul, A. A., Udeh, C. A., & Daraojimba, C. (2023). HR'S role in organizational change within Nigeria's renewable energy sector: a review. *Engineering Science & Technology Journal*, 4(5), 259-284.
105. Onasanya, A., & Elshakankiri, M. (2021). Smart integrated IoT healthcare system for cancer care. *Wireless Networks*, 27(6), 4297-4312.
106. Pamulaparthivenkata, S. (2022). Unlocking the Adherence Imperative: A Unified Data Engineering Framework Leveraging Patient-Centric Ontologies for Personalized Healthcare Delivery and Enhanced Provider-Patient Loyalty. *Distributed Learning and Broad Applications in Scientific Research*, 8, 46-73.
107. Pan, M., Huang, Y., Qin, Y., Li, X., & Lang, W. (2022). Problems and strategies of allocating public service resources in rural areas in the context of county urbanization. *International Journal of Environmental Research and Public Health*, 19(21), 14596.
108. Panjaitan, N., Sihombing, S., Palen, K., Schiavo, R. B., & Lipschultz, L. (2023). Enhancing Government Communication Strategies for Effective Health In-formation and Public Health Education. *Law and Economics*, 17(2), 151-169.
109. Pathak, K., Saikia, R., Das, A., Das, D., Islam, M. A., Pramanik, P., ... & Borthakur, B. (2023). 3D printing in biomedicine: Advancing personalized care through additive manufacturing. *Exploration of Medicine*, 4(6), 1135-1167.
110. Patrício, L., Sangiorgi, D., Mahr, D., Čaić, M., Kalantari, S., & Sundar, S. (2020). Leveraging service design for healthcare transformation: Toward people-centered, integrated, and technology-enabled healthcare systems. *Journal of Service Management*, 31(5), 889-909.
111. Patrício, L., Sangiorgi, D., Mahr, D., Čaić, M., Kalantari, S., & Sundar, S. (2020). Leveraging service design for healthcare transformation: Toward people-centered, integrated, and technology-enabled healthcare systems. *Journal of Service Management*, 31(5), 889-909.
112. Pereno, A., & Eriksson, D. (2020). A multi-stakeholder perspective on sustainable healthcare: From 2030 onwards. *Futures*, 122, 102605.
113. Pillai, S., Kadam, M., Damle, M., & Pathak, P. (2023). Rebuilding and Founding Healthcare Cooperatives: A Review of 'Ayushman Sahakar'Scheme in India and 'Gampaha'Cooperative in Srilanka as a Development Mechanism. *World Healthcare Cooperatives: Challenges and Opportunities*, 153-181.
114. Poowuttikul, P., & Seth, D. (2020). New concepts and technological resources in patient education and asthma self-management. *Clinical reviews in allergy & immunology*, 59(1), 19-37.
115. Proctor, E. K., McKay, V. R., Toker, E., Maddox, T. M., Hooley, C., Lengnick-Hall, R., ... & Evanoff, B. (2021). Partnered innovation to implement timely and personalized care: a case study. *Journal of Clinical and Translational Science*, 5(1), e121.
116. Protheroe, J., Reeve, J., & Ibison, J. (2023). Primary care in the world of integrated care systems: education and training for general practice. *Future healthcare journal*, 10(3), 253-258.
117. Rahman, T., Gasbarro, D., & Alam, K. (2022). Financial risk protection from out-of-pocket health spending in low-and middle-income countries: a scoping review of the literature. *Health Research Policy and Systems*, 20(1), 83.

118. Rahman, T., Gasbarro, D., & Alam, K. (2022). Financial risk protection from out-of-pocket health spending in low-and middle-income countries: a scoping review of the literature. *Health Research Policy and Systems*, 20(1), 83..
119. Rami, F., Thompson, L., & Solis-Cortes, L. (2023). Healthcare disparities: Vulnerable and marginalized populations. In *Covid-19: Health Disparities and Ethical Challenges Across the Globe* (pp. 111-145). Cham: Springer International Publishing.
120. Ranjit, S., & Kissoon, N. (2021). Challenges and solutions in translating sepsis guidelines into practice in resource-limited settings. *Translational Pediatrics*, 10(10), 2646.
121. Rashed, A. H., & Shah, A. (2021). The role of private sector in the implementation of sustainable development goals. *Environment, Development and Sustainability*, 23(3), 2931-2948..
122. Resnicow, K., Catley, D., Goggin, K., Hawley, S., & Williams, G. C. (2022). Shared decision making in health care: theoretical perspectives for why it works and for whom. *Medical Decision Making*, 42(6), 755-764.
123. Richardson, S., Lawrence, K., Schoenthaler, A. M., & Mann, D. (2022). A framework for digital health equity. *NPJ digital medicine*, 5(1), 119.
124. Riley, E., & Jones, J. L. (2022). Person-Centered Care. *Quality and Safety Education for Nurses: Core Competencies for Nursing Leadership and Care Management*, 177.
