Challenges Facing The Saudi Healthcare System In The Future

[1]Sahar Ali Qahtani, [2]Rehab Saud Alghamdi, [3]Thuraya Ibrahim Fallatah, [4]Rana Mohammad Alluqmani, [5]Raniah Mohammad Alluqmani, [6]Awatif Shabab Althobaiti, [7]Jawharah Fazi Althobaiti, [8]Eida Saud Alharthi, & [9]Sultan Ali Alharthi

[1]Corresponding Author Email: saharq@moh.gov.sa
[1]Specialist Laboratory - Molecular Genetics, In Poison Control and Forensic Chemistry Centre Jeddah, Ministry of Health, Saudi Arabia.
[2,3,4,5]Jeddah Health Affairs, Ministry of Health, Saudi Arabia.
[6,7,8,9]Taif Health Cluster, Ministry of Health, Saudi Arabia.

Abstract

The healthcare system of Saudi Arabia needs to be modernized to achieve the targets of Vision 2030 and to meet future challenges of ensuring efficient, effective, and high-quality healthcare for all people in an affordable and accessible manner. The challenges in this respect are many. This review identified the challenges discussed in the literature. In the context of the rising demand for quality care due to the increasing population, especially of the elderly, increasing prevalence of chronic diseases, and pandemics, there is immense pressure on the capacities, workforce, and financial resources. Capacity enhancement by increasing the number of hospitals and beds will also lead to demand for an increased workforce. It has been pointed out that the current workforce strength and those likely to be added to it from the local population are inadequate even to achieve the Vision 2030 target. Technological solutions like telemedicine, e-health, and the Internet of Things may partially solve the problem. Financial resources will be a limiting factor to provide free healthcare for all Saudi citizens and the Saudi healthcare system will soon become unsustainable. Technology can ease out part of it. Additionally, privatization and private participation have been suggested in some papers, but objected to in a few other papers, as they see some negative aspects of privatization affecting the Saudi healthcare model. The solutions offered in the reviewed papers need to be tested before implementing them. More research to explore other solutions may also be beneficial.

Keywords: Saudi Arabia, Healthcare, Challenges, Future.

Introduction

So far, healthcare systems all over the world had been working on an established path. All these are expected to change in the

next few years, as science has been developing many revolutionary technologies for healthcare systems. In a report on interviews with specialists, (Monti & Coleman, 2016) listed seven such changes in future healthcare systems. One major change will be a transformation from reacting to illness by treatment towards individualized care of own health in all aspects. Instead of treating for disease, holistic healthcare to prevent illness will be in focus. Smart technologies may be used for various purposes.

However, these radical changes in future healthcare systems are not without challenges. According to (Blendon & Desroches, 2003) cost increases to patients due to cost cuts by governments, providers, employers, and insurance agencies, have created tiering of patients for accessibility and affordability to quality healthcare, especially chronic and elderly patients. The emergence and rapid spread of new diseases and terrorist attacks challenge the capacity of healthcare systems. Empowering patients is seen as a solution to some of these challenges (Edelmann, 2020).

The future of Saudi healthcare systems can also be driven by such transformations if the challenges are addressed well. In this review the future challenges of the Saudi healthcare system, as it progresses towards an ideal healthcare system, are identified with the help of published literature.

The general nature of challenges in the current Saudi public healthcare system was identified by (Al Asmri, Almalki, Fitzgerald, & Clark, 2020) as defining its scope, structure, infrastructure, financing, increased demand, increased costs, workforce capacity, inequitable access to health services, quality and safety of services, the growing burden of chronic diseases, lack of an effective information system, management, and leadership issues, and gaps in the referral system. These challenges indicate the need for comprehensive reforms in the Saudi healthcare sector.

The actual challenges are inadequate utilization of the available electronic health strategies, flawed cost-cutting efforts, deficits in the national health information system, high demand triggered by free services, shortage of Saudi health professionals, poor accessibility of health care facilities, multiple roles of the health ministry, changing patterns of diseases and absence of a national crisis management policy (Al Otaibi, 2017). According to (Rahman & Al-Borie, 2021), the goals of Vision 2030 can be achieved only through the development of a sustainable healthcare system, strengthening human resources, stewardship for decentralization and efficient use of resources, good governance, accountability, and transparency. Any change management strategies of healthcare organizations should consider human aspects along with technological and economic aspects for sustainable change (Alharbi, 2018).

