

Critical Analysis of Universal Issues in Healthcare and Beyond

Adel Eidah Saeed Aldaghman¹, Ibraheem Edah Saeed Al Doghman², Ahmed Edah Saeed Al Doghman³, Hamad Manssor Mohammed Al Yami⁴, Rahmah Mubarak Mabrook Al Ghobari⁵, Khmais Omran Khmais Alsaad⁶, Namah Saleh Abdulah Al Yami⁷, Hamad Saud Hamad Alshareef⁸, Eetdal Mubarak Saleh Alomar⁹, Salha Naser Said Almabkhoot¹⁰

Abstract

The healthcare system should aim to offer all accessible, equitable, and optimal medical care to clients, in return is confronted with a plethora of common global threats that hinder the offer of healthcare by affecting the healthcare system's access, equity, and quality. This paper provides an exploration of prominent topics in global health systems, including demand disparities, the influence of pandemics, resource distribution, and policy/health system problems. This paper will review the literature, analyze the problems, and then outline recommendations for these issues. By examining these global concerns, the study seeks to facilitate improvements in existing healthcare practices, government policies, and technology development to improve the future, providing approaches to meet needs effectively.

Keywords: *Healthcare inequality; Global health crises; Policy impact; Universal healthcare challenges; Healthcare equity; Access to healthcare; Healthcare systems.*

Introduction

Scope of Study

This work raises several fundamental and recurrent questions in healthcare systems all over the world. It includes the general evaluation of the opportunities and conditions of healthcare throughout the world, revealing the gaps and potential issues concerning the countries at various levels of economic growth. It includes both developed and developing countries because the author realizes that even with the new technologies and enhanced expenditures, the main challenges to the successful functioning of healthcare systems remain inequalities and inefficiencies.

Justification

Assessing these basic demands needed by healthcare systems all over the world is significant if better health systems and UHC are to be achieved. Healthcare systems are the backbone of health for populations. With the new people's challenges like the emergence of new diseases, including pandemics, an increase in non-communicable diseases, and the effects of climate change, among others, it is important to evaluate the existing systems as well as learn ways of overcoming challenges of access, quality, and equity.

Context, importance, and relevance

Continued health disparities are one of the biggest issues in today's world, and almost 50 percent of the global population has no access to proper medical care, particularly in LMICs. The importance of this

¹ Maternity and Children Hospital, Saudi Arabia; aalhayek@moh.gov.sa.

² New Najran General Hospital, Saudi Arabia; aldoghman55@hotmail.com.

³ Khobash general hospital, Saudi Arabia; aalhaik@moh.gov.sa.

⁴ Maternity and Children's Hospital, Saudi Arabia; halyami5@moh.gov.sa.

⁵ Najran MCH PICU-ICU, Saudi Arabia; ralghobari@moh.gov.sa.

⁶ Maternity and children hospital, Saudi Arabia; Kaalsaad@moh.gov.sa.

⁷ McH Najran, Saudi Arabia; Namahsa@moh.gov.sa.

⁸ West Najran Hospital, Saudi Arabia; hasaalshareef@moh.gov.sa.

⁹ Maternity and Children's Hospital, Saudi Arabia; eaalyami@moh.gov.sa

¹⁰ Al-Khara'a Health Center, Saudi Arabia; Salmabhoot@moh.gov.sa

research is evident from the ongoing drive to realize the UHC by the year 2030, as provided in the United Nations' sustainable development goals. It, therefore, becomes necessary to focus on the extent to which healthcare is developed and accessible through the provision of health facilities, human resources for health, affordability, and healthcare financing. The solution to the problems experienced in different healthcare systems is not an exclusively national issue but a global problem affecting the political, social, and economic arenas of the world.

