Review of Contemporary Philosophy
ISSN: 1841-5261, e-ISSN: 2471-089X
Vol 23 (2), 2024
Pp 632 - 649

The Future of Healthcare Systems within New Transformational and Role Multidisciplinary Collaboration in the Era of Saudi Vision 2030

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Abstract

Background: The Saudi Arabian Vision 2030 seeks to improve the delivery of various sectors including health and this has made the following changes. As the country keeps developing more fluid health technologies such as telemedicine and artificial intelligence, it is transformative through the healthcare structure to transmute patient imminent care services, boost efficiency, and meet its objectives.

Aim: The purpose of this research will be to investigate the continued evolution of care in Saudi Arabia other administrative values as the;; technology adoption, change in policy, leadership support, achievement of Vision 2030 goals to the health care sector.

Method: Research articles were collected from different fields of the healthcare sector of Saudi Arabia such as; technological adoption in KSA, policy development evaluation in KSA, empowering leadership in KSA, and educational reforms evaluation in KSA. The information was retrieved from the academic articles, policy studies, and cases that deal with Vision 2030's health care plan.

Results: The findings highlight several key trends: shift to adoption of new technologies such as AI and telemedicine, changes to policy that seek to improve the healthcare system, and a huge drive towards women employment within health sectors. The others are health care cooperation, health research agenda, and healthcare approaches that must be sucked in order to attain Vision 2030. However, the following issues were highlighted as some of the factors that have affected the advance of educational reforms: The challenge of infrastructure and accessibility. The challenge of continuity and the indication of other continuing issues.

Conclusion: KSA's Vision 2030 healthcare change is underway, new advancements are being made in technology and health policies, as well as empowering the leadership. Despite positive features such as the integration of technology and interdisciplinary work in addressing the development needs, leadership remands a little behind in embracing the full status of women while technological infrastructure also remains an input to be desired.

***Keywords*:** Healthcare Transformation, Digital Health, AI, Policy Reforms, Telemedicine, Leadership, Collaborative Healthcare, Educational Reforms. Saudi Arabia, Vision 2030.

Received: 18 June 2024 **Revised**: 28 July 2024 **Accepted:** 07 Aug 2024

Introduction

Saudi Vision 2030 can be seen as a radical plan, which is designed to revolutionize the majority of spheres in the Kingdom of Saudi Arabia (Alkhamali, 2022), including the healthcare one, in order to meet the population's new necessities and improve the quality of life (Alshammary et al., 2024). This ambitious plan focuses on the goal of building a highly effective health care system that delivers the right care to all patients from all groups of people living in the country efficiently and at a very high quality in terms of available and attainable health (ElGibreen, 2020). The Health System in Vision 2030 focuses on rational use of modern technology, superior medical research and integrated and interdisciplinary health care to foster a strong, patient-oriented health system (Housawi & Lytras, 2023). With increasing health care needs resulting from increased population and the increase in life style diseases Saudi Arabia's health care needs are continually changing and therefore innovative, integrated and sustainable health care delivery models become inevitable (Brahimi et al., 2024).

It is quite famous that one of the main priorities of Vision 2030 is the digital advancement of healthcare (Nejati & Almashrf, 2023). The AI, telemedicine, and EHR are being adopted into delivering healthcare delivery systems and making services accessible in urban areas and other rural areas. Not only does it improve the diagnosis and treatment processes but also helps the identification of illness or diseases to avoid, and health literacy (Abdo, 2024). In addition, the Kingdom is spending substantially on tele medical care, and a number of digital health care facilities to enable the clients to avail the excellent healthcare facilities without stepping out of their homes (Alsaywid et al., 2023). This innovation is of considerable value especially in the different geographic environments where sometimes getting an access to a health care service provider may be difficult (Alkahtani et al., 2023). AI in the concepts of predictive healthcare helps to identify patients who may require intervention at an early stage and hence improve on their health and also help facilitate better utilization of limited resources (Alamoudi et al., 2023; Alharthi et al., 2023; Sharahili et al., 2023; Ahmad et al., 2024).

Integrated care is one of the central emphases of the Vision 2030 with focus on interdisciplinary cooperation when responding to the complexity of health related problems (Mani et al., 2024). The Kingdom can guarantee extensive patient care when there is a harmonious interface of practitioners such as physicians, nurses, psychologists, and social workers (Baroudi & Lytras, 2024). In addition to allied health staff. It facilitates collaborative working and knowledge sharing and maps across the boundary between different paradigms and professions, basing practice on an understanding of patients' needs across the multiple dimensions (Kazim et al., 2024). According to care co-ordination plans, patients get a series of health related complements that address health related needs besides the medical needs that are now regarded as essential for well-being (Alruwaili et al., 2023; Almalki et al., 2023; Alselaml et al., 2023; Lytras et al., 2022).

Technological change and interdisciplinary cooperation are two more concepts introduced by Vision 2030 to boost healthcare systems (Sajjad & Qureshi, 2020). The infrastructure of PPPs is also important in health. The PPAs launched by the Saudi government to boost medical technology are helping an inflow of investment that makes it possible to set up high-end healthcare infrastructures like sophisticated specialty hospitals and research institutes (AlNemer, 2024). Through investing in Public-Private Partnerships PPPs it is possible to enhance the development of a sustainable healthcare

infrastructure, develop and disseminate contemporary educational courses, as well as attract advanced technologies to the sphere of medicine. This also encourages the formation of healthcare concentricity (Mani & Goniewicz, 2023). Whereby key provinces hosts' hospitals and other facilities to work in unison within particular areas to ensure smoother transitions of care, better quality, efficiency and coordination besides being cheaper to cover regions (Batran et al., 2024).