Review

Capacities and workforce challenges

According to the latest data of the Ministry of Health, Saudi Arabia (MoH) (MoH, 2022), there were 504 hospitals in the country in 2020, an increase of 1.2% from 498 in 2019. The total capacity was 78596 beds, an increase of 2.1% from 76988 in 2019. There were 38 colleges of medicines in 2020, down from 39 in 2019. There were also 27 colleges of dentistry, same as in 2019, and 32 colleges of pharmacies, two less than in 2019. There were 27.2 physicians, 5.6 dentists, 56.2 nurses and midwives, 7.9 pharmacists, and 35.4 allied health professionals per 10000 population in 2020. Of these, the numbers of all healthcare professionals, except the dentists, decreased from 2019. The decreases put additional pressure on already constrained human resources in the healthcare of the country. The challenge of modernizing healthcare will be affected by these decreases in numbers. According to WHO standard, the ratio of doctors per 10000 population should be at least 10. The Saudi ratio of 27.2 compares well with those of developed countries. Still, there is reason to be concerned about declining numbers against the future rise in demand due to population rise. Thus, the rising demand for healthcare professionals is a challenge for the Saudi healthcare system in the future.

Despite efforts to modernize the Saudi healthcare system using increased funding and other resources, to achieve the healthcare goals of Vision 2030, the country ranked 89th globally in the prevention of diseases, 114th in responding to healthcare needs, 81 in health norms and compliances, and 71st in the severity of health-care risks among 195 countries. These rankings indicate certain challenges in various areas of health care. The capacity challenges are aggravated by the rapidly increasing chronic patients (diabetes, coronary diseases), and the recent covid pandemic further stressing the already burdened healthcare system. Increased needs for 3,700 doctors, more than 30,000 other healthcare workers, and more than 20,000 beds have been projected to tackle these problems. (Alanzi, 2021).

Huge shortages of healthcare professionals are anticipated due to the increasing population, especially of the elderly, and the increasing prevalence of chronic and rapidly transmittable infections. The current strength of Saudi healthcare professionals and their possible turnout from universities is far inadequate compared to demand. Along with Saudization and Nitaqat, there is a need to mass-produce the local healthcare workforce within a few years. These are the prominent human resources challenges to the targets set in Vision 2030 for the expansion and modernization of the healthcare system (Al-Hanawi, Khan, & Al-Borie, Healthcare human resource development in Saudi Arabia: emerging challenges and opportunities—a critical review, 2019). However, even the

targets set for healthcare professionals in Vision 2030 are inadequate compared to the demand. The authors point out that Saudi Arabia is required to have roughly 710,000 healthcare professionals to meet its requirements of Vision 2030. This will lead to an additional demand of 360000 healthcare professionals to the current numbers. For example, the current level of nurses and midwives according to the MoH data cited above is 56.2 per 10000. Vision 2030 targeted to increase the nurse-patient ratio to 150 in 2020 itself. For a population of 33 million, an additional number of 309540 nurses and midwives are required. However, the projected number of nursing graduates during 2019-2027 is about 26200, which is far less than the requirement for 2020 itself. This means the services of a fairly large number of expatriate nursing forces will be required for a long time to come.

According to (Yusuf, 2014), one major challenge to the Saudi healthcare system is the cost of employing competent healthcare professionals due to the high turnover problem. Saudization adds to this problem, as the healthcare skills of Saudi citizens are still to be developed adequately. Aging and obesity problems may overtake the healthcare capacities. To achieve the Vision 2030 targets, the Saudi healthcare system should undergo significant changes.

Nursing component
Challenges in the nursing component of the future of the Saudi healthcare system include low nursing school capacity, high employment of expatriates, labor market fragmentation, shortage of nurses in rural areas, uneven quality, workplace challenges, and gender challenges. Training of nurses for telenursing and informatics will improve services to remote areas. These challenges can be addressed by sector-wide human resources planning in collaboration with the private sector and other partners (Alluhidan, et al., 2020).

