# The Role of Health Assistants in Implementing Saudi Vision 2030 Healthcare Goals: A Systematic Review of Current Evidence

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## Abstract

Saudi Arabia's Vision 2030 outlines ambitious goals for transforming the healthcare system, with a focus on improving access, quality, and efficiency. Health assistants, as an emerging workforce in the Saudi healthcare sector, have the potential to play a crucial role in achieving these goals. This systematic review aims to synthesize the current evidence on the roles, contributions, and effectiveness of health assistants in implementing Saudi Vision 2030 healthcare goals. A comprehensive literature search was conducted using relevant databases, and 40 studies were included in the review. The findings highlight the diverse roles of health assistants in various healthcare settings, such as primary care, hospitals, and community services. These roles include patient care, health education, administrative support, and care coordination. The review also identifies the enablers and barriers to the effective integration and utilization of health assistants in the Saudi healthcare system, such as training, supervision, and scope of practice. Strategies for optimizing the contributions of health assistants in achieving Vision 2030 healthcare goals are discussed, including workforce planning, interprofessional collaboration, and technology-enabled care. The review concludes with recommendations for future research, policy, and practice to support the development and empowerment of health assistants as a key component of the Saudi healthcare workforce.

**Keywords:** health assistants, Saudi Vision 2030, healthcare goals, systematic review, workforce development, interprofessional collaboration, technology-enabled care

## 1.Introduction

Saudi Arabia's healthcare system is undergoing a significant transformation, guided by the Vision 2030 strategic plan, which aims to improve the health and well-being of the population through a series of ambitious goals and initiatives (Rahman & Al-Borie, 2020; Mani & Goniewicz, 2024). These goals include increasing access to healthcare services, enhancing the quality and safety of care, promoting preventive and public health measures, and optimizing the efficiency and sustainability of the healthcare system (Salvador et al., 2022; Alasiri & Mohammed, 2022; Albejaidi & Nair, 2019).

To achieve these goals, Saudi Arabia needs a skilled, motivated, and well-distributed healthcare workforce that can meet the evolving needs and expectations of the population (Alnowibet et al., 2021; Al-Hanawi et al., 2019; Gailey et al., 2021). However, the country faces several challenges in developing and retaining its healthcare workforce, such as shortages of certain professions,

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maldistribution of resources, and limited opportunities for career advancement and professional development (Almaghaslah & Alsayari, 2021; Al-Dossary, 2018; Aldekhyyel et al., 2024).

Health assistants, also known as healthcare assistants, medical assistants, or nursing assistants, have emerged as a potential solution to address these workforce challenges and to support the implementation of Vision 2030 healthcare goals (Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013). Health assistants are typically defined as unlicensed or unregulated healthcare workers who provide supportive and delegated tasks under the supervision of licensed healthcare professionals, such as physicians, nurses, or allied health professionals (Lizarondo et al., 2010; Fee et al., 2020; Snowdon et al., 2020).

The roles and responsibilities of health assistants vary depending on the healthcare setting, the patient population, and the delegating professional, but may include tasks such as patient care, health education, administrative support, and care coordination (Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013). Health assistants have been shown to contribute to various healthcare outcomes, such as improving access to care, enhancing patient satisfaction, reducing costs, and freeing up licensed professionals to focus on more complex tasks (Lizarondo et al., 2010; Fee et al., 2020; Snowdon et al., 2020).

However, the evidence on the roles, contributions, and effectiveness of health assistants in the Saudi healthcare context is limited and fragmented, and there is a need for a systematic review to synthesize the current knowledge and to inform future research, policy, and practice. Therefore, this systematic review aims to answer the following questions:

1. What are the roles and responsibilities of health assistants in the Saudi healthcare system?
2. How do health assistants contribute to the implementation of Saudi Vision 2030 healthcare goals?
3. What are the enablers and barriers to the effective integration and utilization of health assistants in the Saudi healthcare system?
4. What are the strategies for optimizing the contributions of health assistants in achieving Saudi Vision 2030 healthcare goals?

By answering these questions, this review aims to provide a comprehensive understanding of the potential and the challenges of health assistants as a key component of the Saudi healthcare workforce, and to inform the development of evidence-based interventions and policies to support their effective integration and utilization in the context of Vision 2030.

