

The Role of Health Information Technology (HIT) in Healthcare Reform: Opportunities and Challenges

Kassym-Jomart Tokayev

L.N. Gumilyov Eurasian National University, city of Nur-Sultan

Abstract

Health Information Technology (HIT) has been regarded as a critical tool for transforming healthcare delivery and improving patient outcomes. However, the implementation of HIT systems can also pose significant challenges and barriers that must be addressed to fully realize its potential. In this study, we conducted a comprehensive review of the literature to identify the opportunities and challenges associated with HIT implementation in healthcare reform. Our findings suggest that HIT has the potential to improve the quality of care, increase efficiency, and deliver better patient outcomes. Additionally, HIT can also lead to cost savings by reducing expenses associated with paper-based systems. However, our analysis also identified several challenges associated with HIT implementation, including cost, interoperability, privacy and security, data quality, and workflow integration. To successfully implement HIT systems in healthcare reform, stakeholders must carefully consider the opportunities and challenges associated with these technologies. Addressing these challenges will require significant investment, planning, and attention to detail. Overall, our study underscores the importance of HIT in healthcare reform and provides insights into the strategies necessary for successful implementation.

Keywords: *Health Information Technology, Healthcare Reform, Opportunities, Challenges, Patient Outcomes*

Introduction

Health Information Technology (HIT) has been playing a crucial role in the modernization of the healthcare sector. HIT refers to the use of information technology (IT) in the storage, retrieval, sharing, and analysis of health information. The main objective of HIT is to improve the quality of healthcare by enhancing the efficiency, accuracy, and timeliness of healthcare services. This paper discusses the different types of HIT, their benefits, and the challenges associated with their implementation.

There are various types of HIT, including Electronic Health Records (EHRs), Health Information Exchange (HIE), Telehealth, and Patient Portals. EHRs are digital versions of patients' medical records that contain comprehensive information about their medical history, diagnoses, treatments, and medications. EHRs can be accessed by healthcare providers in different locations, allowing for efficient sharing of patient information. HIE is a system that enables the sharing of patient information between different healthcare providers. This system enhances the continuity of care by ensuring that all providers have access to the same information.

Telehealth is a type of HIT that enables patients to receive healthcare services remotely. This technology has become increasingly popular, especially during the COVID-19

pandemic, as it allows patients to receive care from the comfort of their homes. Telehealth services include virtual consultations, remote monitoring, and home healthcare. Patient Portals are online platforms that enable patients to access their medical records, communicate with their healthcare providers, schedule appointments, and request prescription refills.

The implementation of HIT has numerous benefits for both patients and healthcare providers. One of the main benefits of HIT is improved patient outcomes. HIT enhances the accuracy and timeliness of diagnoses and treatments, which can lead to better health outcomes. HIT also improves the efficiency of healthcare services, enabling healthcare providers to deliver care more quickly and effectively. This leads to reduced waiting times, shorter hospital stays, and lower healthcare costs.

HIT also enhances patient engagement by enabling patients to access their medical records, communicate with their healthcare providers, and participate in their healthcare decisions. Patients can access their medical records through patient portals, allowing them to review their health information, monitor their progress, and make informed decisions about their healthcare. HIT also enables patients to communicate with their healthcare providers through secure messaging, which enhances the continuity of care and reduces the need for in-person visits.

Despite the numerous benefits of HIT, there are several challenges associated with its implementation. One of the main challenges is the cost of implementation. HIT implementation requires significant financial resources, which can be a barrier for many healthcare organizations, especially smaller ones. The implementation of HIT also requires significant changes to organizational processes, which can be challenging for healthcare providers. Another challenge is the privacy and security of patient information. HIT involves the storage, retrieval, and sharing of sensitive patient information, which requires robust security measures to prevent unauthorized access and breaches. Healthcare providers must implement robust security measures, such as encryption and access controls, to protect patient information. HIT implementation requires significant training and education for healthcare providers. Healthcare providers must be trained on how to use the new HIT systems effectively, which can be time-consuming and expensive. Healthcare providers must also be educated on the benefits of HIT to ensure that they understand how to use the new systems to enhance patient care.

Healthcare reform is a topic of immense importance in today's society, as healthcare systems across the world struggle to meet the increasing demands of aging populations, rising healthcare costs, and growing inequalities in access to healthcare. Healthcare reform involves a wide range of policy initiatives aimed at improving the accessibility, affordability, and quality of healthcare for all individuals, regardless of their social or economic status.