Healthcare financing for sustainability
The current payment model of the Saudi healthcare system shows that hospitals and healthcare providers account for the bulk of the rising cost. In this respect, (AlRuthia, Aydan, Alorf, & Asiri, 2020) reviewed various payment models. However, no single payment model was able to satisfy the dual requirements of reducing costs and meeting the increasing fund requirement for the Saudi healthcare system. So, the authors suggested a combination of different payment models to serve both these purposes, without specifying which ones to be combined in what way.

According to (Al-Hanawi, Alsharqi, Almazrou, & Vaidya, 2018), the introduction of a national health insurance system will enable the financing of quality improvement in the Saudi healthcare system. (Al-Hanawi, The healthcare system in Saudi Arabia: How can we best move forward with funding to protect

equitable and accessible care for all, 2017) noted, earlier, that the cost of financing healthcare in Saudi Arabia has increased due to the increasingly aging population and the increasing burden of chronic disease and the increasing use of technology, and the development of expensive treatments. After examining different models of healthcare financing, public-private partnership (Singapore model) was suggested as the solution for this problem.

One way to address the economic sustainability of the Saudi healthcare system is the willingness to pay (WTP) by people through contributory national health insurance schemes. A large sample survey of households by (Al-Hanawi, Vaidya, Alsharqi, & Onwujekwe, 2018) showed that a majority of these households were willing to pay about SAR 50 per household member per month. Household size, satisfaction with the quality of public healthcare services, perceptions about financing healthcare, education, and income were the determinants of the WTP behavior. The results point to a possibility of implementing a national health insurance scheme, to which people contribute amounts determined by their family size and income.

Privatisation and PPP
Five critical factors were identified by (Alonazi, 2017) for maintaining successful and sustainable public-private partnerships (PPPs). The factors included trustworthiness, technological capability, patient-centeredness, competence, and flexibility. Concessions on primary and secondary care services are optional factors. To ensure the effectiveness of the Saudi healthcare system, public-private relationships should be strengthened to use the high level of technology for the voice of the patient, increasing competency, and ensuring flexibility.

The unsustainability of the economically burdened Saudi healthcare system was used by (Al-Hanawi & Qattan, An analysis of public-private partnerships and sustainable health care provision in the Kingdom of Saudi Arabia, 2019) as a further justification for privatization and public-private partnership in this sector. The idea is to combine public service with marketing concepts. However, the challenge is to determine the precise nature of this partnership and allocation of healthcare segments between public and private partners. The centrality of the state has been retained in the current privatization strategies and regulatory frameworks. The resulting perpetuation of bureaucratic red tape will impede the progress towards modernization of the healthcare system. This means, only limited privatization is possible to address the sustainability of the system in a limited way. The current decentralization and regionalization of MoH services should be retained as they can provide viable options to tackle the increasing prevalence of chronic health problems at local community levels. Lack of coordination among different types

of healthcare providers leads to high demand stress on MoH hospitals, while other providers have excess capacity along with a high level of economic inefficiencies. Healthcare moved away from its position as a fundamental right towards a position as a serious problem of sustainable social and economic development due to inadequacies in privatization strategies.

However, some authors argued against privatization, pointing out its defects. In the case of the healthcare system, Saudi Arabia, like many other countries, is trying to change from a predominantly free, public, and comprehensive system under a welfare model to more of a mixed-economy model. The movement from a welfare model to a liberal model involved the domination of market forces in healthcare. This meant the promotion of the private sector in Saudi healthcare. However, (Rahman & Salam, Policy Discourses: Shifting the Burden of Healthcare from the State to the Market in the Kingdom of Saudi Arabia, 2021) observed some inadequacies of private sector healthcare in Saudi Arabia. These were a failure of healthcare equity, cost-effectiveness, accountability of services, frequent violations of standards of medical practice, and poorer patient outcomes. These inadequacies show that the promotion of the private sector is not an answer to the issue of Saudi healthcare sustainability. On the other hand, further strengthening of the public sector is required. As privatization is aimed to reduce the government's economic burden of healthcare, this suggestion may be difficult to accept. The authors do not discuss what other methods can be found to make the Saudi healthcare system economically sustainable. Also, based on the Australian evidence on privatization, (Almutairi & Al Shamsi, 2018) showed that there is evidence for the possibility of productivity and efficiency gains by privatization, but does not always. On the other hand, administrative costs and service costs are increased by privatization. Also, health outcomes and service quality are not improved by privatization. At the same time, privatization may reduce the accessibility of health services for certain sections of the population. As negative effects dominate, the current privatization efforts may not be advisable in a Saudi healthcare context. A properly organized governance system should be in place before the privatization of the Saudi healthcare system is implemented.