## 2. Methods

### 2.1 Search Strategy

A comprehensive literature search was conducted in August 2023 using the following electronic databases: PubMed, Scopus, Web of Science, and Saudi Digital Library. The search terms included a combination of keywords related to health assistants, Saudi Arabia, Vision 2030, and healthcare goals, such as: "health assistants," "healthcare assistants," "medical assistants," "nursing assistants," "allied health assistants," "Saudi Arabia," "Vision 2030," "healthcare goals," "healthcare transformation," "healthcare reform," "workforce development," and "interprofessional collaboration." The search was limited to English-language articles published between January 2010 and August 2023. The reference lists of the included articles were also hand-searched for additional relevant studies.

### 2.2 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for the systematic review are presented in Table 1.

**Table 1. Inclusion and Exclusion Criteria**

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| Original research studies (quantitative, qualitative, or mixed-methods) | Non-research articles (reviews, commentaries, editorials) |
| Studies focused on the roles, contributions, or effectiveness of health assistants in the Saudi healthcare system | Studies not focused on health assistants or the Saudi healthcare context |
| Studies related to the implementation of Saudi Vision 2030 healthcare goals | Studies not related to Saudi Vision 2030 or healthcare goals |
| Studies published in peer-reviewed journals | Studies not published in English |

## 2.3 Study Selection and Data Extraction

The study selection process was conducted in two stages. First, the titles and abstracts of the retrieved articles were screened independently by two reviewers (MSAD and AFTA) for relevance and eligibility based on the inclusion and exclusion criteria. Second, the full texts of the potentially eligible articles were reviewed independently by the same reviewers for final inclusion. Any discrepancies between the reviewers were resolved through discussion and consensus, or by consulting a third reviewer (BHMA) if needed.

The data extraction was performed using a standardized form that included the following information for each included study: authors, year of publication, study design, sample size and characteristics, health assistant roles and responsibilities, contribution to Vision 2030 healthcare goals, enablers and barriers, strategies for optimization, and quality assessment. The data extraction was conducted independently by two reviewers (FHA and SSA), and any discrepancies were resolved through discussion and consensus.

## 2.4 Quality Assessment

The quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT) version 2018 (Hong et al., 2018). The MMAT is a validated and reliable tool for appraising the methodological quality of studies with different designs, including quantitative, qualitative, and mixed-methods studies. The tool consists of five criteria for each study design, which are rated as "yes," "no," or "can't tell." The overall quality score for each study is calculated as a percentage of the criteria met. The quality assessment was conducted independently by two reviewers (MHS and MAAD), and any discrepancies were resolved through discussion and consensus.

## 2.5 Data Synthesis

The data from the included studies were synthesized using a narrative approach, which involves a descriptive summary and interpretation of the findings, taking into account the quality and heterogeneity of the studies (Popay et al., 2006). The synthesis was organized according to the review questions and the key themes that emerged from the data, including the roles and responsibilities of health assistants, their contributions to Vision 2030 healthcare goals, the enablers and barriers to their integration and utilization, and the strategies for optimizing their contributions.

## 3. Results

### 3.1 Study Selection

The initial search yielded 1,652 articles, of which 785 were duplicates and removed. The remaining 867 articles were screened by title and abstract, and 745 were excluded for not meeting the inclusion criteria. The full texts of the remaining 122 articles were assessed for eligibility, and 82 were further excluded for various reasons, such as not focusing on health

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assistants or the Saudi healthcare context, not being related to Vision 2030 or healthcare goals, or not being published in English. Finally, 40 studies were included in the review. The PRISMA flow diagram of the study selection process is presented in Figure 1.

## 3.2 Study Characteristics

The characteristics of the included studies are summarized in Table 2. The studies were published between 2013 and 2024, with the majority (n=32, 80%) being published after 2020. The study designs included quantitative (n=24, 60%), qualitative (n=12, 30%), and mixed-methods (n=4, 10%) approaches. The sample sizes ranged from 10 to 1,200 participants, with a total of 8,450 participants included across all studies. The studies were conducted in various healthcare settings in Saudi Arabia, including hospitals (n=18, 45%), primary healthcare centers (n=12, 30%), and community services (n=10, 25%).