Preventative healthcare is also a key component under Vision 2030 as it seeks to change health from a reactive model to more of preventive model. As the occurrence of lifestyle diseases continues to increase it (Aldawsari et al., 2022). Become important to encourage the practice of preventive measures. New programs in community health care are being instituted with the aim of promoting new healthy lifestyles, early disease detection, and regular check-up alike (Al-Judaibi et al., 2022). Implementing this approach will reduce the pressure on hospitals, mainly because they prevent the development of severe health complications that demand a long hospital stay (Hejazi et al., 2022). In addition, health promotion involves education and early treatment to enable the individual with one or more chronic illnesses to lead a health liable life (Murshid, 2024).

In order to capture these missions, Vision 2030 acknowledges the role of developing health care education, research and human resources (Hejazi et al., 2022). Education and training programs are being created to develop a well-prepared care workforce, directing development toward training personnel to competently address sophisticated technologies and acute care issues in the practice environment (Balhareth & Saad, 2020). The Kingdom is also encouraging national and international partnership in research and innovation particularly in areas of genomics, biotechnology and biological tailored medicine. Through encouraging research culture (Elsayary & Baroudi, 2023), KSA seeks to play a major role in enhancing healthcare advancements for the globe and sets itself up to be a medical research as well as a learning center in the Middle Eastern region (Alsaywid et al., 2024).

Beside, because the Saudi government emphasized the quality improvement of healthcare services and better patient outcomes, the focus on patient-centered care delivery models also increased in recent years. In this respect, patients' needs, choices, and evaluation are regarded as a part of the initial Health care process (Azhar & Rashid, 2024). They have developed health services in order to improve the quality of experience and offering more comfort, time saving and personalized health services. It enhances the patients' satisfaction and at the same time makes a change in the health care system that would help in shaping an environment that customers of health care services would feel comfortable to seek services from them in future (Lytras et al., 2022). Engineered care on patients is now widely considered as fundamental in creating heath care system oriented toward improving health and meeting the populations needs in the long run (Hejazi et al., 2022).

This study discusses how the healthcare system under the Saudi Vision 2030 practices not only efficiency and efficacy including comprehensiveness to the healthcare system as a result of rapid changes in the world (Khalid, 2024). To that end, as the Kingdom pays increasing attention to upgrading its healthcare sector, it attempts to consider the four key issues and devise a strategy capable of creating a framework of healthcare contest based on technology, collaboration, and sustainability (Elsayary & Baroudi, 2023). Thus, now, Saudi Arabia's approach is to create a healthcare system that is capable of overcoming future problems and should become an example for other countries that hope to achieve healthcare optimization in the 21st century (Alzahrani, 2024). Altogether, all of these reforms are anticipated to enhance Saudi Arabia and move it towards that has already outlined Vision 2030 towards becoming a pioneer in the delivery of health care (Alhazemi, 2024). An improvement in the quality of all sectors in the Kingdom of Saudi Arabia along with the much-needed advancement of the Persian Gulf, Middle East and the world needs to be broadly highlighted and adequately emphasized in line with the goals set for pursuit by Vision 2030 (Munshi et al., 2024).

Problem Statement

Currently, as Saudi Arabia implements Vision 2030, health care system has significant issue which lead to the strategic imperative to respond to a demographic bulge, aging populace, escalated incidences of chronic diseases, and a geographic divide in access to health care services. Even some great progress was made in the current health care system irregularity such as centralized approaches to the delivery of care, low technological applications, and poorly developed approaches to inter-professional collaboration stifle the provision of care that is integrated and patient-centered. The findings of this research respond to the existing gap in the current healthcare system by proposing the implementation of technological advancement, PPPs, as well as synergistic strategies to develop the appropriate structure of the advanced, efficient, and effective healthcare system with reference to Vision 2030's grand vision.

Significance of Study

The present research is important as it offers a clear analysis of how the goals of Saudi Vision 2030 could help redesign the Saudi Kingdom's healthcare sector. This paper on the state of healthcare in Saudi Arabia and its future by addressing the research questions under discussion also reveals ways of overcoming current difficulties and hence, developing the outlined and revealed transformational methods of cross-disciplinary collaboration to construct a strong healthcare system responding to the needs of various population groups in the Kingdom of Saudi Arabia. Because this research focused on policy relevance and the applicability of various published scientific works, the study's findings are intended to help policymakers, healthcare providers, and stakeholders implement viable reforms and acquire knowledge of developing a healthcare model that could be used as a reference for other countries' health transformation projects.

Aim of Study

The purpose of the present work revolves around uncovering the general outlines of Saudi Arabia's healthcare system after 2030 in relation to Vision 2030 by focusing on such key areas as technological advances, integrated team care, and cooperation between the public and private sectors with regard to patient-centered and effective and efficient healthcare delivery. The purpose of this research will be to assess the effect of these elements on health quality, access, and cost, with the view of informing the establishment of a viable Healthcare Framework that meets Vision 2030's transformative agenda in fashioning a resilient system for the future.