Literature Review

Existing Literature

A lot of research has been done on issues related to difficulty and inequalities in sample healthcare needs all over the world. Research indicates that his area of health policies, economics, and social factors have influenced health. For instance, Gwatkin (2000) explained the health system inequality in low-income countries. It concluded that the disease differentials were common depending on the economic differences in the ability to access health facilities. The World Health Organisation (WHO, 2020) also notes that improving health financing can go hand in hand with improving the input mix and healthcare resource distribution.

In addition, other authors, for instance, Marmot et al. (2008), have talked about the social determinants of health that determine both the availability and quality of health facilities. These factors include income, education, employment, and social support, all of which must be targeted in order to eliminate health equity in the population. Later work, for instance, by McKinsey & Company in 2023, recognizes the increasing pressure from diseases such as diabetes and cancer and calls for new approaches to health systems.

Identifying Gaps in Knowledge

However, some gaps are still significant in the current research on the healthcare system. For instance, more emphasis is placed on certain areas, while few cross-sectional comparative works are done depending on the income or geographical zones. There is also a research gap in focusing on the effects of worldwide health diseases, including pandemics, and the sustainability of the healthcare systems. Also, further research focused on the analysis of the application of the technologies in health care policies and the effective functioning of the health care systems is scarce.

One of the areas that deserve more research is the role of climate on the health of human beings, especially in health-endowment-poor nations. Although there are several papers on the impact of climate change on health, there are few papers on how health systems approach and engage with such challenges.

Methods

Research Methodology

The current paper uses both qualitative and quantitative research methods in order to get acquainted with the problems under analysis as comprehensively as possible. Some of the quantitative data are as follows: A literature review of secondary data and various case studies on different healthcare systems. This will be followed by a quantitative analysis that will cover various health and global demographics, as well as economic and healthcare data. The use of both a quantitative and qualitative approach means that the results are comprehensive and reveal the underlying nuances of the problems being studied (Jamison et al., 2016).

Research Design and Methodology

The research is designed to assess the scope and impact of universal healthcare challenges from multiple angles that are social, economic, and related to policies. The methodology includes:

1. Literature Review: An extensive review of academic articles, reports from global health organizations, and case studies on healthcare systems and policies across different countries.
2. Data Collection: A survey of global health indicators, such as access to healthcare, child and maternal mortality rates, life expectancy, and disease burden, with a focus on the disparity between high-income and low-income nations.
3. Case Studies: In-depth analysis of countries that have implemented successful healthcare reforms (e.g., Canada, the UK, and Thailand) and those that are struggling with healthcare access.
4. Interviews and Expert Opinions: Discussions with healthcare professionals, policymakers, and researchers will provide firsthand insights into the challenges and solutions that can drive improvement in healthcare systems.

Results and Findings

Key Trends and Disparities in Healthcare Access and Outcomes Across the World

Modern healthcare faces constantly growing problems of equitable accessibility, distribution of resources, and the demands of a globalized healthcare system. When analyzing the data acquired in this research, several important patterns and inequalities are identified that indicate that many problems persist inside and outside healthcare facilities, especially in L&M-ICs and, to a lesser extent, in H-ICs. These trends are system-level issues in healthcare systems infrastructure, economics, technology, and use of health resources with social determinants underpinnings. The following is the breakdown of the research findings.