### Table 2. Characteristics of the Included Studies (N=40)

| Characteristic | n (%) |
|---|---|
| Publication Year | |
| - 2013-2019 | 8 (20%) |
| - 2020-2024 | 32 (80%) |
| Study Design | |
| - Quantitative | 24 (60%) |
| - Qualitative | 12 (30%) |
| - Mixed-methods | 4 (10%) |
| Setting | |
| - Hospitals | 18 (45%) |
| - Primary healthcare centers | 12 (30%) |
| - Community services | 10 (25%) |
| Sample Size | |
| - Less than 50 | 4 (10%) |
| - 50-99 | 8 (20%) |
| - 100-299 | 16 (40%) |
| - 300 or more | 12 (30%) |

## 3.3 Roles and Responsibilities of Health Assistants

The roles and responsibilities of health assistants in the Saudi healthcare system were reported in 36 studies (90%). The findings highlighted the diverse and multi-faceted nature of health assistant roles, which varied depending on the healthcare setting, the patient population, and the delegating professional (Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013).

In hospital settings, health assistants were found to provide direct patient care, such as assisting with activities of daily living, monitoring vital signs, and performing basic nursing procedures under the supervision of registered nurses (Salvador et al., 2022; Alqahtani et al., 2022; Mutair et al., 2023). They also contributed to patient education, discharge planning, and care coordination, by communicating with patients, families, and other healthcare professionals (Salvador et al., 2022; Alqahtani et al., 2022; Mutair et al., 2023).

In primary healthcare centers, health assistants were reported to support physicians and nurses in providing preventive, diagnostic, and therapeutic services, such as health screening, immunization, wound care, and medication administration (Alshammari, 2023; Chowdhury et al., 2021; Alnowibet et al., 2021). They also engaged in health promotion and disease prevention activities, such as patient counseling, community outreach, and health education (Alshammari, 2023; Chowdhury et al., 2021; Alnowibet et al., 2021).

In community services, health assistants were found to play a key role in supporting the health and well-being of specific populations, such as older adults, individuals with chronic diseases, and underserved communities (Fee et al., 2020; Leufer et al., 2021; Alhamed et al., 2023). They provided home-based care, assisted with self-management and medication adherence, and facilitated access to healthcare and social services (Fee et al., 2020; Leufer et al., 2021; Alhamed et al., 2023).

Across all settings, health assistants were also reported to perform administrative and clerical tasks, such as scheduling appointments, maintaining medical records, and managing supplies and equipment (Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013). They also contributed to quality improvement and patient safety initiatives, by participating in audits, incident reporting, and team meetings (Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013).

Table 3 presents a summary of the key roles and responsibilities of health assistants in the Saudi healthcare system, as reported in the included studies.

**Table 3. Roles and Responsibilities of Health Assistants in the Saudi Healthcare System**

| Setting | Roles and Responsibilities | References |
|---|---|---|
| Hospitals | - Direct patient care (assisting with activities of daily living, monitoring vital signs, performing basic nursing procedures) | Salvador et al., 2022; Alqahtani et al., 2022; Mutair et al., 2023 |
| | - Patient education, discharge planning, and care coordination | Salvador et al., 2022; Alqahtani et al., 2022; Mutair et al., 2023 |
| Primary healthcare centers | - Supporting physicians and nurses in providing preventive, diagnostic, and therapeutic services (health screening, immunization, wound care, medication administration) | Alshammari, 2023; Chowdhury et al., 2021; Alnowibet et al., 2021 |
| | - Health promotion and disease prevention activities (patient counseling, community outreach, health education) | Alshammari, 2023; Chowdhury et al., 2021; Alnowibet et al., 2021 |
| Community services | - Supporting the health and well-being of specific populations (older adults, individuals with chronic diseases, underserved communities) | Fee et al., 2020; Leufer et al., 2021; Alhamed et al., 2023 |
| | - Providing home-based care, assisting with self-management and medication adherence, and facilitating access to healthcare and social services | Fee et al., 2020; Leufer et al., 2021; Alhamed et al., 2023 |
| All settings | - Administrative and clerical tasks (scheduling appointments, maintaining medical records, managing supplies and equipment) | Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013 |
| | - Contributing to quality improvement and patient safety initiatives (participating in audits, incident reporting, team meetings) | Stanhope & Pearce, 2013; Lovink et al., 2017; Munn et al., 2013 |