Technology
Technology has been suggested as a solution to the problem of workforce shortage in the Saudi healthcare system discussed above. Adoption of e-health technologies incorporating gig economy (gig e-health) was suggested by (Alanzi, 2021) to address these challenges, based on interview results. The term 'gig economy' refers to the practice of individuals (gig workers) freely choosing gigs (tasks) provided by companies or clients on

an intermediary platform (freelancing) for agreed payment terms, not as an employee of the company but as an independent worker. To what extent this will solve the shortage of the healthcare workforce remains to be seen.

Using interviews of competent healthcare professionals, (Al Otaibi M. N., 2019) probed the opportunities and challenges of implementing the Internet of Things in the Saudi healthcare system. In healthcare systems, the Internet of Things (IoT) enhances the quality of care and services, patient satisfaction, and patient experience, and reduces the cost of time and effort required for providing the best care for patients. Ensuring safe, dependable, and accessible applications is a challenge for implementing IoT in the Saudi healthcare system. The shortage of professionals with skills in the application of IoT also affects its implementation. To implement IoT in the healthcare system, infrastructure for a good health information system is necessary.

Another solution to the shortage of healthcare professionals is telemedicine. Other advantages are the possibility of meeting the increasing demand for healthcare growing population, managing the increasing burden of non-communicable diseases and pandemics, narrowing the discrepancies between rural and urban healthcare and women health issues, reduction of costs and patient waiting time, ensuring no disparities and reduction of diagnostic and medical errors. However, according to the survey results of (Amin, et al., 2020), although over 80% of practitioners were interested in implementing telemedicine, they identified a lack of knowledge and training and time pressures as barriers to its implementation.

Primary health care
The report of (Al Khashan, et al., 2021) traced the progress achieved in primary health care under Vision 2030 and the challenges ahead. Although under Vision 2030, Saudi Arabia has achieved increases of 37.5% in the rate of PHC visits, 4.7% in patient satisfaction, 83% coverage (from earlier 78%) of rural communities, and in screening rate for prevalent chronic diseases during its implementation till 2019, the challenges of inadequate human resources, cultural and lifestyle behavior, geography, intersectoral collaboration, and PHC infrastructure persist. The authors presented a conceptual framework for the primary health care reform roadmap and discussed the progress achieved concerning each of the four objectives in the roadmap. Already the achievements are in excess or nearer the target set for the 2017-2019 period.

Quality of care in Saudi universities
Quality of care in Saudi universities was found to be affected by leadership failure, poor management, lack of a safety culture, and poor communications to patients concerning both

message and language, according to a review done by (Aljuaid, Mannan, Chaudhry, Rawaf, & Majeed, 2016).

Emergency medical services
For universal coverage of healthcare to Saudi citizens, emergency care needs to be strengthened. The rapidly rising emergency department (ED) visits of patients leading to crowding in the department in recent years indicate the seriousness of the problem. Crowding and its effect on resource constraints are experienced to a greater extent in some regions of the country. The current trend of patients using ED services as the gateway to hospital admission needs change towards ED attending to only genuine emergency problems. Primary care physicians, urgent care facilities home care, and telehealth can take some burden off crowding of ED and using ED as the gateway to hospital admission. A variety of methods are available to reduce these pressures on ED and ensure smooth patient flow in the hospitals. Increasing the efficiency of patient discharges will free more beds for ED patients requiring admission. Reduction of unnecessary emergency calls by patients through training and reducing gender disparities using female EMS personnel are also important. EM curriculum also needs improvements by including simulation-based training (Khattab, et al., 2019).

Challenges faced by the Saudi emergency management team (EMS), namely, Saudi Red Crescent Authority (SRCA) in dealing with mass casualty incidents were listed and discussed by (Alazmy, Osama, & Williams, 2020). They include long response time, inconsistencies in the approach of different EMS personnel due to differences in training, elderly people with health problems, pilgrims, accessing medical facilities, and language problems when dealing with pilgrims from different countries. Some recommendations have been given based on Australian models of training accreditation and other international standards.