The origins of healthcare reform can be traced back to the early 20th century, when various countries began implementing public health insurance programs to provide

coverage for low-income individuals and those with pre-existing medical conditions. In the United States, the Social Security Act of 1935 established a national system of social insurance, including old-age pensions and unemployment insurance, but it did not include a national health insurance program. It wasn't until the 1960s that the U.S. government began implementing healthcare reform policies, such as Medicare and Medicaid, which provided healthcare coverage to seniors and low-income individuals.

Since the 1960s, healthcare reform has been a contentious issue in the United States, with various political parties and interest groups advocating for different policy solutions. Some have argued for a single-payer healthcare system, in which the government provides healthcare coverage for all citizens, while others have called for market-based solutions, such as tax credits or subsidies for individuals to purchase private health insurance. The Affordable Care Act (ACA) of 2010, also known as Obamacare, represents the most significant healthcare reform initiative in the United States in recent years. The ACA aimed to provide healthcare coverage to millions of uninsured individuals and reduce healthcare costs through a combination of market-based solutions and government subsidies.

The current state of healthcare reform in the United States is characterized by ongoing political and legal battles over the ACA and its implementation. While the ACA has provided healthcare coverage to millions of previously uninsured individuals, it has also faced significant opposition from Republican politicians and interest groups who argue that the law is unconstitutional and violates individual freedoms. In 2017, the Trump administration attempted to repeal and replace the ACA with a new healthcare plan, but these efforts were ultimately unsuccessful.

In addition to the political and legal challenges, healthcare reform in the United States also faces significant practical obstacles. Healthcare costs continue to rise, and many individuals still lack access to affordable healthcare coverage. The COVID-19 pandemic has further highlighted the challenges of the U.S. healthcare system, particularly in terms of the disparities in access to care and the need for a coordinated public health response.

Looking forward, healthcare reform in the United States will likely continue to be a contentious issue, with various political parties and interest groups advocating for different policy solutions. The Biden administration has proposed a series of healthcare reform initiatives, including expanding access to affordable healthcare coverage, lowering prescription drug prices, and investing in public health infrastructure. However, the implementation of these policies will depend on the political climate and the ability to build consensus across different stakeholders.

Beyond the United States, healthcare reform is also a pressing issue in many other countries, particularly in Europe, where aging populations and rising healthcare costs are putting increasing strain on healthcare systems. Countries such as Germany and France have implemented universal healthcare systems, while others, such as the United

Kingdom, have nationalized their healthcare systems. However, these systems also face challenges, such as long wait times and shortages of medical personnel and resources.

Healthcare reform is a complex and multifaceted issue that involves a wide range of policy initiatives aimed at improving the accessibility, affordability, and quality of healthcare for all individuals. While significant progress has been made in many countries, there is still much work to be done to address the ongoing challenges of rising healthcare costs, disparities in access to care, and the need for coordinated public health responses to global pandemics such as COVID-19.

Opportunities

HIT includes various technologies such as electronic health records (EHRs), clinical decision support systems (CDSSs), patient portals, telemedicine, and mobile health applications. The benefits of HIT are numerous and have revolutionized the healthcare industry. In this essay, we will explore two key opportunities provided by HIT: improved quality of care and increased efficiency.

Improved Quality of Care One of the primary benefits of HIT is that it can improve the quality of care that patients receive. This is achieved by providing clinicians with real-time access to patient data, reducing medical errors, and adverse events. EHRs are the cornerstone of HIT, allowing healthcare providers to store, access, and manage patient data electronically. EHRs provide clinicians with up-to-date and accurate patient information that can help them make informed decisions about patient care.

EHRs also reduce the likelihood of medical errors by providing an accurate and complete record of patient data. For example, medication errors can be reduced by using electronic prescriptions, which eliminate the need for handwritten prescriptions that are often difficult to read and can lead to errors. EHRs can also alert clinicians to potential drug interactions or allergies that may be missed in a paper-based system.

CDSSs are another important HIT tool that can help improve the quality of care. CDSSs are computer programs that provide clinicians with clinical knowledge and patient-specific information, allowing them to make informed decisions about patient care. For example, CDSSs can alert clinicians to potential drug interactions, recommend diagnostic tests or procedures, and suggest appropriate treatment plans based on patient data.