**3.4 Contributions to Vision 2030 Healthcare Goals**

The contributions of health assistants to the implementation of Saudi Vision 2030 healthcare goals were reported in 32 studies (80%). The findings highlighted the potential of health assistants in supporting various aspects of healthcare transformation, such as increasing access to care, enhancing quality and safety, promoting preventive and public health measures, and

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optimizing efficiency and sustainability (Rahman & Al-Borie, 2020; Mani & Goniewicz, 2024; Alasiri & Mohammed, 2022).

Health assistants were found to contribute to increasing access to healthcare services, particularly for underserved and vulnerable populations, by providing community-based care, facilitating referrals and care coordination, and reducing wait times and barriers to care (Albe jaidi & Nair, 2019; Althumairy, 2022; AlJohani & Bugis, 2024). They also supported the expansion of primary healthcare and the integration of healthcare services across different levels and settings of care (Albejaidi & Nair, 2019; Althumairy, 2022; AlJohani & Bugis, 2024).

Health assistants were reported to enhance the quality and safety of healthcare services, by assisting with evidence-based practices, monitoring patient outcomes, and identifying and reporting errors and adverse events (Alqahtani et al., 2022; Syaputra & Prasodjo, 2023; Nair, 2019). They also contributed to patient-centered care, by engaging patients and families in decision-making, providing education and support, and addressing their cultural and linguistic needs (Alqahtani et al., 2022; Syaputra & Prasodjo, 2023; Nair, 2019).

Health assistants were found to promote preventive and public health measures, by participating in health screening, immunization, health education, and lifestyle modification programs (Almaghaslah & Alsayari, 2021; Al-Hanawi et al., 2019; Aftab et al., 2020). They also supported the management of chronic diseases, by assisting with self-management, medication adherence, and care coordination (Almaghaslah & Alsayari, 2021; Al-Hanawi et al., 2019; Aftab et al., 2020).

Health assistants were reported to optimize the efficiency and sustainability of the healthcare system, by reducing the workload and burnout of licensed professionals, improving the skill mix and distribution of the workforce, and controlling healthcare costs (Snowdon et al., 2020; Sarkies et al., 2017; Almutairi & Shamsi, 2018). They also contributed to the development and retention of the healthcare workforce, by providing entry-level opportunities, career pathways, and on-the-job training (Snowdon et al., 2020; Sarkies et al., 2017; Almutairi & Shamsi, 2018).

Table 4 presents a summary of the key contributions of health assistants to the implementation of Saudi Vision 2030 healthcare goals, as reported in the included studies.

**Table 4. Contributions of Health Assistants to Saudi Vision 2030 Healthcare Goals**

| Vision 2030 Healthcare Goal | Contributions of Health Assistants | References |
|---|---|---|
| Increasing access to healthcare services | - Providing community-based care, facilitating referrals and care coordination, and reducing wait times and barriers to care | Albejaidi & Nair, 2019; Althumairy, 2022; AlJohani & Bugis, 2024 |
| | - Supporting the expansion of primary healthcare and the integration of healthcare services across different levels and settings of care | Albejaidi & Nair, 2019; Althumairy, 2022; AlJohani & Bugis, 2024 |
| Enhancing quality and safety of healthcare services | - Assisting with evidence-based practices, monitoring patient outcomes, and identifying and reporting errors and adverse events | Alqahtani et al., 2022; Syaputra & Prasodjo, 2023; Nair, 2019 |
| | - Contributing to patient-centered care, by engaging patients and families in decision-making, providing education and support, and addressing their cultural and linguistic needs | Alqahtani et al., 2022; Syaputra & Prasodjo, 2023; Nair, 2019 |
| Promoting preventive and public health measures | - Participating in health screening, immunization, health education, and lifestyle modification programs | Almaghaslah & Alsayari, 2021; Al-Hanawi et al., 2019; Aftab et al., 2020 |
| | - Supporting the management of chronic diseases, by assisting with self-management, medication adherence, and care coordination | Almaghaslah & Alsayari, 2021; Al-Hanawi et al., 2019; Aftab et al., 2020 |
| Optimizing efficiency and sustainability of the healthcare system | - Reducing the workload and burnout of licensed professionals, improving the skill mix and distribution of the workforce, and controlling healthcare costs | Snowdon et al., 2020; Sarkies et al., 2017; Almutairi & Shamsi, 2018 |
| | - Contributing to the development and retention of the healthcare workforce, by providing entry-level opportunities, career pathways, and on-the-job training | Snowdon et al., 2020; Sarkies et al., 2017; Almutairi & Shamsi, 2018 |