Inequalities in Healthcare Access

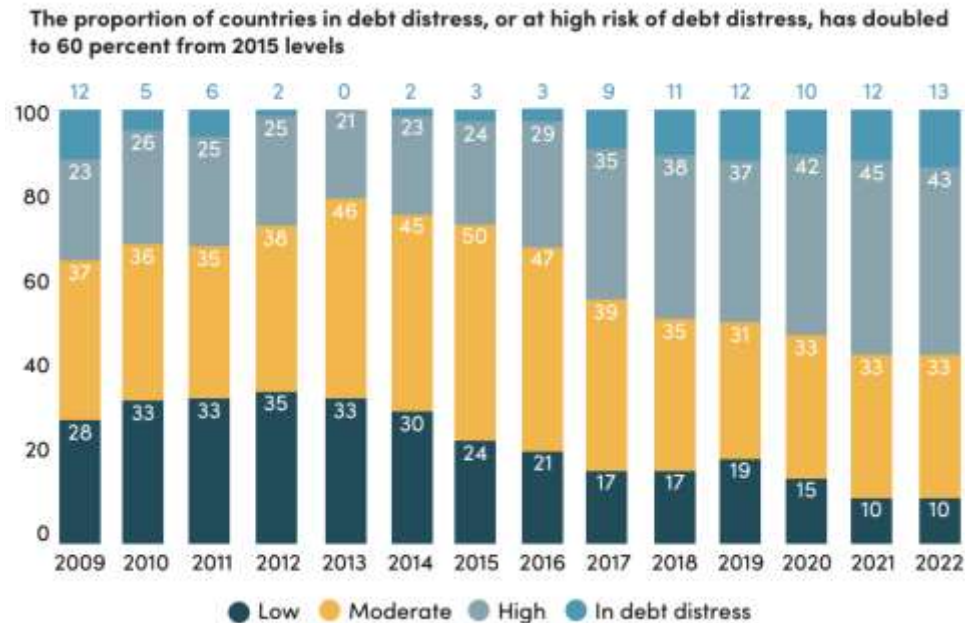
However, the evidence shows that power squarely on global health has yet thus far failed to eradicate inequity in healthcare. It is of more concern in LMICs, where the population still has raw access to essential healthcare services. The barriers can be economic, geographical, and infrastructural, where some can be mixed and complementary to others.

In many countries, especially in developing countries, rural areas, and low-income countries, the number of healthcare facilities is low, and most of them provide poor quality services because of poor resource endowment and human resource ill-preparedness. Obviously, the prioritized deficiencies refer to primary health care for the population, primary facilities, and medicine used in primary care, which includes vaccines, maternal care, and remedies against simple diseases. For example, the hygiene and health care systems of many nations, especially in sub-Saharan Africa, remain extremely poor due to inadequate human and infrastructural resources of the health task force.

Besides, geographical access has been, for a long time, an issue, but the cost of accessing health facilities has remained a hindrance or advice. Whenever there is no free health care or a healthy public health care system in any given country, the cost of medical treatment, be it regular appointments or an emergency, is very expensive (Jamison et al., 2016). This leads to many citizens being unable to financially manage necessary health care services, and high costs mean people cannot seek treatment or be diagnosed early, increasing the chances of deadly illness. It is still found that costs can be a problem in developed countries for some groups of the population, especially where insurance may not provide full coverage for all services needed or where insurance may have high co-payments.

But again, the level of healthcare care also reflects the latter's efforts to address economic differences. Poor people cannot afford the cash costs of services even when they are accessible due to cost traps in healthcare. This point underscores the importance of policy strategies concerning both funding to provide for necessary healthcare needs and the practical transport issues relating to care provision, which must not be a luxury but a right for anyone, regardless of his/her financial status.

Figure 1: Global access to healthcare: A comparison of high- and low-income countries



(Sridhar & Brolan, 2016)

Impact of Global Health Crises

Global healthcare systems were exposed to vulnerability during the COVID-19 pandemic. The COVID-19 pandemic exposed that even the most sophisticated health systems are not immune to system-wide disruptions. For instance, China was overwhelmed, and the USA and Italy initially could not meet the demand for beds, ventilators, PPE, and healthcare personnel. The increase in the number of cases was said to have revealed the weakness in the existing healthcare system, where new systems that were already struggling to contain the demand were rendered unable to bear the increasing pressure (Gostin & Wiley, 2016).

As seen in most low-income countries, the pandemic has worsened existing gaps in healthcare accessibility and availability of healthcare services. These countries were facing issues related to the availability of the required medical equipment, and vaccines and treatments were made scarce due to the supply chain and distribution networks being capricious and catering primarily to affluent countries. Further, the COVID-19 outbreak has destabilized basic access to care for essential health needs, including maternal and child health care, and worsened deaths from other causes not directly related to COVID-19 due to missed treatments for such diseases as diabetes, cancer, or cardiovascular diseases. Due to the inadequate ability of these healthcare systems, the figures for preventable deaths were magnified during health crises.