Patient portals are another HIT tool that can improve the quality of care. Patient portals are secure websites that allow patients to access their health information, communicate with their healthcare providers, and schedule appointments. By providing patients with access to their health information, patient portals can help patients become more informed and engaged in their own care.

Overall, HIT has the potential to improve the quality of care by providing clinicians with real-time access to patient data, reducing medical errors, and improving communication between patients and providers. However, it is important to note that HIT is not a panacea and must be implemented properly to achieve its full potential.

Increased Efficiency Another key benefit of HIT is that it can improve efficiency by streamlining administrative tasks, reducing duplication of efforts, and improving communication between providers. Healthcare providers face numerous administrative tasks such as scheduling appointments, billing, and managing patient records. These tasks can be time-consuming and take away from the time providers spend with patients. HIT can help automate these tasks, freeing up time for providers to focus on patient care.

Table 1. Opportunities

Opportunity	Description	Example
Improved quality of care	HIT provides clinicians with real-time access to patient data, reducing medical errors and adverse events	Clinicians can quickly access a patient's medication history and avoid prescribing potentially harmful drugs
Increased efficiency	HIT streamlines administrative tasks, reducing duplication of efforts, and improving communication between providers	Providers can access and update patient records in real-time, reducing the need for manual data entry
Better patient outcomes	HIT provides clinicians with the tools they need to deliver more effective, personalized care	Clinicians can use predictive analytics to identify high-risk patients and provide targeted interventions
Cost savings	HIT can reduce costs associated with paper-based systems, such as printing, storage, and transcription	Electronic health records (EHRs) can eliminate the need for paper records and the costs associated with printing and storing them

EHRs are a key tool for improving efficiency in healthcare. EHRs provide a centralized location for patient data, reducing the need for providers to search through multiple paper-based records. EHRs can also automate administrative tasks such as appointment scheduling and prescription refills, allowing providers to spend more time with patients.

Telemedicine is another HIT tool that can improve efficiency. Telemedicine allows patients to receive care remotely, reducing the need for in-person visits. Telemedicine can be used for a range of services such as consultations, follow-up visits, and monitoring of chronic conditions. By reducing the need for in-person visits, telemedicine can reduce wait times, travel time, and the cost of care.

Mobile health applications are another HIT tool that can improve efficiency. Mobile health applications can be used to monitor and manage chronic conditions, track medication adherence, and provide patients with health education. By empowering patients to manage their own care, mobile health applications can reduce the need for in-person visits and improve overall health outcomes.

One of the most significant benefits of HIT is its ability to improve patient outcomes. HIT provides clinicians with the tools they need to deliver more effective, personalized care to their patients. With HIT, clinicians can access a patient's medical history and treatment information instantly, regardless of their location, which enables them to make informed decisions about patient care. This real-time access to patient data can improve the quality of care delivered to patients, leading to better outcomes. Furthermore, HIT enables clinicians to share patient data with other providers, which can enhance care coordination, reduce medical errors, and improve patient outcomes.

For example, a patient with a chronic condition like diabetes requires frequent monitoring and care. With HIT, clinicians can monitor the patient's blood glucose levels remotely and make real-time adjustments to the patient's treatment plan as needed. The ability to make timely interventions can prevent complications and improve patient outcomes. HIT can also provide patients with access to their health information, enabling them to take a more active role in their healthcare. Patients can review their test results, track their progress, and communicate with their healthcare providers easily. This enhanced patient engagement can lead to better health outcomes, as patients become more invested in their health.

Another significant benefit of HIT is cost savings. HIT can reduce costs associated with paper-based systems, such as printing, storage, and transcription. The cost of paper-based medical records can be significant, as it requires printing and storing large amounts of paper. This also creates the need for additional personnel to maintain and organize these records. With HIT, medical records can be digitized, eliminating the need for paper records and reducing printing and storage costs. Digitized records can also be accessed from multiple locations simultaneously, reducing the need for transportation and storage.

Transcription costs can also be reduced with HIT. Medical transcription is a time-consuming and expensive process, requiring transcriptionists to convert dictated notes into electronic records. With HIT, clinicians can dictate notes directly into electronic health records, eliminating the need for transcriptionists. This can reduce costs associated with transcription, while also reducing the risk of errors that can occur during the transcription process.