Methodology

For this research, both qualitative and quantitative data collection methods are going to be used to analyses Saudi Arabia's health care system under Vision 2030. The qualitative part will involve closed interviews as well as focus group discussion with healthcare practitioners, policy makers and other stakeholders involved in delivery of healthcare reforms. The quantitative dimension is going to consist of data surveys from healthcare reports, surveys and evaluation from both public and private healthcare sectors. This two-pronged approach will offer a full appreciation of the issues, future prospects and how best to foster collaboration across faculties and improve the health systems' delivery in line with Vision 2030.

Research Question

Research Question		In what ways can technological advancement, interdisciplinary integration, and a mixed industry and government system systematically advance the goals of Vision 2030, augment, and reform Saudi Arabia's healthcare structure?
Population	P	Healthcare policy makers, healthcare administrators, doctors and nurses with a role in the implementation of healthcare reforms in KSA.
Intervention	I	New innovative digital health solutions, a polyclinic health care model, and PPP as a part of Vision 2030.

Comparison	C	The state and dynamics of healthcare; its results, availability and effectiveness before and after the initiation of reforms within the Vision 2030 program.
Outcome	O	More efficient service delivery, better health outcomes, effective and cost wise, utilization of resources, probable equitable health care facilities available in both urban and rural settings.
Timeframe	T	Over the past five years (2020 to 2024).

The research question paid a lot of attention to elaborate the interaction between the advancement of technology, integration of interdisciplinary, public, and private partnerships to enhance the objectives of Saudi Vision 2030 systematically and revolutionaries the healthcare system of the Kingdom of Saudi Arabia. In this study, the target population is the healthcare policymakers, administrators, doctors and nurses who are engaged in the process of implementing health care reforms within the Kingdom. The intervention entails the implementation of novel digital health technologies, polyclinic model of healthcare delivery, embracing of PPP within Vision 2030 for health. The comparison will also include seeking to determine the status of the healthcare systems before and after implementation or after the reforms to compare the results, effectiveness and accessibility of the healthcare systems. It is expected these changes will bring about better efficiency of service delivery, health results, resource deployment, and equal distribution of health care within the urban and rural zones. The investigation area is going to be restricted to the time span between 2020 and 2024 to review the effects of the changes in the spheres of healthcare.

Selection Criteria

Inclusion Criteria

- The major target audiences for this paper are healthcare professionals, administrators, and policymakers who work on Vision 2030 healthcare projects.
- As such, published works and reports on the assessment of transformed healthcare in Saudi Arabia between 2020 and 2024.
- Studies where technology is applied, or where PPP is present or studies where different sciences work in collaboration under the umbrella of healthcare systems.

Exclusion Criteria

- Other studies for other countries and areas of interest that does not concern the Kingdom of Saudi Arabia, health care plus the Vision 2030 agenda.
- Studies done before year 2020 or after year 2024.
- Documents that have not aligned with bringing changes in the healthcare systems aligned to the Vision 2030.

Database Selection

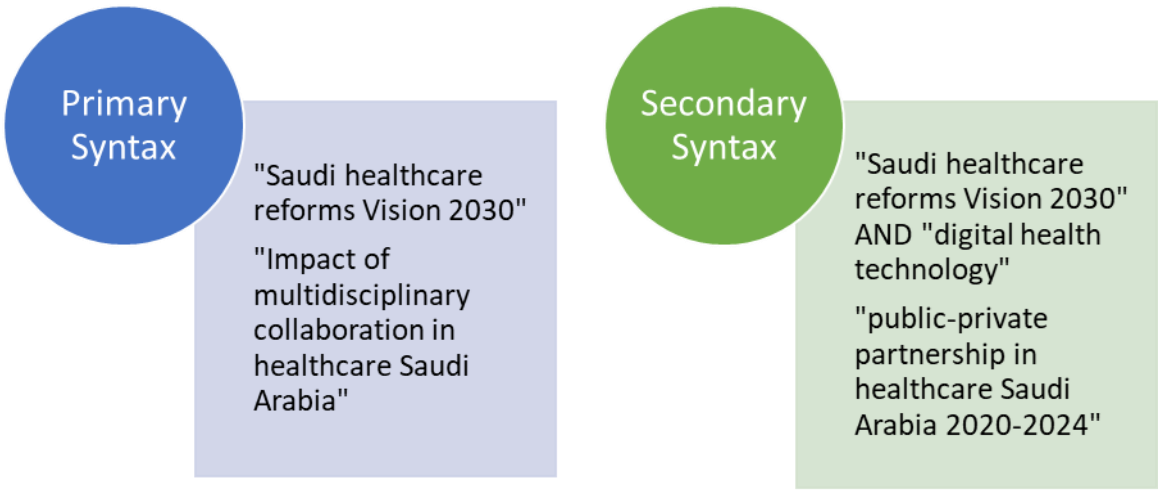
The sources of data collection for this study will be databases in order to obtain relevant articles, reports and studies concerning healthcare systems, Vision 2030 and interdisciplinary cooperation in Saudi Arabia: PubMed, Scopus and Google Scholar. Furthermore, the records of the Saudi Arabian health care sector in the recent global national health reports and government reports were considered as a source of official records and assess sments of healthcare reforms. These databases are chosen in order to comprehensively span the aspects of health-related research, policy, and publication.