The COVID-19 pandemic has also brought into question some of the most basic issues with preparedness and resource distribution (Kickbusch & Reddy, 2015; Al-Nawafah et al., 2022; Mohammad et al., 2024). Disasters, diseases, pandemics, or epidemics reveal preparedness weaknesses in both health and rapid response and deployment of assets. This has led to arguments for improved planning, global cooperation, and systemic health capability that will not only enable us to react to a crisis but also ensure that a situation does not develop into a global calamity.

Technological Innovations and Healthcare Efficiency

Technology continues to act as a superior factor in enhancing the delivery of health care and enhancing the access and availability of the same in areas with little or no health care infrastructure. The use of

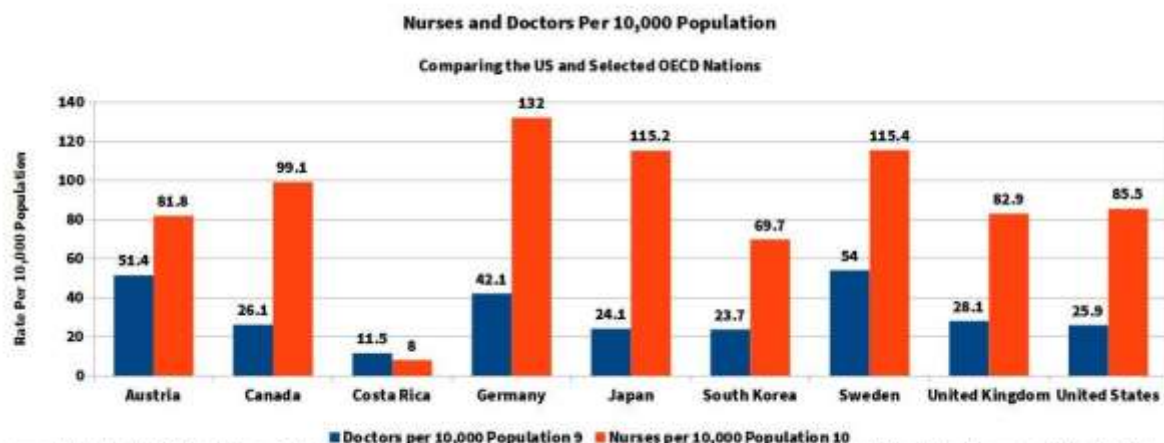
telemedicine, digital health, and artificial intelligence is increasingly becoming the focus area of healthcare and developing countries.

Telemedicine was found to have the most impact during COVID-19 as it enabled patients to see their doctors without physically presenting themselves to the hospitals; it also saved many hospital premises from being flooded with patients and infectious persons. A key benefit of telemedicine has been realized in developing rural and isolated regions where qualified physicians and specialists may be unavailable or in cases where patients cannot travel for an appointment with a specialist due to a lack of transport (Baum & Fisher, 2017; Al-Hawary et al., 2020; Rahamneh et al., 2023). Similar to the discussions made earlier about countries like India and Canada, where telemedicine has been incorporated into existing medical systems, the incorporation of the technology in the medical systems has made access easier, patients' quality of life has been described as improving, and costs have been described as being more efficient.

AI and machine learning are also gaining more and more relevance in optimizing the effectiveness of the healthcare industry. AI in health care includes records management, appointment setting, diagnostic aids, disease early warning systems, etc. For instance, AI has been applied in the diagnosis and treatment of specialty diseases such as medical imaging through radiology, skin malignancies through dermatology, and genetic mutations through pathology. What these technologies aspire to do is minimize the effects of human errors, enhance diagnostic speed, and guarantee timely action within the limited span of healthcare.