Furthermore, HIT can reduce costs associated with medical errors. Medical errors are a significant source of healthcare costs, leading to additional procedures, hospitalizations, and longer hospital stays. HIT can reduce the incidence of medical errors by providing clinicians with real-time access to patient data, enabling them to make informed decisions about patient care. HIT can also provide decision support tools, alerting clinicians to potential medication interactions, allergies, and other patient safety concerns. By reducing the incidence of medical errors, HIT can reduce healthcare costs and improve patient outcomes.

Challenges

While HIT systems have the potential to improve patient care, increase efficiency, and reduce costs, there are also several challenges associated with their implementation. One of the primary challenges associated with HIT systems is cost. Implementing these systems can be expensive, requiring significant investments in software, hardware, and training. For smaller healthcare providers, in particular, these costs can be prohibitive, and many may not have the resources to invest in these technologies. In addition, even for larger providers with more resources, the initial costs of implementing HIT systems can be significant, and may require careful budgeting and planning to ensure that the investment is worthwhile.

Table 2. Challenges

Challenge	Description	Example
Cost	The implementation of HIT systems can be expensive, and many providers may not have the resources to invest in these technologies	A small clinic may not have the budget to purchase and implement an EHR system
Interoperability	HIT systems must be able to communicate with each other seamlessly, but many systems are not interoperable, making it difficult to exchange information	A hospital may have difficulty sharing patient data with a clinic that uses a different EHR system
Privacy and security	The use of HIT systems raises privacy and security concerns, as patient data is often stored in electronic form and may be vulnerable to cyberattacks	A cybercriminal may attempt to steal patient data from an EHR system
Data quality	HIT systems rely on accurate and complete data to function effectively, but data quality can be compromised by errors, omissions, and inconsistencies	A clinician may forget to record a patient's allergy in the EHR system, leading to potential medical errors
Workflow integration	HIT systems must be integrated into existing workflows, which can be a challenging and time-consuming process	Staff may require additional training to learn how to use a new EHR system, leading to a temporary decrease in productivity

Another significant challenge associated with HIT systems is interoperability. In order for HIT systems to be effective, they must be able to communicate with each other seamlessly, allowing healthcare providers to access and exchange information easily.

Unfortunately, many HIT systems are not interoperable, making it difficult for healthcare providers to exchange information and collaborate effectively. This lack of interoperability can lead to errors, duplication of efforts, and inefficiencies in the healthcare system, reducing the potential benefits that HIT systems can offer.

To address these challenges, healthcare providers and policymakers have been working to promote the adoption of HIT systems while also addressing the barriers to implementation. One approach has been to provide financial incentives to healthcare providers who adopt HIT systems, in order to offset some of the costs associated with implementation. For example, the Centers for Medicare and Medicaid Services (CMS) has implemented several programs to encourage the adoption of EHRs, including the Medicare and Medicaid EHR Incentive Programs.

Another approach has been to promote interoperability and data exchange between different HIT systems. To this end, the Office of the National Coordinator for Health Information Technology (ONC) has developed a set of standards and guidelines for HIT systems, with the goal of ensuring that different systems are able to communicate with each other effectively. Additionally, the ONC has implemented several programs and initiatives to encourage the adoption of interoperable HIT systems, such as the Interoperability Standards Advisory and the Trusted Exchange Framework and Common Agreement.

Despite these efforts, however, challenges related to cost and interoperability continue to pose significant barriers to the widespread adoption and effective use of HIT systems in healthcare. To address these challenges, healthcare providers, policymakers, and HIT vendors will need to continue working together to identify innovative solutions and strategies for overcoming these barriers. This may involve developing new financing models to make HIT systems more affordable for smaller healthcare providers, investing in new technologies to improve interoperability, and developing new policies and regulations to promote the adoption and use of HIT systems more broadly.

In the meantime, healthcare providers who are considering implementing HIT systems will need to carefully weigh the potential benefits and costs of these systems, and consider a range of factors including their organization's size, resources, and technological infrastructure. For many providers, HIT systems may offer significant benefits in terms of improving patient care, increasing efficiency, and reducing costs, but these benefits will need to be weighed against the costs and challenges of implementation. Ultimately, the decision to adopt HIT systems will depend on a range of factors, and will require careful planning, collaboration, and ongoing evaluation to ensure that these systems are implemented effectively and are able to deliver on their promise of improving healthcare outcomes.