**3.5 Enablers and Barriers to Integration and Utilization**

The enablers and barriers to the effective integration and utilization of health assistants in the Saudi healthcare system were reported in 28 studies (70%). The findings highlighted the complex and multi-level factors that influence the adoption, implementation, and sustainability of health assistant roles and programs (Al-Dossary, 2018; Qwaider et al., 2023; Alhur, 2024).

The most commonly reported enablers of health assistant integration and utilization were related to organizational support, workforce development, and interprofessional collaboration (Sheerah et al., 2024; Alharthi et al., 2024; Blay & Roche, 2020). Organizational support factors included leadership commitment, resource allocation, and performance management systems that recognize and reward the contributions of health assistants (Sheerah et al., 2024; Alharthi et al., 2024; Blay & Roche, 2020).

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Workforce development factors included education and training programs that equip health assistants with the necessary knowledge, skills, and competencies to perform their roles effectively and safely, as well as career pathways and progression opportunities that promote job satisfaction and retention (Al-Jedai et al., 2022; Alshahrani et al., 2019; Mohamed et al., 2023). Interprofessional collaboration factors included teamwork, communication, and mutual respect among health assistants and other healthcare professionals, as well as clear roles, responsibilities, and scopes of practice (Al-Jedai et al., 2022; Alshahrani et al., 2019; Mohamed et al., 2023).

The most commonly reported barriers to health assistant integration and utilization were related to professional resistance, role ambiguity, and resource constraints (Sarigiovannis et al., 2020; Stanhope & Pearce, 2013; Munn et al., 2014). Professional resistance factors included the lack of awareness, understanding, and acceptance of health assistant roles among some healthcare professionals, as well as concerns about patient safety, liability, and competition (Sarigiovannis et al., 2020; Stanhope & Pearce, 2013; Munn et al., 2014).

Role ambiguity factors included the lack of clear and consistent definitions, standards, and regulations for health assistant roles across different settings and jurisdictions, as well as the variability and overlap of tasks and responsibilities with other healthcare professionals (Al-Anezi et al., 2020; Munn et al., 2013; Blay & Roche, 2020). Resource constraints factors included the limited availability and accessibility of education and training programs, supervision and mentorship, and career development opportunities for health assistants, as well as the funding and reimbursement models that may not adequately recognize or compensate their services (Al-Anezi et al., 2020; Munn et al., 2013; Blay & Roche, 2020).

Table 5 presents a summary of the key enablers and barriers to the effective integration and utilization of health assistants in the Saudi healthcare system, as reported in the included studies.

**Table 5. Enablers and Barriers to Health Assistant Integration and Utilization in the Saudi Healthcare System**

| Enablers | Barriers |
|---|---|
| - Organizational support (leadership commitment, resource allocation, performance management systems) | - Professional resistance (lack of awareness, understanding, and acceptance among some healthcare professionals, concerns about patient safety, liability, and competition) |
| - Workforce development (education and training programs, career pathways and progression opportunities) | - Role ambiguity (lack of clear and consistent definitions, standards, and regulations, variability and overlap of tasks and responsibilities) |
| - Interprofessional collaboration (teamwork, communication, mutual respect, clear roles and scopes of practice) | - Resource constraints (limited availability and accessibility of education and training, supervision and mentorship, career development opportunities, funding and reimbursement models) |

**3.6 Strategies for Optimization**

Strategies for optimizing the contributions of health assistants in achieving Saudi Vision 2030 healthcare goals were proposed in 24 studies (60%). The most frequently mentioned strategies were related to policy and regulation, education and training, and technology and innovation (Pantoja et al., 2017; Al-Jedai et al., 2022; Albejaidi & Alharbi, 2024).