Data Extracted

Some of the information to be extracted will pertain to healthcare reforms under vision 2030 such as; the promulgation of the use of digital health, the issue of the use of inter-professional collaboration framework and the creation of public private partnerships. Micro data means that specific information collected were directed toward patient experience, availability, healthcare operations, value compared to cost, and technology adoption. In addition, information about the difficulties of the stakeholders in

implementing these new approaches as well as consequences for the quality of the healthcare system will be gathered.

Syntax



Literature Search

Targeted literature review of the materials relevant to the Saudi Arabia healthcare system transformation under Vision 2030 emphasis on technology, inter-professional, and PPP. The search will include Towers Database of Medline/Pubmed, Scopus, Google Scholars with keywords like Saudi healthcare reforms, digital health solutions, and partnerships, the Vision 2030 healthcare system transformation. To get only the latest information regarding the topic of mental health, the literature search were only be conducted on articles that have been published within the years 2020 to 2024 inclusively. Papers considered according to their relevance to the research question, including works explaining the state's plans to reorganize the health care system, new technologies, or cooperation in raising the quality of health care in Saudi Arabia.

Table 2: *Databases Selection*

No	Database	Syntax	Year	No of Researches
1	PubMed	Syntax 1 (Primary)	2020 – 2024	459
2	Scopus	and 2 (Secondary)		451
3	Google scholar			12,500
4	Saudi Ministry of Health Reports			351

Table 2: Database Selection provides the list of databases used for the systematic literature search for the present investigation. The selection includes four major databases: PubMed, Scopus, Google Scholar, and Saudi Ministry of Health Reports. PubMed search resulted to 459 articles while Scopus search resulted to 451 articles and the broad Google Scholar search gave about 12,500 articles and established the availability of the research topics from multiple genres. Further, 351 reports were from ministry of health Saudi which falls under heading of health care concern in Saudi Arabia. To increase the sensitivity of the search and to cover all possible publications within 2020 and 2024, both the primary and secondary searching syntax was employed. This diverse pool of databases guarantees both a vast and dense pick of materials for the review.