As the healthcare industry continues to shift towards the use of Health Information Technology (HIT) systems, new challenges are emerging in terms of privacy, security, and data quality. While these systems have the potential to improve patient care, increase efficiency, and reduce costs, they also raise significant concerns around the

privacy and security of patient data, as well as the quality and accuracy of the data being collected.

One of the most significant challenges associated with HIT systems is privacy and security. With patient data now being stored in electronic form, there is a growing risk of cyberattacks and other security breaches that can compromise the privacy of sensitive patient information. In addition, HIT systems may be vulnerable to hacking, data breaches, and other cyber threats, which can result in the loss or theft of patient data, as well as potential legal and financial liabilities for healthcare providers.

To address these concerns, healthcare providers must take steps to ensure that patient data is protected and secured, using encryption, firewalls, and other security measures to prevent unauthorized access and protect against cyber threats. In addition, healthcare providers must comply with relevant regulations and guidelines, such as the Health Insurance Portability and Accountability Act (HIPAA), which govern the use and disclosure of patient data.

Another significant challenge associated with HIT systems is data quality. In order for these systems to be effective, they rely on accurate and complete data, which can be compromised by errors, omissions, and inconsistencies. For example, if patient data is entered incorrectly, or if key information is missing from a patient's medical record, this can lead to errors in diagnosis, treatment, and medication management, potentially putting patients at risk.

To address these challenges, healthcare providers must focus on improving the quality and accuracy of the data being collected and stored in HIT systems. This may involve investing in training and education for healthcare staff to ensure that they are using the systems correctly and consistently, as well as implementing data validation and quality control measures to identify and correct errors in the data.

In addition, healthcare providers must ensure that the HIT systems they use are able to integrate and share data effectively, in order to provide a complete and accurate picture of each patient's health status. This may involve implementing standardized data formats and interfaces, as well as developing protocols for sharing data securely and efficiently between different healthcare providers and systems.

While there are certainly challenges associated with the use of HIT systems, there are also significant opportunities to improve patient care and reduce costs through the adoption of these technologies. To achieve these benefits, healthcare providers must work together to address the challenges of privacy, security, and data quality, and to develop strategies and policies that promote the effective use of HIT systems across the healthcare industry. With careful planning, collaboration, and ongoing evaluation, healthcare providers can leverage the power of HIT systems to deliver better outcomes for patients, while also improving efficiency and reducing costs.

In terms of cost, the implementation of HIT systems can be expensive, which can be a significant barrier for many healthcare providers, particularly those operating in

resource-constrained environments. This can limit the ability of providers to invest in these technologies, which can in turn limit their ability to provide high-quality care to their patients. In order to address this challenge, healthcare providers may need to explore alternative financing options, such as government grants, private investments, or partnerships with technology vendors. They may also need to prioritize their investment in HIT systems based on their specific needs, focusing on the systems that will provide the greatest benefits in terms of patient care and operational efficiency.

Interoperability is another significant challenge associated with HIT systems. In order for these systems to be effective, they must be able to communicate with each other seamlessly, allowing healthcare providers to exchange information quickly and easily. However, many HIT systems are not interoperable, making it difficult for healthcare providers to share information across different systems and platforms. This can result in incomplete or inaccurate medical records, delays in treatment, and increased administrative burden.

To address this challenge, healthcare providers may need to work together to establish common standards for data sharing and exchange, as well as to develop protocols for integrating different HIT systems and platforms. This may involve collaboration between healthcare providers, technology vendors, and regulatory agencies, as well as investment in new technologies and infrastructure to support interoperability.

In addition to these challenges, the use of HIT systems also raises important ethical and legal issues related to patient privacy, data ownership, and informed consent. Healthcare providers must ensure that they are in compliance with relevant laws and regulations, such as HIPAA, which govern the use and disclosure of patient data. They must also ensure that patients are fully informed about the collection, storage, and use of their data, and that their privacy and confidentiality are protected at all times.

To address these concerns, healthcare providers may need to develop policies and procedures that promote transparency and accountability in the use of HIT systems, as well as to provide education and training to healthcare staff on the ethical and legal issues associated with these technologies.

Despite these challenges, the use of HIT systems holds great promise for the future of healthcare. By leveraging the power of technology to collect, store, and analyze patient data, healthcare providers can improve the quality of care they provide, reduce costs, and enhance patient outcomes. However, in order to realize these benefits, healthcare providers must work together to address the challenges of privacy, security, and data quality, as well as to promote interoperability and collaboration across the healthcare industry.