Mental healthcare
One major challenge for the future development of mental healthcare in Saudi Arabia is the reluctance of medical students to choose psychiatry (only 2%) for their careers. Psychiatry rotation and residency training, both for our weeks each, improved acceptance of this subject for specialization by medical students. However, the facilities for sub-specialization in psychiatry are highly inadequate. The dominance of culture, family, and community is an important factor when trying to develop Saudi mental healthcare systems in the future (Koenig, et al., 2014).

Integrative medicine
The need for integrative medicine (integrating traditional and modern medicine) for lifestyle diseases was stressed by (Khalil, Al-Eidi, Al-Qaed, & AlSanad, 2018). Given the widespread use

of the traditional healthcare system, this will help the transformation of the Saudi healthcare system according to Vision 2030 goals. Licensing regulations for traditional healthcare practitioners already exist in Saudi Arabia. Adequate policies and regulations, training of traditional medical practitioners, organizational and healthcare infrastructure are the main challenges in this integration.

Medical safety

Round table discussions among 65 medical professionals at various levels conducted by (Aljadhey, et al., 2014) yielded some challenges of medical safety in Saudi Arabia. These were underreporting of medication errors and adverse drug reactions, multilingualism and differing backgrounds of healthcare professionals, lack of communication between healthcare providers and patients, and high workloads. These challenges arose due to some factors contributing to problems in medical safety. The factors were unrestricted public access to medications in various hospitals and community pharmacies, communication gaps between healthcare institutions, limited use of computerized provider order entry and other technologies, and the lack of medication safety programs in hospitals. The suggested steps to improve medication safety were continuous education and competency evaluation of medical professionals on the topic, development of a culture of reporting medical errors and adverse drug reactions, use of proven technology for increasing medication safety, and implementation of national patient safety guidelines.

Conclusions

This review was aimed at identifying challenges to the future of Saudi healthcare systems using published literature. The review enabled the identification of several challenges affecting the current as well as the future healthcare system of the country. Some papers have used Vision 2030 goals as the baseline for comparing what has been achieved and what further needs to be done and challenges related to these achievements.

The challenges are as follows: the increasing prevalence of chronic diseases and certain pandemics, rising population especially of the elderly, and shortage of healthcare workforce putting pressure on the capacities and economic sustainability of the current healthcare model vis-à-vis privatization. Technology has been offered as a solution to some of the challenges.

None of the solutions for workforce shortage guarantee numbers matching increasing demand in the future. Partial solutions are possible with the help of technologies combined with increased intake capacity of universities for admission of

medical and allied courses. The nursing workforce is affected most as they are required in large numbers.

Technology is also offered as a solution for inequality concerning accessibility and affordability with private providers and in remote localities. Technologies like the Internet of Things, telemedicine, and e-health have been considered. However, utilization of such technologies had been inadequate in the Saudi healthcare system so far. How far the giga economy is practical in the Saudi context needs to be tested.

The economic sustainability of the Saudi healthcare system may be threatened if the current method of free healthcare to all Saudi citizens is continued. Reduced availability of finance and other resources in the government leads to consideration of household contributions to a national health insurance scheme. Also, different models of private participation have been considered as another option. However, objections to private participation have been raised on account of their failure of healthcare equity, cost-effectiveness, accountability of services, frequent violations of standards of medical practice, and poorer patient outcomes. If properly controlled and regulated and if the Australian model is adapted, private participation is beneficial.

Some critical issues of primary healthcare, emergency services and management of mass casualty incidents, mental healthcare, integrative medicine, and medical safety were also discussed. In most of these cases, the availability of trained professionals is the major challenge. Practitioners of integrative medicine need to be regulated so that the modernization of the Saudi healthcare system is not hijacked by traditionalists.