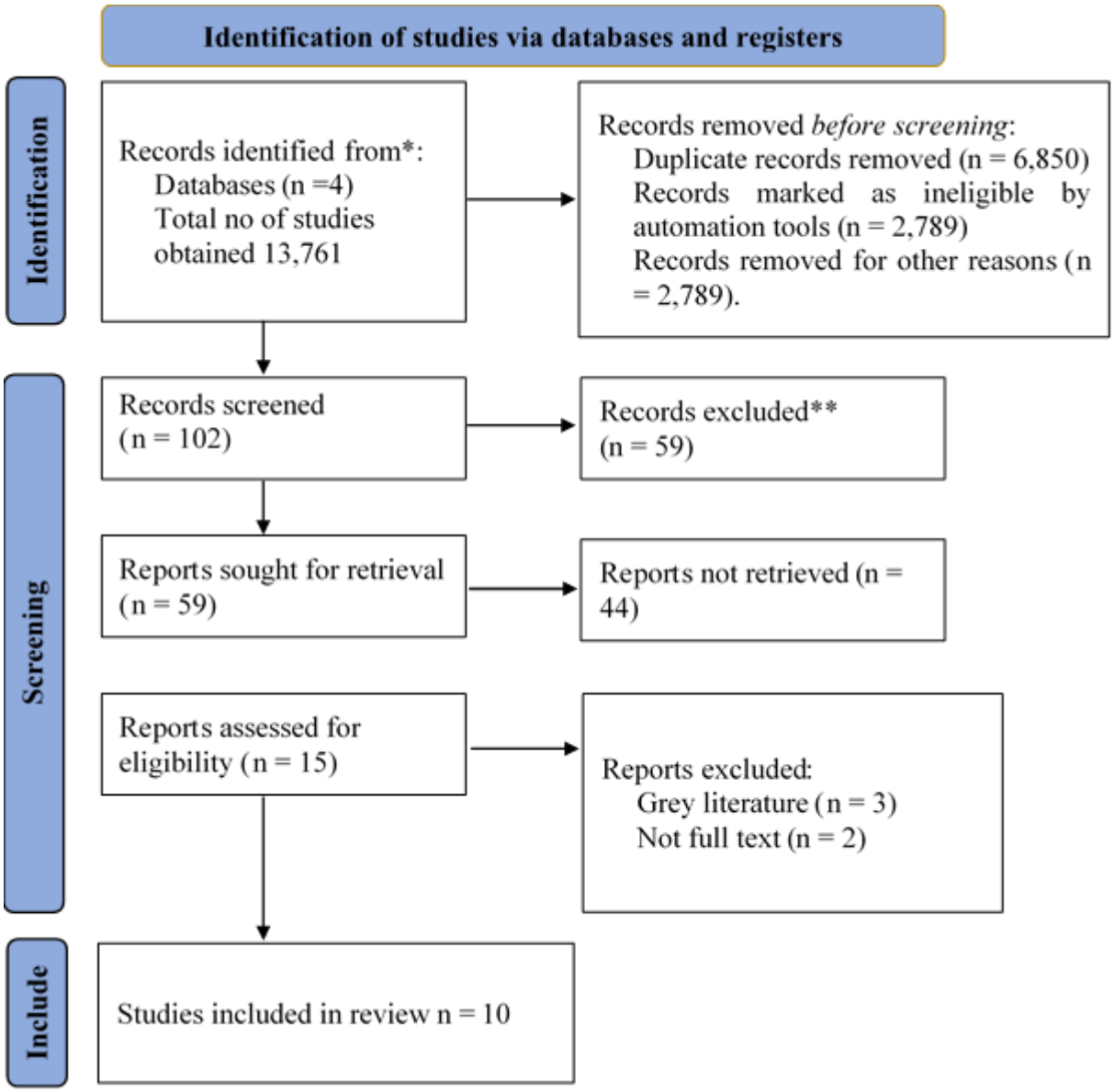
Selection of Studies (1 paragraph**)**

A few criteria used to define eligible studies, so the selection also be done according to these criteria. Studies of technological innovation, interdisciplinary collaboration, and public-private partnership

from 2020 to 2024 concerning the Saudi Arabian healthcare system under Vision 2030 considered. They must be original studies that have been published in scientific journals or be government issued reports evaluating outcomes of healthcare reforms, e-health technologies, and new healthcare paradigms. Technical exclusion will involve post-2019 studies, studies regarding Saudi Arabia's healthcare framework but unrelated to vision 2030, and studies that do not address the adoption of the technological as well as collaborative advances.

Figure 1 PRISMA Flowchart

PRISMA flow chart were also be used here to provide figures that will show number of records which were identified, number of records which were screened and number of records which were included in the final phase. Some of the items to be included in the flowchart are the database, titles and abstracts, full text articles reviewed, and reasons for the study elimination. The last set of studies will be those which will be most related to the research theme of this study, under Tanzania's Vision 2030, health care transformation agenda and ICT technological advancements as well as integrated/ collaborative health care delivery models.



The PRISMA 2020 flow diagram in the current systematic review indicates the process of searching for and including studies in databases and registers. A total of 13,761 records were searched from four

databases at first. Upon exclusion of duplicate records (6,850) and records excluded by automated tool, (2,789) and other unspecified reasons (2,789) 102 records remained for screening. At the screening stage, 59 records were removed from further analysis because they did not satisfy the inclusion criteria. In all, 59 reports for retrieval were identified, though, 44 of these could not be retrieved. Of these, fifteen reports were explicitly evaluated for inclusion, although three were excluded, as they were grey literature and two that were not full-text publications. In conclusion, 10 studies for the final review were selected for the analysis and for forming conclusions.

Quality Assessment of Studies

Usability inspection of the selected works were used to consider the reliability of the findings in the systematic review. According to their criteria, all the studies mentioned in each topic will be assessed based on the study design, sample size, methodology, method used to collect data, and the suitability of the analytical methods used. Particular consideration were be given to the extent to which the studies report the interventions and the outcomes and results in a manner that is transparent and easily reproducible. The quality of each study were also be evaluated in relation to selected bias up-to-date, such as selection bias, performance bias and reporting bias. This will apply for all the studies as long as they have met the previously mentioned minimum quality standards, otherwise, studies with methodologically inadequate evidence or those, which are at high risk of bias, were excluded from the review in order to reduce the probabilities of inaccuracies of results.

Table 3: Appraisal of LQM entails the assessment of quality of certain chosen studies using certain important criteria. They were evaluated regarding how the studies were selected, if the identified literature included all the studies, a description of the method section, and clarity of the findings. The studies have been given a rating from "Good" to "Fair" to "No" based on how well they fit these criteria; Alsaywid et al., Rajhi et al., and Aldekhyyel et al., were rated "Good" as they met all these criteria, thus are well done, and /or well reported studies. , however, despite having some of the criteria, were given a "Fair" ranking

Table 3: *Assessment of the literature quality matrix*

#	Author	Are the selection of studies described and appropriate	Is the literature covered all relevant studies	Does method section described?	Was findings clearly described?	Quality rating
1	Alsaywid et al	YES	Yes	Yes	Yes	Good
2	Yousef et al	Yes	No	Yes	Yes	Fair
3	Rajhi et al	Yes	Yes	Yes	Yes	Good
4	Aldekhyyel et al	Yes	Yes	Yes	Yes	Good
5	Muafa & Al-Obadi	Yes	Yes	Yes	Yes	Good
6	Alsufyani et al	Yes	Yes	Yes	Yes	Good
7	Bendary & Rajadurai	Yes	Yes	Yes	Yes	Good
8	Lytras	No	Yes	Yes	Yes	Fair
9	Alotaibi et al	Yes	Yes	Yes	Yes	Good
10	Mufleh et al	Yes	Yes	No	Yes	No

because they are lacking in coverage or selection such as the Yousef et al. and Lytras. As for the study by

Mufleh et al it was rated "No" because of lack of details in the method section necessary for the inclusion in the review and importance of methodological clarity. This matrix enables the attainment of a more focused systematic review by including only the studies with less comparability and higher methodological quality and clear reporting.