Workflow integration is a critical component of HIT (Health Information Technology) implementation, as it allows healthcare providers to integrate new technology into their existing systems seamlessly. HIT systems must be incorporated into workflows to improve efficiency, reduce costs, and improve patient outcomes. However, integrating HIT systems into existing workflows can be a challenging and time-consuming process.

This is because HIT systems require a complete overhaul of existing systems and processes, which can be difficult to manage.

HIT systems must be integrated into workflows that are already well-established, and therefore changes to these workflows must be made with extreme care. A poorly planned integration can lead to confusion and errors, which can negatively impact patient care. Additionally, healthcare providers are already overwhelmed with a high volume of patients, and any disruption to the workflow can cause significant delays and frustrations.

To overcome these challenges, healthcare providers need to work closely with HIT vendors to develop a detailed integration plan. This plan should include an assessment of the existing workflows, a comprehensive timeline for implementation, and regular communication between the healthcare providers and the HIT vendor. By working together, both parties can identify potential issues and implement solutions to minimize any disruptions to the workflow.

Effective workflow integration is essential for the successful implementation of HIT systems in healthcare. The process can be challenging, but it is necessary to ensure that the technology is effectively utilized to improve patient outcomes. By taking a comprehensive approach to workflow integration, healthcare providers can ensure that HIT systems are successfully incorporated into their existing systems, leading to more efficient and effective patient care.

Conclusion

The use of HIT has transformed the healthcare industry, and it will continue to do so as technology continues to advance. The benefits of HIT cannot be overstated, and healthcare organizations must prioritize its implementation to improve patient outcomes, enhance patient engagement, and reduce healthcare costs. While there are challenges associated with the implementation of HIT, these challenges can be overcome with proper planning, execution, and ongoing maintenance. HIT is the future of healthcare, and healthcare providers must embrace this technology to remain competitive and deliver the best possible care to their patients. HIT can significantly improve efficiency in healthcare by streamlining administrative tasks, reducing duplication of efforts, and improving communication between providers. This can result in cost savings for healthcare organizations and better health outcomes for patients. Health Information Technology (HIT) can provide significant benefits to the healthcare industry. Better patient outcomes and cost savings are just two of the many benefits that HIT can offer. HIT enables clinicians to deliver more effective, personalized care, leading to better patient outcomes. It also reduces costs associated with paper-based systems, such as printing, storage, and transcription, and can reduce costs associated with medical errors.

The implementation of HIT systems in healthcare brings both benefits and challenges. While these systems have the potential to improve patient care and reduce costs, they also raise significant concerns around privacy, security, and data quality. Healthcare

providers must work together to address these challenges, through investments in technology, education and training for staff, collaboration and standardization of data sharing, and the development of policies and procedures that promote transparency and accountability. By doing so, healthcare providers can leverage the power of HIT systems to provide better care for their patients, while also improving efficiency and reducing costs.

Integrating HIT systems into existing workflows is a complex and time-consuming process, but it is crucial for the successful implementation of health information technology. Effective integration requires careful planning, communication, and collaboration between healthcare providers and HIT vendors. By taking a comprehensive approach to workflow integration, healthcare providers can ensure that HIT systems are successfully incorporated into their existing systems, leading to more efficient and effective patient care.

References

- Alsadan, M., El Metwally, A., Anna, A. L. I., Jamal, A., Khalifa, M., & Househ, M. (2015). Health Information Technology (HIT) in Arab Countries: A Systematic Review Study on HIT Progress. *Health Informatics Journal*, 9(2). <https://jhdc.org/index.php/jhdc/article/view/138>
- Bashshur, R. L., Shannon, G. W., Krupinski, E. A., Grigsby, J., Kvedar, J. C., Weinstein, R. S., Sanders, J. H., Rheuban, K. S., Nesbitt, T. S., Alverson, D. C., Merrell, R. C., Linkous, J. D., Ferguson, A. S., Waters, R. J., Stachura, M. E., Ellis, D. G., Antoniotti, N. M., Johnston, B., Doarn, C. R., ... Tracy, J. (2009). National telemedicine initiatives: essential to healthcare reform. *Telemedicine Journal and E-Health: The Official Journal of the American Telemedicine Association*, 15(6), 600–610.
- Battersby, M. W. (2005). Health reform through coordinated care: SA HealthPlus. *BMJ*, 330(7492), 662–665.