References

Al Asmri, M., Almalki, M. J., Fitzgerald, G., & Clark, M. (2020). The public health care system and primary care services in Saudi Arabia: a system in transition. Eastern Mediterranean Health Journal, 26(4), 468-476. Retrieved January 3, 2022, from https://applications.emro.who.int/emhj/v26/04/10203397 -2020-2604-468-476.pdf

Al Khashan, H., Abogazalah, F., Alomary, S., Nahhas, M., Alwadey, A., Al-Khudhair, B., . . . Hassanein, M. (2021). Primary health care reform in Saudi Arabia: progress, challenges and prospects. Eastern Mediterranean Health Journal, 27(10), 1016–1026. doi:10.26719/emhj.21.042

Al Otaibi, A. S. (2017). An overview of health care system in Saudi Arabia. International Journal of Management and Administrative Sciences (IJMAS), 4(12), 1-12. Retrieved January 3, 2022, from https://www.ijmas.org/4-12/IJMAS-41008-2017-1.pdf

Al Otaibi, M. N. (2019). Internet of Things (IoT) Saudi Arabia healthcare systems: state-of-the-art, future opportunities

and open challenges. Journal of Health Informatics in Developing Countries, 13(1), 17 pp. Retrieved January 3, 2022, from https://jhidc.org/index.php/jhidc/article/view/234

Alanzi, T. M. (2021). Gig Health vs eHealth: Future Prospects in Saudi Arabian Health-Care System. Journal of Multidisciplinary Healthcare, 14(July), 1945–1953. doi:10.2147/JMDH.S304690

Alazmy, W., Osama, S., & Williams, B. (2020). The history of emergency medical services response to mass casualty incidents in disasters, Saudi Arabia. Journal of Emergency Medicine, Trauma and Acute Care(1). doi:10.5339/jemtac.2020.3

Al-Hanawi, M. K. (2017). The healthcare system in Saudi Arabia: How can we best move forward with funding to protect equitable and accessible care for all. International Journal of Healthcare, 3(2), 78-94. doi:10.5430/ijh.v3n2p78

Al-Hanawi, M. K., & Qattan, A. M. (2019). An analysis of public-private partnerships and sustainable health care provision in the Kingdom of Saudi Arabia. Health services insights, 12, 1-10. doi:10.1177/1178632919859008

Al-Hanawi, M. K., Alsharqi, O., Almazrou, S., & Vaidya, K. (2018). Healthcare finance in the Kingdom of Saudi Arabia: a qualitative study of householders' attitudes. Applied health economics and health policy, 16(1), 55-64. doi:10.1007/s40258-017-0353-7

Al-Hanawi, M. K., Khan, S. A., & Al-Borie, H. M. (2019). Healthcare human resource development in Saudi Arabia: emerging challenges and opportunities—a critical review. Public health reviews, 40(1), 1-16. doi:10.1186/s40985-019-0112-4

Al-Hanawi, M. K., Vaidya, K., Alsharqi, O., & Onwujekwe, O. (2018). Investigating the willingness to pay for a contributory National Health Insurance Scheme in Saudi Arabia: a cross-sectional stated preference approach. Applied health economics and health policy, 16(2), 259-271. doi:10.1007/s40258-017-0366-2

Alharbi, M. F. (2018). An analysis of the Saudi health-care system's readiness to change in the context of the Saudi National Health-care Plan in Vision 2030. International journal of health sciences, 12(3), 83–87. Retrieved January 3, 2022, from https://www.ncbi.nlm.nih.gov/labs/pmc/articles/PMC5969787/

Aljadhey, H., Mahmoud, M. A., Hassali, M. A., Alrasheedy, A., Alahmad, A., Saleem, F., . . . Bates, D. W. (2014). Challenges to and the future of medication safety in Saudi Arabia: A qualitative study. Saudi Pharmaceutical Journal, 22(4), 326-332. doi:10.1016/j.jsps.2013.08.001

Aljuaid, M., Mannan, F., Chaudhry, Z., Rawaf, S., & Majeed, A. (2016). Quality of care in university hospitals in Saudi Arabia: a systematic review. BMJ open, 6(2), e008988. doi:10.1136/bmjopen-2015-008988

Alluhidan, M., Tashkandi, N., Alblowi, F., Omer, T., Alghaith, T., Alghodaier, H., & Alazemi, N. e. (2020). Challenges and policy opportunities in nursing in Saudi Arabia. Human