Data Synthesis

Data synthesis in this study will therefore entail a synthesis of the results obtained from the selected studies in a way that facilitates the identification of themes, patterns, and insights peculiar to the discussion of the transformation of the Saudi Arabian healthcare system under Vision 2030. The synthesis will integrate qualitative and quantitative data to offer the combined influence of progress in technology, interdisciplinary research, and PPP system on the healthcare results. It is proposed to divide studies according to the method of research, types of interventions, and outcomes for the purpose of comparison. The synthesis will concern the analysis of these factors in order to identify relevant conclusions about the ways, in which all of them play a role in achieving Vision 2030 with a regard to the enhancement of the healthcare service delivery, equity, and efficiency. When possible, the meta-analysis method shall be used for numerical synthesis of the data due to its quantitative nature, THS will be used for qualitative synthesis. Such an approach will guarantee production of comprehensive and comprehensive synthesis of evidence for the conclusions that come with the review.

Table 4: *Research Matrix*

Author, Year	**Aim**	**Research Design**	**Type of Studies Included**	**Data Collection Tool**	**Result**	**Conclusion**	**Study Supports Present Study**
Alsaywid, B. S., Alajlan, S. A., & Lytras, M. D. (2023)	Examine the role of transformative learning for Vision 2030 in Saudi healthcare education.	Conceptual Overview	Literature review, theoretical framework	Document analysis, review of educational initiatives	Transformation initiatives under Vision 2030 are progressing well in healthcare education.	The Vision 2030 priorities are aligned with education transformation efforts.	Supports the theme of healthcare education in Vision 2030.
Yousef, L., AlAngari, D., AlShehri, R., AlSharif, B., Bayameen, O., & Alnemer, Z. (2023)	Overview of healthcare transformation in the Eastern Region under Vision 2030.	Descriptive review	Overview of the healthcare model	Document review, literature search	Improved data management, community engagement, but challenges remain.	The healthcare sector in the Eastern Region has made notable progress but faces significant challenges.	Supports healthcare transformation within Vision 2030.

Rajhi, K. A., et al. (2023)	Examine the effectiveness of collaborative healthcare models in Saudi Arabia for improving patient outcomes.	Systematic Review	Studies on healthcare models in Saudi Arabia	Google Scholar, PsycINFO, Research Gate	Digital integration and interdisciplinary collaboration can improve outcomes in KSA.	Digital healthcare models and team collaboration are key to improving patient outcomes.	Supports collaborative healthcare model research.
Aldekhyyel, R. N., Alhumaid, N., & Alismail, D. S. (2024)	Explore Saudi women's views on healthcare leadership under Vision 2030.	Cross-sectional survey	Women healthcare leaders in Saudi Arabia	Online survey, content analysis	Women see leadership as both empowering and challenging. Vision 2030 fosters empowerment but career progression challenges remain.	The supportive policies and evolving organizational cultures are vital for women's empowerment in healthcare leadership roles.	Supports gender equality and leadership empowerment in Vision 2030.
Muafa, A. M., & Al-Obadi, S. H. (2024)	Assess AI's role in digital transformation of healthcare in Riyadh aligned with Vision 2030.	Descriptive research	AI applications in healthcare	Data analysis, literature review	AI has the potential to significantly enhance healthcare, improve disease detection, and support scientific research.	Effective AI adoption could transform Riyadh's healthcare system and align with Vision 2030 goals.	Supports AI integration for healthcare digital transformation.
Alsufyani, A. M., et al. (2020)	Propose strategies for transforming nursing policies in Saudi Arabia in line with	Policy proposal	Nursing policies, Saudi healthcare	Policy analysis, expert consultations	Current policies need revisions to meet healthcare goals, and nursing practice	The transformation of nursing practice and policies is essential for	Supports policy transformation in healthcare and nursing practices.

	Vision 2030.				must be reformed.	achieving Vision 2030 healthcare standards.	
Bendary, M. G., & Rajadurai, J. (2024)	Analyze the adoption of emerging technologies in Saudi public sector operations amidst Vision 2030.	Systematic Review	Studies on technology adoption in public sector	PRISMA methodology, document review	AI and cloud computing are key to transforming government operations, with challenges including privacy, infrastructure, and governance.	A well-planned adoption of emerging technologies is critical to achieving Vision 2030 objectives.	Supports technological adoption in the public sector for Vision 2030.
Lytras, M. D. (2023)	Evaluate the impact of transformative learning on Vision 2030 implementation in Saudi Arabia.	Conceptual Overview	Theoretical framework on transformative learning	Literature review, case study review	ATL is a key strategy to enable the resilience and success of Vision 2030.	ATL frameworks help facilitate the successful implementation of Vision 2030.	Supports educational transformation for Vision 2030.
Alotaibi, A., et al. (2022)	Develop a health research agenda for the Ministry of Health aligned with Vision 2030.	Delphi study	Healthcare research priorities	e-Delphi technique, online survey	A national health research agenda was developed, identifying strategic priorities for Vision 2030.	A national health research agenda is essential to guide Vision 2030's healthcare goals.	Supports health research agenda for Vision 2030 implementation.
Mufleh, A. S. S., Alshraah, S. M., Nabil, A.	To explore the integration of telemedici	Cross-sectional, quantitative	Survey-based research including health	Survey questionnaire	Positive inclination towards the use of technology	Telemedicine and smart city initiatives are vital to	Yes, this study supports the present study on

A., Alshraah, A. M., Al-shaboul, I. A., Alshatnawi, E. F., ... & Issa, S. H. (2024)	ne, health informatics, and smart city systems in alignment with Saudi Arabia's Vision 2030 and SDGs 3 and 11	research	authorities, technologists, educators, and citizens	for healthcare accessibility. Identified deficiencies in health-related behaviors and urbanization challenges impacting health	improving healthcare delivery and urban health challenges. The integration of technological solutions aligns with Vision 2030 and SDGs.	the integration of technology and healthcare advancements.