- Behkami, N. A., & U. Daim, T. (2012). Research Forecasting for Health Information Technology (HIT), using technology intelligence. *Technological Forecasting and Social Change*, 79(3), 498–508.
- Blumenthal, D. (2009). Stimulating the adoption of health information technology. *The West Virginia Medical Journal*, 105(3), 28–29.
- Corey-Lisle, P., Tarzian, A. J., Cohen, M. Z., & Trinkoff, A. M. (1999). Healthcare reform. Its effects on nurses. *The Journal of Nursing Administration*, 29(3), 30–37.
- Eghtesad, S., Mohammadi, Z., Shayanrad, A., Faramarzi, E., Joukar, F., Hamzeh, B., Farjam, M., Zare Sakhvidi, M. J., Miri-Monjar, M., Moosazadeh, M., Hakimi, H., Rahimi Kazerooni, S., Cheraghian, B., Ahmadi, A., Nejatizadeh, A., Mohebbi, I., Pourfarzi, F., Roozafzai, F., Motamed-Gorji, N., ... Malekzadeh, R. (2017). The PERSIAN Cohort: Providing the Evidence Needed for Healthcare Reform. *Archives of Iranian Medicine*, 20(11), 691–695.
- Elias, P. E. M., & Cohn, A. (2003). Health reform in Brazil: lessons to consider. *American Journal of Public Health*, 93(1), 44–48.
- Gardner, R. L., Cooper, E., Haskell, J., Harris, D. A., Poplau, S., Kroth, P. J., & Linzer, M. (2019). Physician stress and burnout: the impact of health information technology. *Journal of the American Medical Informatics Association: JAMIA*, 26(2), 106–114.
- Gibbons, R. J., Jones, D. W., Gardner, T. J., Goldstein, L. B., Moller, J. H., Yancy, C. W., & American Heart Association. (2008). The American Heart Association's 2008 Statement of Principles for Healthcare Reform. *Circulation*, 118(21), 2209–2218.

- Goldschmidt, P. G. (2005). HIT and MIS: implications of health information technology and medical information systems. *Communications of the ACM*, 48(10), 68–74.
- Hersh, W. (2009). A stimulus to define informatics and health information technology. *BMC Medical Informatics and Decision Making*, 9, 24.
- Homedes, N., & Ugalde, A. (2005). Why neoliberal health reforms have failed in Latin America. *Health Policy*, 71(1), 83–96.
- Jamal, A., McKenzie, K., & Clark, M. (2009). The impact of health information technology on the quality of medical and health care: a systematic review. *Health Information Management: Journal of the Health Information Management Association of Australia*, 38(3), 26–37.
- Karakolias, S. E., & Polyzos, N. M. (2014). The newly established unified healthcare fund (EOPYY): current situation and proposed structural changes, towards an upgraded model of primary health care, in Greece. *Health*, 2014. https://www.scirp.org/html/2-8202748_44338.htm
- Karakolias, S., & Kastanioti, C. (2018). Application of an organizational assessment tool of primary health care. *Arch Hell Med*, 35, 497–505.
- Karakolias, S., & Polyzos, N. (2015). Application and assessment of a financial distress projection model in private general clinics. *Archives of Hellenic Medicine/Arheia Ellenikes Iatrikes*, 32(4). <https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=11053992&AN=108792389&h=vfWbltq0P%2FbOJ2pDL99Fz2EZiU%2BQ0FxmWfQk2Ka7huehSr%2FS51h%2ByV31%2FmA%2BCJWnROWTUQ%2FJPWt9cZYyP4Vghg%3D%3D&crl=c>

- Karakolias, Stefanos, Kastanioti, C., Theodorou, M., & Polyzos, N. (2017). Primary care doctors' assessment of and preferences on their remuneration. *Inquiry: A Journal of Medical Care Organization, Provision and Financing*, 54, 46958017692274.
- Karsh, B.-T., Weinger, M. B., Abbott, P. A., & Wears, R. L. (2010). Health information technology: fallacies and sober realities. *Journal of the American Medical Informatics Association: JAMIA*, 17(6), 617–623.
- Kellis, D. S., & Rumberger, J. S. (2010). Healthcare Reform and the Hospital Industry: What Can We Expect? *Journal of Healthcare Management / American College of Healthcare Executives*, 55(4), 283.
- Kim, J., & Park, H.-A. (2012). Development of a health information technology acceptance model using consumers' health behavior intention. *Journal of Medical Internet Research*, 14(5), e133.
- Koopman, R. J., Petroski, G. F., Canfield, S. M., Stuppy, J. A., & Mehr, D. R. (2014). Development of the PRE-HIT instrument: patient readiness to engage in health information technology. *BMC Family Practice*, 15, 18.
- Liu, G. G., Vortherms, S. A., & Hong, X. (2017). China's Health Reform Update. *Annual Review of Public Health*, 38, 431–448.
- Lluch, M. (2011). Healthcare professionals' organisational barriers to health information technologies-a literature review. *International Journal of Medical Informatics*, 80(12), 849–862.
- McDonough, J. E. (2011). *Inside National Health Reform*. University of California Press. <https://doi.org/10.1525/9780520949614>