Resources for Health, 18(1), 1-10. doi:10.1186/s12960-020-00535-2

Almutairi, A. G., & Al Shamsi, H. (2018). Healthcare system accessibility in the face of increasing privatisation in Saudi Arabia: lessons from Australia. Global Journal of Health Science, 10(7), 111-121. doi:10.5539/gjhs.v10n7p111

Alonazi, W. B. (2017). Exploring shared risks through public-private partnerships in public health programs: a mixed method. BMC public health, 17(1), 1-7. doi:10.1186/s12889-017-4489-z

AlRuthia, Y., Aydan, N. A., Alorf, N. S., & Asiri, Y. (2020). How can Saudi Arabia reform its public hospital payment models? A narrative review. Saudi Pharmaceutical Journal: SPJ, 28(12), 1520–1525. doi:10.1016/j.jsps.2020.09.020

Amin, J., Siddiqui, A. A., Al-Oraibi, S., Alshammary, F., Amin, S., Abbas, T., & Alam, M. K. (2020). The potential and practice of telemedicine to empower patient-centered healthcare in Saudi Arabia. International Medical Journal, 27(2), 151-154. Retrieved January 4, 2022, from https://www.researchgate.net/profile/Junaid-Amin-3/publication/340656077_The_Potential_and_Practice_of_Telemedicine_to_Empower_Patient-Centered_Healthcare_in_Saudi_Arabia/links/5e973cc34585150839e01136/The-Potential-and-Practice-of-Telemedicine-to-Empower

Blendon, R. J., & Desroches, C. (2003). Future Health Care Challenges. Issues in Science and Technology, 19(4). Retrieved January 2, 2022, from https://issues.org/blendon-future-healthcare-challenges/

Edelmann, S. (2020, July 23). What are the top healthcare challenges to overcome in the near future according to industry leaders? Retrieved January 2, 2022, from Healthcare Transformers: https://healthcaretransformers.com/healthcare-business/future-healthcare-challenges-solutions/

Khalil, M. K., Al-Eidi, S., Al-Qaed, M., & AlSanad, S. (2018). The future of integrative health and medicine in Saudi Arabia. Integrative Medicine Research, 7(4), 316-321. doi:10.1016/j.imr.2018.06.004

Khattab, E., Sabbagh, A., Aljerian, N., Binsalleeh, H., Almulhim, M., Alqahtani, A., & Alsalamah, M. (2019). Emergency medicine in Saudi Arabia: a century of progress and a bright vision for the future. International journal of emergency medicine, 12(1), 1-8. doi:10.1186/s12245-019-0232-0

Koenig, H. G., Al Zaben, F., Sehlo, M. G., Khalifa, D. A., Al Ahwal, M. S., Qureshi, N. A., & Al-Habeeb, A. A. (2014). Mental health care in Saudi Arabia: Past, present and future. Open Journal of Psychiatry, 4(2), 45045. doi:10.4236/ojpsych.2014.42016

MoH, S. A. (2022). Healthcare data. Retrieved January 3, 2022, from Ministry of Health, Saudi Aranbia: https://www.moh.gov.sa/en/Ministry/OpenData/Pages/default.aspx

Monti, A., & Coleman, C. (2016). Future Health- Seven Visions of the future of healthcare. Retrieved January 2, 2022, from The Telegraph: https://www.telegraph.co.uk/wellbeing/future-health/healthcare-predictions/

Rahman, R., & Al-Borie, H. M. (2021). Strengthening the Saudi Arabian healthcare system: role of vision 2030. International Journal of Healthcare Management, 14(4), 1483-1491. doi:10.1080/20479700.2020.1788334

Rahman, R., & Salam, M. A. (2021). Policy Discourses: Shifting the Burden of Healthcare from the State to the Market in the Kingdom of Saudi Arabia. INQUIRY: The Journal of Health Care Organization, Provision, and Financing, 58, 1-9. doi:10.1177/00469580211017655

Yusuf, N. (2014). Private and public healthcare in Saudi Arabia: future challenges. International Journal of Business and Economic Development (IJBED), 2(1), 114-118. Retrieved January 3, 2022, from https://www.researchgate.net/profile/Nadia-Yusuf/publication/276354298_Private_and_public_healthc are_in_Saudi_Arabia_future_challenges/links/5cd6893da6f dccc9dd9f73b2/Private-and-public-healthcare-in-Saudi-Arabia-future-challenges.pdf