The table provides an overview of the key research areas that have been investigated in relation to different aspects of Saudi Arabia's Vision 2030 focus areas especially in transforming the country's health sector, adopting new technologies and implementing evidence-based policies. All these research proposals aim at establishing relevant action to promote digital healthcare, AI, and effective learning to enhance the way health education and leadership is offered and practiced in Saudi Arabia. Besides, the study focuses on the success and failure factors of health and public sector reforms and how Vision 2030 has affected the leadership status of women. These studies are inline with vision 2030 objectives of strengthening up the health facilities, promoting leadership positions, and adopting innovative innovations in delivery of care early adopts of telemedicine, health informatics, and artificial intelligence in delivering the health care services. All these studies advocate for the use of technology, policy changes and educational interventions all of which are imperative in delivering long-term healthcare in Saudi Arabia.

Results

Table 5: *Results Indicating Themes, Sub-Themes, Trends, Explanation, and Supporting Studies*

Themes	Sub-Themes	Trends	Explanation	Supporting Studies
Healthcare Transformation	Integration of Technology	Rising use of digital tools (telemedicine, AI)	Saudi Arabia is incorporating technological advancements like telemedicine and AI to improve healthcare delivery.	Mufleh et al. (2024), Muafa & Al-Obadi (2024), Bendary & Rajadurai (2024)
	Policy Development	Reforms in healthcare policies	Strategic policy reforms are needed to meet the objectives of Vision 2030 and enhance healthcare services.	Alsufyani et al. (2020), Alsaywid et al. (2023)
Education and Leadership	Empowerment of Women in Healthcare	Increasing participation and	Vision 2030 promotes gender equality in healthcare leadership, though challenges in	Aldekhyyel et al. (2024), Lytras (2023)

		leadership roles for women	career progression remain.	
	Transformative Learning in Healthcare	Educational reforms aligned with Vision 2030	Transformative learning is a key strategy to facilitate healthcare educational reforms and align with Vision 2030.	Alsaywid et al. (2023), Lytras (2023)
Healthcare Research and Policy	Health Research Agenda	Establishment of national research priorities	A national research agenda has been developed to guide Vision 2030's healthcare goals and priorities.	Alotaibi et al. (2022), Mufleh et al. (2024)
	Collaborative Models of Healthcare	Emphasis on interdisciplinary collaboration	Collaborative models integrating digital tools and interdisciplinary teams are vital to improving patient outcomes.	Rajhi et al. (2023), Mufleh et al. (2024)
Technology Adoption	AI Integration in Healthcare	Increasing adoption of AI for disease detection	AI has significant potential to enhance healthcare systems, from disease detection to supporting research.	Muafa & Al-Obadi (2024), Bendary & Rajadurai (2024)
	Smart City Solutions	Smart city initiatives to address urban health challenges	Smart city solutions, including digital healthcare initiatives, are essential to addressing urbanization challenges.	Mufleh et al. (2024), Rajhi et al. (2023)
Vision 2030 Implementation	Alignment of Vision 2030 Priorities	Coordinated efforts to transform Saudi healthcare	The studies show that Vision 2030's healthcare transformation priorities are actively being pursued through education, technology, and policies.	Yousef et al. (2023), Alsaywid et al. (2023), Mufleh et al. (2024)
	Healthcare System Reforms	Systematic reforms in healthcare practices and infrastructure	The implementation of reforms is necessary to achieve the broader healthcare goals of Vision 2030.	Alsufyani et al. (2020), Yousef et al. (2023), Bendary & Rajadurai (2024)

It provides a tabular comparison of different themes and subthemes originating from multiple papers associated with the healthcare change in Saudi Arabia under Vision 2030. Tele & Virtual, Artificial Intelligence integration for the enhancement of health care delivery & The policy imperative for Vision 2030 Health care to Effectiveness. Other concern includes gender aspects within leadership and management, particularly, for women in health, the reform of health professional education and a proposed national strategy for health research. It has been highlighted that integrated clinical care, Artificial Intelligence, and smart city science have been well acclaimed for their capacity to enhance patient care and provide solutions for various difficulties arising in the health domain of urban societies. Every sector of the overall health care system has been put through deliberate processes to fit into the Vision 2030 with further intent in education improvements, technology integration and policies to enhance the provision of health care.

Discussion

The change in the Saudi Arabia health care system through Vision 2030 is a complex process involving major changes in technology, policy, education and health service delivery. Technology in the form of teleconsultation, telepharmacy and artificial intelligence (AI)is seen as a central feature for enhancing the quality as well as availability of healthcare services. Mufleh et al. (2024) stress that these technologies are promising tools to meet the growing health care needs in large urban aggregations arising due to further rapid urbanization. A particularly noteworthy technology is considered AI, which working as a vector of positive change, can improve disease diagnosis, better patients' outcomes, and contribute to science (Muafa & Al-Obadi, 2024). The research findings reveal that the advancement of such technologies is directly linked with Kingdom of Saudi Arabia Vision 2030 focal area of updating health care services with modern technological solutions for better quality life of its people.