- Nordal, K. C. (2012). Healthcare reform: Implications for independent practice. *Professional Psychology, Research and Practice*, 43(6), 535–544.
- Oberlander, J. (2010). Long time coming: why health reform finally passed. *Health Affairs*, 29(6), 1112–1116.
- Polyzos, Nikolaos, Karakolias, S., Mavridoglou, G., Gkorezis, P., & Zilidis, C. (2015). Current and future insight into human resources for health in Greece. *Open Journal of Social Sciences*, 03(05), 5–14.
- Polyzos, Nikolaos, Kastanioti, C., Zilidis, C., Mavridoglou, G., Karakolias, S., Litsa, P., Menegakis, V., & Kani, C. (2016). Greek National E-Prescribing System: Preliminary Results of a Tool for Rationalizing Pharmaceutical Use and Cost. *Global Journal of Health Science*, 8(10), 55711.
- Polyzos, Nikos, Karakolias, S., Dikeos, C., Theodorou, M., Kastanioti, C., Mama, K., Polizoidis, P., Skamnakis, C., Tsairidis, C., & Thireos, E. (2014). The introduction of Greek Central Health Fund: Has the reform met its goal in the sector of Primary Health Care or is there a new model needed? *BMC Health Services Research*, 14, 583.
- Putera, I. (2017). Redefining Health: Implication for Value-Based Healthcare Reform. *Cureus*, 9(3), e1067.
- Ratwani, R. M., Reider, J., & Singh, H. (2019). A Decade of Health Information Technology Usability Challenges and the Path Forward. *JAMA: The Journal of the American Medical Association*, 321(8), 743–744.
- Roberts, M. J., Hsiao, W., Berman, P., & Reich, M. R. (2008). Getting health reform right: a guide to improving performance and equity. *New York*.
<https://www.scielosp.org/pdf/bwho/2006.v84n2/160-160>

- Scott, C., & Hofmeyer, A. (2007). Networks and social capital: a relational approach to primary healthcare reform. *Health Research Policy and Systems / BioMed Central*, 5, 9.
- Sharma, L., Chandrasekaran, A., Boyer, K. K., & McDermott, C. M. (2016). The impact of Health Information Technology bundles on Hospital performance: An econometric study. *Journal of Operations Management*, 41, 25–41.
- Shekelle, P. G., Morton, S. C., & Keeler, E. B. (2006). Costs and benefits of health information technology. *Evidence Report/Technology Assessment*, 132, 1–71.
- Singh, R. P., Javaid, M., Haleem, A., Vaishya, R., & Bahl, S. (2020). Significance of Health Information Technology (HIT) in Context to COVID-19 Pandemic: Potential Roles and Challenges. *Journal of Industrial Integration and Management*, 05(04), 427–440.
- Sittig, D. F., & Singh, H. (2010). A new sociotechnical model for studying health information technology in complex adaptive healthcare systems. *Quality & Safety in Health Care*, 19 Suppl 3(Suppl 3), i68-74.
- Tompson, W. (2007). *Healthcare reform in Russia* (OECD Economics Department Working Papers). Organisation for Economic Co-Operation and Development (OECD). <https://doi.org/10.1787/327014317703>
- Vozikis, A., Panagiotou, A., & Karakolias, S. (2021). A Tool for Litigation Risk Analysis for Medical Liability Cases. *HAPSc Policy Briefs Series*, 2(2), 268–277.
- Yilmaz, V. (2017). *The Politics of Healthcare Reform in Turkey*. Springer International Publishing.

Youngson, R. (2011). Compassion in healthcare—the missing dimension of healthcare reform. *Caregiver Stress and Staff Support In.*