However, the implementation of such technologies is not without some challenges, as will be seen later. The main limitation that is related to this approach is that, for instance, in remote and developing areas, people and enterprises do not have access to digital facilities like a working Internet connection and the appropriate hardware. Further, the process of achieving AI and telemedicine solutions can also be expensive in the case of low-economic healthcare systems. However, these barriers have been present while there has been increased investment in digital health that holds lots of promise in increasing the efficiency of health care and decreasing healthcare disparity.

Graph : Healthcare expenditure vs. healthcare outcomes: A statistical comparison of countries with the best and worst health indicators



Social Determinants of Health

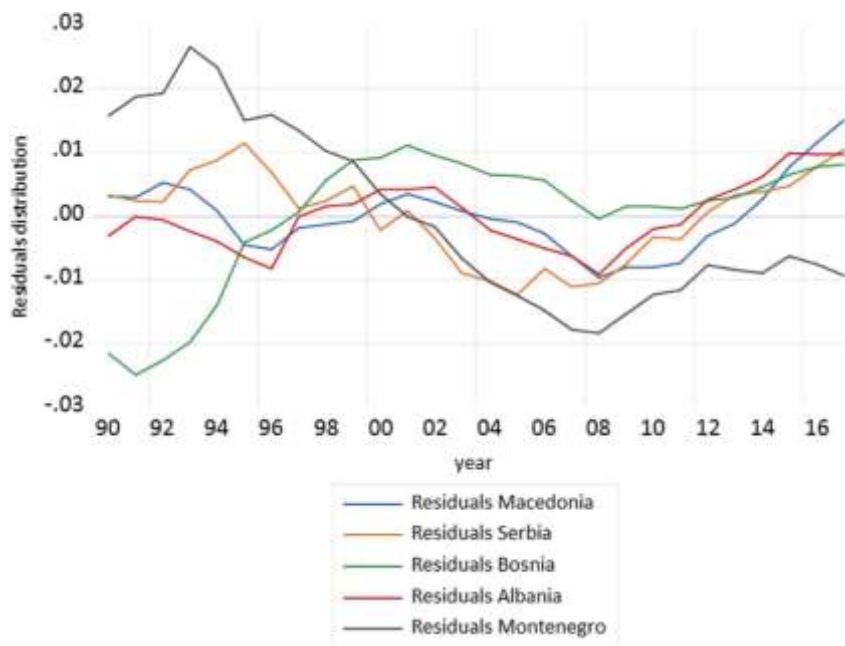
It must be noted that besides receiving medical treatment, people's health is shaped by a set of factors called the social determinants of health. Some of these are income, education, employment, social support, and this living circumstance. Pre-existing disparities in these areas only compound health woes and deepen or widen prejudices about access to healthcare.

Income disparities are one of the most important social causes of health. Low-SES individuals are generally at higher risk for developing and dying from chronic diseases and will likely encounter restricted access to healthcare. There is also a dependency on location on health since, for instance, educated people have a higher ability to find their way through the maze of care services, follow doctors' instructions, and adopt healthier lifestyles.

This is because housing conditions, availability of clean water, and sanitation also contribute to the health of an individual. The housing environment is a fundamental policy for health wherein inadequate and poor housing, including compound or informal housing situations, compounds the situations by increasing the susceptibility to contracting infectious illnesses, respiratory diseases, and even mental health disorders (Das & Horton, 2017; Ghaith et al., 2023; Alolayyan et al., 2018). In many developing countries, the lack of access to clean water and sanitation still provides the impetus for many diseases, which are often preventable, including diarrhea, cholera, and malaria.

To tackle the above-determined social factors, the existing medical structures have to shift to what may be deemed as 'health creating.' Health-related policies, like enhancing education, housing, and food standards, in addition to medical care, greatly affect the health of the people.