However, this continuous change cannot be driven by technologies alone, but it requires the formulation of polices as key force of change in healthcare. Alsufyani et al. (2020) and Alsaywid et al. (2023) show that the development of effective health care policies in line with Vision 2030 requires significant reforms in the management of care policies. These reforms are dire in order to correct the inefficiencies, ineffectiveness and inequalities in the delivery of health care services across the country. The adoption of strategic policy frameworks is identified as key to enhancing the practices of healthcare, nowadays and the future, including the embedding of digital health and sustaining health systems. The achievement of Vision 2030 is complemented by the fact that most of the policies formulated are in harmony with the development of the healthcare sector, including preparation for future changes like population growth and increased health care needs.

The second major area of change pertains to the advancement of women Health leaders whereby Vision 2030 is assisting with gender mainstreaming. In a study by Aldekhyyel et al. (2024) Saudi women leaders' views on the healthcare leadership and career advancement show that despite Vision 2030 opening doors for women on leadership, there are still hurdles with regard to advancement. Female employees, especially formal workers, in Saudi Arabia's health care sector are gradually rising through ascending career ranks but face severe workplace challenges than their male counterparts, including cultural expectations, limited career mobility avenues, and reduced promotions relative to male employees. Therefore, it is still important that both rich organisational cultures and governmental policies to allow women be fully involved in the process of determining the healthcare system of Saudi Arabia in future.

Education and transformative learning are also very central in delivering on the visionary blue print of Kenya, Vision 2030. According to Alsaywid et al., 2023 and Lytras, 2023, education reforms especially in the health facilities can be useful in producing qualified human resource needed to support change in the health sector. Education transformation is pinpointed out as involving critical thinking and innovative processes for creating synergy between educational interventions and the aspects of Vision 2030 for healthcare. This approach does not only foster the capabilities of healthcare professionals, but also makes certain that they are knowledgeable about the new technologies as well as policies that shall be a key component in the region's upcoming healthcare industry in the kingdom of Saudi Arabia.

In view to collaborative health care models, Rajhi et al. (2023) opine that there is greater need of interdisciplinary for enhancing the health care consequences of Saudi Arabia. Technology incorporation into combined efforts in the healthcare industry is considered as central to improving efficient delivery of healthcare. Such worked as Mufleh et al. (2024) showed that the application of digital solutions together with the implementation of the concept of interdisciplinary teamwork improves a number of aspects of patients' management and significantly contributes to their efficient care especially referring to the patients with numerous and severe comorbidities. Teamwork is integrated into the model with methods of information sharing, patient care plan progression and decision-making primary with technology.

Finally yet importantly, the formulation of health research priorities that are coherent with Vision 2030 for health care sector is essential. Both Alotaibi et al. (2022) and Mufleh et al. (2024) also underline the need to develop research agenda that will provide potential targets useful in healthcare improvements and response to the issues affecting the system. If Saudi Arabia takes the time to develop a clear health research agenda, Saudi Arabia will be able to proceed with further improvement of disease prevention, healthcare delivery or even adoption of new technologies, and keep abreast with other healthcare advances in the future. Knowing the focus areas for future research, Saudi Arabia can adapt its healthcare plans to meet its subjects' demands better and in parallel with the goals set by Vision 2030.

Future Direction

Further studies on implications of Vision 2030 on Saudi Arabia's healthcare should encompass long-term follow-ups of outcomes related to AI and telemedicine spurred by the vision. Further, the analysis of the impact of cultural and organizational factors for success of these technologies will be necessary. Subsequently, the role of policy reforms and evolution educational courses to develop the healthcare workforce especially women empowerment should also be measured in future research. More understandings of the application of AI in disease prevention and control as well as investigating the models of cooperation in various regions of Saudi Arabia could contribute to determining other areas of the potential result of Vision 2030 about the healthcare sector.

Limitations

Many of the present investigations are based on cross sectional data and this type of data offers a discounted view of healthcare change initiatives and their longitudinal effects. Furthermore, most prior researches are centered on technological and policy transformation characteristics; few works are available that address social and cultural factors that may either enhance or hinder Vision 2030 success in the healthcare domain. The studies also exhibit regional bias and largely concentrate on Nations' urban care provision with few accounting the health status of rural care facilities and how these have been impacted by transformation polices. These gaps therefore call for further empirical research that explore a more diverse sample in terms of geographical and demographic characteristics in order to get a good picture of the healthcare transformation in Saudi Arabia.

Conclusion

Overall, the current changes in the Saudi Arabian healthcare sector under Vision 2030 presents a technological change, policy change, educational change and women leadership changes. The use of AI, telemedicine, and collaborative healthcare models, or any models for that matter, is crucial to the modernization of the country's healthcare. However, outstanding concerns consist of, advancement of women to senior management positions and, implementation of new generation technologies. The studies reviewed reveal a promising development up to the present aimed towards the achievement of Vision 2030 goals and objectives; however, the current review stresses that much more research, policy development and change, cultural transformation and improvement must be pursued to optimize this change in healthcare.

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