Policy and regulation strategies focused on developing and implementing national and institutional policies, standards, and guidelines that clarify the roles, responsibilities, and scopes of practice of health assistants, as well as the delegation, supervision, and accountability mechanisms (Pantoja

et al., 2017; Al-Jedai et al., 2022; Alshahrani et al., 2023). These strategies also involved establishing regulatory and licensing frameworks that ensure the competence, safety, and quality of health assistant services, and that promote their recognition and integration into the healthcare system (Pantoja et al., 2017; Al-Jedai et al., 2022; Alshahrani et al., 2023).

Education and training strategies aimed to design and deliver competency-based and interprofessional education and training programs that prepare health assistants for their roles and responsibilities, and that foster collaborative practice and lifelong learning (Alotaibi, Athari et al., 2022; Sarkies et al., 2017; Munn et al., 2014). These strategies included developing and implementing curricula, teaching and learning methods, and assessment and evaluation tools that are aligned with the healthcare needs and priorities of Saudi Arabia, and that engage healthcare professionals, educators, and consumers in the planning and delivery of education and training (Alotaibi, Athari et al., 2022; Sarkies et al., 2017; Munn et al., 2014).

Technology and innovation strategies sought to leverage digital health technologies, such as electronic health records, telehealth, mobile health, and artificial intelligence, to enhance the efficiency, effectiveness, and impact of health assistant services (Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024). These strategies involved designing and implementing technology-enabled models of care that optimize the roles and contributions of health assistants, such as remote monitoring, patient education, care coordination, and decision support (Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024). They also included providing health assistants with the necessary training, support, and infrastructure to use and integrate these technologies into their practice, and to ensure their safety, security, and interoperability (Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024).

Table 6 presents a summary of the key strategies for optimizing the contributions of health assistants in achieving Saudi Vision 2030 healthcare goals, as reported in the included studies.

**Table 6. Strategies for Optimizing Health Assistant Contributions to Saudi Vision 2030 Healthcare Goals**

| Strategy | Key Findings | References |
|---|---|---|
| Policy and regulation | - Developing and implementing national and institutional policies, standards, and guidelines that clarify the roles, responsibilities, and scopes of practice of health assistants, as well as the delegation, supervision, and accountability mechanisms | Pantoja et al., 2017; Al-Jedai et al., 2022; Alshahrani et al., 2023 |
| | - Establishing regulatory and licensing frameworks that ensure the competence, safety, and quality of health assistant services, and that promote their recognition and integration into the healthcare system | Pantoja et al., 2017; Al-Jedai et al., 2022; Alshahrani et al., 2023 |
| Education and training | - Designing and delivering competency-based and interprofessional education and training programs that prepare health assistants for their roles and responsibilities, and that foster collaborative practice and lifelong learning | Alotaibi, Athari et al., 2022; Sarkies et al., 2017; Munn et al., 2014 |
| | - Developing and implementing curricula, teaching and learning methods, and assessment and evaluation tools that are aligned with the healthcare needs and priorities of Saudi Arabia, and that engage healthcare professionals, | Alotaibi, Athari et al., 2022; Sarkies et al., 2017; Munn et al., 2014 |

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| | | |
|---|---|---|
| | educators, and consumers in the planning and delivery of education and training | |
| Technology and innovation | - Leveraging digital health technologies, such as electronic health records, telehealth, mobile health, and artificial intelligence, to enhance the efficiency, effectiveness, and impact of health assistant services | Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024 |
| | - Designing and implementing technology-enabled models of care that optimize the roles and contributions of health assistants, such as remote monitoring, patient education, care coordination, and decision support, and providing them with the necessary training, support, and infrastructure to use and integrate these technologies into their practice | Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024 |

## 4.Discussion

This systematic review provides a comprehensive synthesis of the current evidence on the roles, contributions, and effectiveness of health assistants in implementing Saudi Vision 2030 healthcare goals. The findings highlight the diverse and multi-faceted nature of health assistant roles across different healthcare settings, and their potential to support various aspects of healthcare transformation, such as increasing access to care, enhancing quality and safety, promoting preventive and public health measures, and optimizing efficiency and sustainability.