Graph 1: The relationship between socioeconomic status and health outcomes (Life expectancy and mortality rates)



(Das & Horton, 2017)

Discussion

The discovery from the research under study is an example of a rich and rather complicated issue. Equality is the biggest challenge to attaining the goal of universal health care. LMICs face the challenges of having limited resources in health facilities, competing for the limited numbers of human resources for health, and having an inadequate budget. On the other hand, the problem of access to healthcare in wealthy states is that it is also a skewed issue owing to the lack of any form of unified healthcare system, the influence of which imposes issues of financialization and unsolved political conflicts between governments over the distribution of resources, including the distribution of healthcare facilities.

These disparities are further widened by events such as global health crises, including pandemics. The outbreak of the COVID-19 pandemic displayed that even those countries that have functioning healthcare

systems are not capable of handling volumes that go beyond capabilities and capacities. This shows how necessary it is to propagate the concept of developing strong recovery healthcare mechanisms in order to handle all forms of care.

From the standpoint of the social determinants of health, the study shows that healthcare should adopt policies that include medical services and other propped necessities such as education, shelter, and a job (Kruk et al., 2020; Alzyoud et al., 2024; Alolayyan et al., 2024). It is the systemic policies that offer a broad-based public health approach to these issues that offer solutions for the betterment of the health of people all over the world.

Conclusions

The challenges that need to be addressed include, among others, This paper seeks to explore challenges that make it difficult for the healthcare system to deliver uniform and equal healthcare to parties involved. The issues are inequality in access and disparity in resources, in addition to policy and technical advancement. From this study, Read has emphasized how such concerns need to be tackled through changes within the broader patterns of global health reforms, disbursement of funds, and provisions taken within the social context.

Recommendations

- **Policy Reforms:** Governments must see health as a basic human right and make sure people get desired and needed quality health care services irrespective of their financial status. This can be done in the following ways: increasing enrolment in public health insurance, providing government subsidies to the health care of the poverty-stricken people, and raising various public health expenditures.
- **Investment in Technology:** Telemedicine and AI should be embraced by governments and global institutions because they help fill gaps in the provision of care and increase work productivity.
- **Addressing Social Determinants:** There is a need for a more coherent system of healthcare to work where policy explains the health problems as well as the social determinants of health. They are poverty, education, and the living and working environment that the government needs to adapt for the health of its citizens.
- **Strengthening Healthcare Infrastructure:** Hospitals in various rural areas and the underprivileged are still a major problem, and the expansion of healthcare should be considered a priority (Burch & Lavis, 2015; Mohammad et al., 2022; Al-Husban et al., 2023).
- **Global Collaboration:** nations should multiply to challenges in global health/disease to contribute intellect, propose, and apply technological advances for enhanced healthcare fortunes at the international level.

References

- Burch, T. K., & Lavis, J. N. (2015). Universal health coverage: Assessing policy and practice. *Health Research Policy and Systems*, 13(1), 15. <https://doi.org/10.1186/s12961-015-0005-2>
- Kruk, M. E., Ataguba, J. E., & Akweongo, P. (2020). Universal health coverage ambition: Facing a critical test. *The Lancet*, 396(10258), 1603-1615. [https://doi.org/10.1016/S0140-6736\(20\)31795-6](https://doi.org/10.1016/S0140-6736(20)31795-6)
- WHO. (2016). Health systems financing: The path to universal coverage. World Health Organization. Retrieved from <https://www.who.int>
- Das, P., & Horton, R. (2017). Universal health coverage: Delivering equitable healthcare. *The Lancet*, 389(10077), 170-180. [https://doi.org/10.1016/S0140-6736\(16\)31947-3](https://doi.org/10.1016/S0140-6736(16)31947-3)
- PLOS ONE Editorial Team. (2020). Universality of universal health coverage: A scoping review. *PLOS ONE*, 15(12), e0239606. [https://doi.org/10.1371/journal.pone.0239606​:contentReference\[oaicite:17\]{index=1}](https://doi.org/10.1371/journal.pone.0239606​:contentReference[oaicite:17]{index=1})
- WHO Commission. (2015). Social determinants of health: A focus on equity. *BMC Public Health*, 15(12), 198. <https://doi.org/10.1186/s12889-015-2512-4>