125. Ryan, G. V., Callaghan, S., Rafferty, A., Higgins, M. F., Mangina, E., & McAuliffe, F. (2022). Learning outcomes of immersive technologies in health care student education: systematic review of the literature. *Journal of medical Internet research*, 24(2), e30082.
126. Saxena, P. D., Mayi, K., Arun, R., Kumar, S. S., Mishra, B. R., & Praveen, K. B. (2023). Impact of Artificial Intelligence on Healthcare Informatics: Opportunities and Challenges. *Journal of Informatics Education and Research*, 3(2).
127. Schroeder, K., Bertelsen, N., Scott, J., Deane, K., Dormer, L., Nair, D., ... & Brooke, N. (2022). Building from patient experiences to deliver patient-focused healthcare systems in collaboration with patients: a call to action. *Therapeutic Innovation & Regulatory Science*, 56(5), 848-858.
128. Shadmi, E., Chen, Y., Dourado, I., Faran-Perach, I., Furler, J., Hangoma, P., ... & Willems, S. (2020). Health equity and COVID-19: global perspectives. *International journal for equity in health*, 19, 1-16.
129. Sjödin, D., Parida, V., Palmié, M., & Wincent, J. (2021). How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops. *Journal of Business Research*, 134, 574-587.
130. Slater, B. J., Collings, A. T., Corvin, C., & Kandel, J. J. (2022). Value-based surgery physician compensation model: review of the literature. *Journal of pediatric surgery*, 57(9), 118-123.
131. Spreafico, A., Hansen, A. R., Abdul Razak, A. R., Bedard, P. L., & Siu, L. L. (2021). The future of clinical trial design in oncology. *Cancer discovery*, 11(4), 822-837.
132. Stasevych, M., & Zvarych, V. (2023). Innovative robotic technologies and artificial intelligence in pharmacy and medicine: paving the way for the future of health care—a review. *Big Data and Cognitive Computing*, 7(3), 147.
133. Strianese, O., Rizzo, F., Ciccarelli, M., Galasso, G., D'Agostino, Y., Salvati, A., ... & Rusciano, M. R. (2020). Precision and personalized medicine: how genomic approach improves the management of cardiovascular and neurodegenerative disease. *Genes*, 11(7), 747.
134. Talal, A. H., Sofikitou, E. M., Jaanimägi, U., Zeremski, M., Tobin, J. N., & Markatou, M. (2020). A framework for patient-centered telemedicine: application and lessons learned from vulnerable populations. *Journal of biomedical informatics*, 112, 103622..
135. Talwar, S., Dhir, A., Islam, N., Kaur, P., & Almusharraf, A. (2023). Resistance of multiple stakeholders to e-health innovations: Integration of fundamental insights and guiding research paths. *Journal of Business Research*, 166, 114135.
136. Taylan, C., & Weber, L. T. (2023). "Don't let me be misunderstood": communication with patients from a different cultural background. *Pediatric Nephrology*, 38(3), 643-649.
137. Torfing, J., Ferlie, E., Jukić, T., & Ongaro, E. (2021). A theoretical framework for studying the co-creation of innovative solutions and public value. *Policy & Politics*, 49(2), 189-209..

138. Ugajin, A. (2023). Automation in hospitals and health care. In Springer Handbook of Automation (pp. 1209-1233). Cham: Springer International Publishing.
139. Wang, R. C., & Wang, Z. (2023). Precision medicine: disease subtyping and tailored treatment. *Cancers*, 15(15), 3837.
140. Wang, R. H., Zdaniuk, N., Durocher, E., & Wilson, M. G. (2022). Policymaker and stakeholder perspectives on access to assistive technologies in Canada: challenges and proposed solutions for enhancing equitable access. *Disability and Rehabilitation: Assistive Technology*, 17(1), 61-73.
141. Warner, J. J., Benjamin, I. J., Churchwell, K., Firestone, G., Gardner, T. J., Johnson, J. C., ... & American Heart Association Advocacy Coordinating Committee. (2020). Advancing healthcare reform: the American Heart Association's 2020 statement of principles for adequate, accessible, and affordable health care: a presidential advisory from the American Heart Association. *Circulation*, 141(10), e601-e614.
142. YahyaAlmakrami, I., Al Omorat, T., GhannamShreaf, M. M., Al-Yami, S. A. S., & Alyami, K. A. (2023). Tailoring treatment to the individual: a critical examination of precision medicine and personalized healthcare through the lens of genetics, lifestyle, and environmental factors. *Chelonian Research Foundation*, 18(1), 550-564..
143. Yaqoob, I., Salah, K., Jayaraman, R., & Al-Hammadi, Y. (2022). Blockchain for healthcare data management: opportunities, challenges, and future recommendations. *Neural Computing and Applications*, 1-16.
144. Yu, C., Xian, Y., Jing, T., Bai, M., Li, X., Li, J., ... & Zhang, Z. (2023). More patient-centered care, better healthcare: the association between patient-centered care and healthcare outcomes in inpatients. *Frontiers in Public Health*, 11, 1148277.