The review also identifies the enablers and barriers to the effective integration and utilization of health assistants in the Saudi healthcare system, which include organizational, professional, and resource factors. Strategies for optimizing the contributions of health assistants in achieving Vision 2030 healthcare goals are proposed, focusing on policy and regulation, education and training, and technology and innovation.

The findings of this review have several implications for research, policy, and practice. First, future research should focus on conducting more rigorous and longitudinal studies to evaluate the effectiveness and cost-effectiveness of different health assistant roles and programs in the Saudi healthcare context, as well as to assess their impact on patient outcomes, experiences, and satisfaction (Aftab et al., 2020; Al-Dossary, 2018; Alshahrani et al., 2019). Second, policies and guidelines should be developed to support the standardization, regulation, and integration of health assistant roles and services in the Saudi healthcare system, as well as to align them with the goals and priorities of Vision 2030 (Pantoja et al., 2017; Al-Jedai et al., 2022; Alshahrani et al., 2023).

Third, education and training programs should be designed and implemented to equip health assistants with the necessary competencies and skills to perform their roles effectively and safely, as well as to promote interprofessional collaboration and lifelong learning (Alotaibi, Athari et al., 2022; Sarkies et al., 2017; Munn et al., 2014). These programs should be based on the healthcare needs and priorities of Saudi Arabia, and should engage healthcare professionals, educators, and consumers in their planning and delivery (Alotaibi, Athari et al., 2022; Sarkies et al., 2017; Munn et al., 2014).

Moreover, the review highlights the importance of adopting a systems approach to the integration and utilization of health assistants, by addressing the organizational, professional, and resource factors that influence their roles and contributions, and by promoting a culture of collaboration, innovation, and learning (Al-Dossary, 2018; Qwaider et al., 2023; Alhur, 2024). This approach requires the engagement and commitment of all stakeholders, including policymakers, healthcare

leaders, professionals, educators, and consumers, to create an enabling environment and infrastructure for health assistant services (Al-Dossary, 2018; Qwaider et al., 2023; Alhur, 2024). Finally, the review underscores the need to leverage technology and innovation to enhance the efficiency, effectiveness, and impact of health assistant services, by designing and implementing technology-enabled models of care that optimize their roles and contributions, and by providing them with the necessary training, support, and infrastructure to use and integrate these technologies into their practice (Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024). This requires a strategic and coordinated approach to digital health transformation, that aligns with the goals and priorities of Vision 2030, and that ensures the safety, security, and interoperability of health information systems (Alshahrani et al., 2019; Aljerian et al., 2022; Albejaidi & Alharbi, 2024).

**5.Conclusion**

In conclusion, this systematic review provides a timely and relevant synthesis of the current evidence on the roles, contributions, and effectiveness of health assistants in implementing Saudi Vision 2030 healthcare goals. The findings highlight the significant potential of health assistants in supporting various aspects of healthcare transformation, by leveraging their diverse skills and competencies across different healthcare settings. However, the review also identifies several enablers and barriers to the effective integration and utilization of health assistants in the Saudi healthcare system, which require targeted strategies and interventions to address them.

To optimize the contributions of health assistants in achieving Vision 2030 healthcare goals, the review proposes several strategies related to policy and regulation, education and training, and technology and innovation. These strategies aim to create an enabling environment and infrastructure for health assistant services, to equip them with the necessary competencies and skills to perform their roles effectively and safely, and to leverage technology and innovation to enhance their efficiency, effectiveness, and impact.

Future research, policy, and practice should focus on conducting more rigorous and longitudinal studies to evaluate the effectiveness and cost-effectiveness of health assistant roles and programs, developing policies and guidelines to support their standardization, regulation, and integration, and implementing education and training programs to promote their competencies and collaboration. By doing so, Saudi Arabia can harness the full potential of health assistants as a key component of its healthcare workforce, and make significant progress towards achieving the ambitious goals of Vision 2030 for a healthier, more prosperous, and sustainable future.

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