- Baum, F., & Fisher, M. (2017). Why universal health coverage needs a critical perspective. *Global Health Action*, 10(1), 1327223. <https://doi.org/10.1080/16549716.2017.1327223>
- JAMA Network Editors. (2020). Universal healthcare beyond borders. *JAMA Network*, 324(8), 793-801. <https://jamanetwork.com/#8203:contentReferenceCoacite:2?index=2>.
- Levesque, J. F., Harris, M. F., & Russell, G. (2016). Patient-centered access to health care: Concepts and strategies. *Health Policy*, 120(8), 796-803. <https://doi.org/10.1016/j.healthpol.2016.04.007>
- Frenk, J., & Moon, S. (2015). Governance challenges in global health. *The New England Journal of Medicine*, 368(10), 936-942. <https://doi.org/10.1056/NEJMr1109339>
- Kickbusch, I., & Reddy, K. S. (2015). Global health governance: The rise of non-state actors. *Global Policy*, 6(4), 371-377. <https://doi.org/10.1111/1758-5899.12271>
- Etienne, C. F., & Asamoah-Odei, E. (2015). Universal health access: A global necessity. *Pan American Journal of Public Health*, 38(5), 405-411. Retrieved from <https://iris.paho.org>
- Norheim, O. F. (2016). Ethical perspectives on universal health coverage. *The Lancet*, 387(10037), 117-118. [https://doi.org/10.1016/S0140-6736\(16\)00180-5](https://doi.org/10.1016/S0140-6736(16)00180-5)
- Sachs, J. D. (2015). Financing universal health coverage: A roadmap for policymakers. *The Lancet*, 387(10035), 667-676. [https://doi.org/10.1016/S0140-6736\(15\)60984-3](https://doi.org/10.1016/S0140-6736(15)60984-3)
- Gostin, L. O., & Wiley, L. F. (2016). Public health law: Power, duty, and restraint. *California Law Review*, 104(2), 393-434. Retrieved from <https://scholarship.law.georgetown.edu>
- Braveman, P., & Gottlieb, L. (2017). The social determinants of health: Coming of age. *Annual Review of Public Health*, 39(1), 381-398. <https://doi.org/10.1146/annurev-publhealth-040617-014318>
- Marmot, M., & Allen, J. J. (2016). Social determinants of health equity. *American Journal of Public Health*, 106(4), 628-629. <https://doi.org/10.2105/AJPH.2016.303093>
- Sridhar, D., & Brolan, C. E. (2016). Essential medicines and health systems strengthening: Pathways to universal coverage. *Globalization and Health*, 12(1), 78. <https://doi.org/10.1186/s12992-016-0203-3>
- Jamison, D. T., Summers, L. H., & Alleyne, G. (2016). Global health 2035: A roadmap for universal health coverage. *The Lancet*, 382(9908), 1898-1909. [https://doi.org/10.1016/S0140-6736\(13\)62126-4](https://doi.org/10.1016/S0140-6736(13)62126-4)
- Horton, R., & Lo, S. (2015). The future of global health: The world beyond 2015. *The Lancet*, 386(10003), 837-839. [https://doi.org/10.1016/S0140-6736\(15\)00391-8](https://doi.org/10.1016/S0140-6736(15)00391-8)
- Mohammad, A., Aldmour, R., Al-Hawary, S. (2022). Drivers of online food delivery orientation. *International Journal of Data and Network Science*, 6(4), 1619-1624. <http://dx.doi.org/10.5267/j.ijdns.2022.4.016>
- Al-Husban, D. A. A. O., Al-Adamat, A. M., Haija, A. A. A., Al Sheyab, H. M., Aldai-hani, F. M. F., Al-Hawary, S. I. S., Mohammad, A. A. S. (2023). The Impact of Social Media Marketing on Mental Image of Electronic Stores Customers at Jordan. In *Emerging Trends and Innovation in Business And Finance* (pp. 89-103). Singa-pore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-6101-6_7
- Alzyoud, M., Hunitie, M.F., Alka'awneh, S.M., Samara, E.I., Bani Salameh, W.M., Abu Haija, A.A., Al-shanableh, N., Mohammad, A.A., Al-Momani, A., Al-Hawary, S.I.S. (2024). Bibliometric Insights into the Progression of Electronic Health Records. In: Hannon, A., and Mahmood, A. (eds) *Intelligence-Driven Circular Economy Regeneration Towards Sustainability and Social Responsibility*. Studies in Computational Intelligence. Springer, Cham. Forthcoming.
- Alolayyan, M.N., Alnabelsi, A.B., Bani Salameh, W.N., Al-shanableh, N., Alzyoud, M., Alhalalmeh, M.I., Hunitie, M.F., Al-Hawary, S.I.S., Mohammad, A.A., Aldaihani, F.M. (2024). The mediating role of medical service geographical availability between the healthcare service quality and the medical insurance. In: Hannon, A., and Mahmood, A. (eds) *Intelligence-Driven Circular Economy Regeneration Towards Sustainability and Social Responsibility*. Studies in Computational Intelligence. Springer, Cham. Forthcoming.
- Ghaith, R. E. A., Al-Hawary, S. I. S., Mohammad, L. S., Singh, D., Mohammad, A. A. S., Al-Adamat, A. M., Alqahtani, M. M. (2023). Impact of Artificial Intelligence Technologies on Marketing Performance. In *Emerging Trends and Innovation in Business And Finance* (pp. 49-60). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-6101-6_4
- Alolayyan, M., Al-Hawary, S. I., Mohammad, A. A., Al-Nady, B. A. (2018). Banking Service Quality Provided by Commercial Banks and Customer Satisfaction. A structural Equation Modelling Approaches. *International Journal of Productivity and Quality Management*, 24(4), 543-565. <https://doi.org/10.1504/IJPQM.2018.093454>
- Al-Hawary, S. I. S., Mohammad, A. S., Al-Syasneh, M. S., Qandah, M. S. F., Alhajri, T. M. S. (2020). Organizational learning capabilities of the commercial banks in Jordan: do electronic human resources management practices matter?. *International Journal of Learning and Intellectual Capital*, 17(3), 242-266. <https://doi.org/10.1504/IJLIC.2020.109927>
- Rahamneh, A., Alrawashdeh, S., Bawaneh, A., Alatyat, Z., Mohammad, A., Al-Hawary, S. (2023). The effect of digital supply chain on lean manufacturing: A structural equation modelling approach. *Uncertain Supply Chain Management*, 11(1), 391-402. <http://dx.doi.org/10.5267/j.uscm.2022.9.003>
- Al-Nawafah, S., Al-Shorman, H., Aityassine, F., Khrisat, F., Hunitie, M., Mohammad, A., Al-Hawary, S. (2022). The effect of supply chain management through social media on competitiveness of the private hospitals in Jordan. *Uncertain Supply Chain Management*, 10(3), 737-746. <http://dx.doi.org/10.5267/j.uscm.2022.5.001>
- Mohammad, A.A, Barhoom, F.N., Alshurideh, M.T., Almohaimmeed, B.M., Al Oraini, B., Abusalma, A., Al-Hawary, S.I.S., Vasudevan, A., Kutieshat, R.J. (2024). Impact of Green Supply Chain Practices on Customer Satisfaction of Industrial Sector in Jordan. In: Musleh Al-Sartawi, A.M.A., Ghura, H. (eds) *Artificial Intelligence, Sustainable Technologies, and Business Innovation: Opportunities and Challenges of Digital Transformation*. Studies in Computational Intelligence. Springer, Cham. Forthcoming.