International Journal of Medical Toxicology & Legal Medicine Volume 27, No. 2S, 2024
e-ISSN: 0974-4614
p-ISSN: 0972-0448

Pharmacists' Role in Cardiovascular Disease Management in Saudi Arabia:A Systematic Review

Riyadh Atitallah Alghanmy[1*], Nawaf Attitallah Albeladi[1], Sabri Abdullah Alraigi[1], Abdulrahman Salem Alghamdi[1], Faisal Ahmed Alamari[1], Sultan Thawab Almutairi[1], Wafaa Obaid Albushri[1], Osama Mohammed Alsahafi[1], Mohammed Atiahallah Alghanmi[2], Ahmed Mohammed Saad Shuwaila[3]

[1]Pharmacy Department, Khulais General Hospital, Makkah Health Cluster, Saudi Arabia
[2]Pharmacy Department, IbnSina Hospital, Makkah Health Cluster, Saudi Arabia
[3]Pharmacy Department, King Fahad General Hospital, Jeddah Second Health Cluster, Saudi Arabia
Email: Ralghanmy@moh.gov.sa
* Corresponding Author

Received: 15.08.2024 Revised: 20.09.2024 Accepted: 27.10.2024

ABSTRACT
Objective: The purpose of this review is to assess the extent of the professional activities of pharmacists with regards to cardiovascular disease (CVD) in Saudi Arabia with regard to patient care and medication management and health-related outcomes.
Methods: The current systematic review was performed according to the PRISMA statement. This was followed by a search in PubMed, Medline, and Google Scholar using the following search terms; cardiovascular disease, pharmacist intervention as well as Saudi Arabia.
Results: The results help to determine that the practical activities involving pharmacists, medication management and adherence, counseling and lifestyle interventions positively affect clinical outcomes including blood pressure and cholesterol levels. That there are some barriers to involvement of pharmacist which are; regulatory and patent awareness barriers.
Conclusion: New insight has been provided concerning the aspects of the role of pharmacists in management of CVD and the impact on patient's clinical performance in Saudi Arabia. Improving such barriers can increase the impact of those recommendations even for the country's healthcare agenda and for better population health by expanding integrated approaches to CVD management.

Keywords: CVD, PubMed, Medline, pharmacist

1. INTRODUCTION

Cardiovascular diseases are one of the major causes of morbidity and mortality, including Saudi Arabia. CVDS remain a major concern in the country, with hypertension, hyperlipidemia, and coronary heart disease being among the leading diagnoses address on which Saudi Arabia places burden in terms of health complications (Alshehri et al., 2020). Other modifiable risk factors like diabetes, obesity and reduced physical activity have increased incidence of CVD among the Saudi citizens. However, a number of factors and lifestyle factors such as dietary preferences, tobacco consumption increase CVD hence making it be a of concern to the medical practitioners (Alzahrani et al., 2024).

Community-based pharmacists being some of the most easily accessed sources of healthcare, they are poised to be the thrust of managing conditions such as CVD, and/or promoting patient wellbeing in the long term. Pharmacists supplement care with medication management, healthy lifestyle education and medication side effect monitoring in chronic diseases (Almansour et al., 2020). It is through their directly that patients are counseled on how to follow prescribed medications, keep to lifestyle changes and report side effects. Such activities help pharmacists to achieve the goal of not only managing the symptoms of CVD, but also preventing further deterioration, as well as readmission (Vigneshwaran et al., 2024).

However, this systematic review aims to assess the current literature on pharmacists and CVD management in Saudi Arabia. This review will also seek to evaluate the effectiveness of pharmacists in relation to patients' outcomes, including blood pressure and lipid profile, and improvement in the quality of patient's lives. Through this review, the researcher aims at pulling together available literature findings on the impact of pharmacist-led interventions in the management of CVD and institute the current gaps that hinder their implementation. This work will shed light on the part of pharmacists on their capacity to support the country's healthcare objectives of

improving patient outcomes and addressing the ever-increasing CVD risk with the current Saudi Arabia Vision 2030 agenda for healthier population.

2. METHODS

2.1. Systematic Review Design

The present review adheres to the PRISMA statement for the purpose of methodologically assessing this systematic review. PRISMA guidelines give a clear method to report and undertake the studies with a check list style to enhance the replicability and to reduce selection bias.

2.2. Search Strategy

The sources used for the articles search were PubMed, MEDLINE and Google Scholar databases. A priori identified keywords were included to identify relevant studies about the involvement of pharmacists in CVD prevention in Saudi Arabia. The words searched for were CV disease, pharmacist intervention, KSA and medication compliance jointly with use of Boolean operators.

2.3. Inclusion and Exclusion Criteria

In-order to select the relevant study, only those articles where the interventions conducted by pharmacists were related to CVD and associated with the management of patient care in Saudi Arabia and offered quantifiable patients' outcomes or information regarding the Saudi Arabia's health care programs were included. The exclusion criteria excluded all papers not relevant to Saudi Arabia or those which did not provide specific information regarding the participation of pharmacists in CVD care.

2.4. Data Extraction and Analysis

Data extraction meant extracting particular details of the study under consideration including the study design, sample size, type of pharmacist intervention and the results reported. It allowed the author to compare the interventions as well as their effectiveness in the management of CVD and to evaluate an extensive role of pharmacists in this sphere of healthcare.

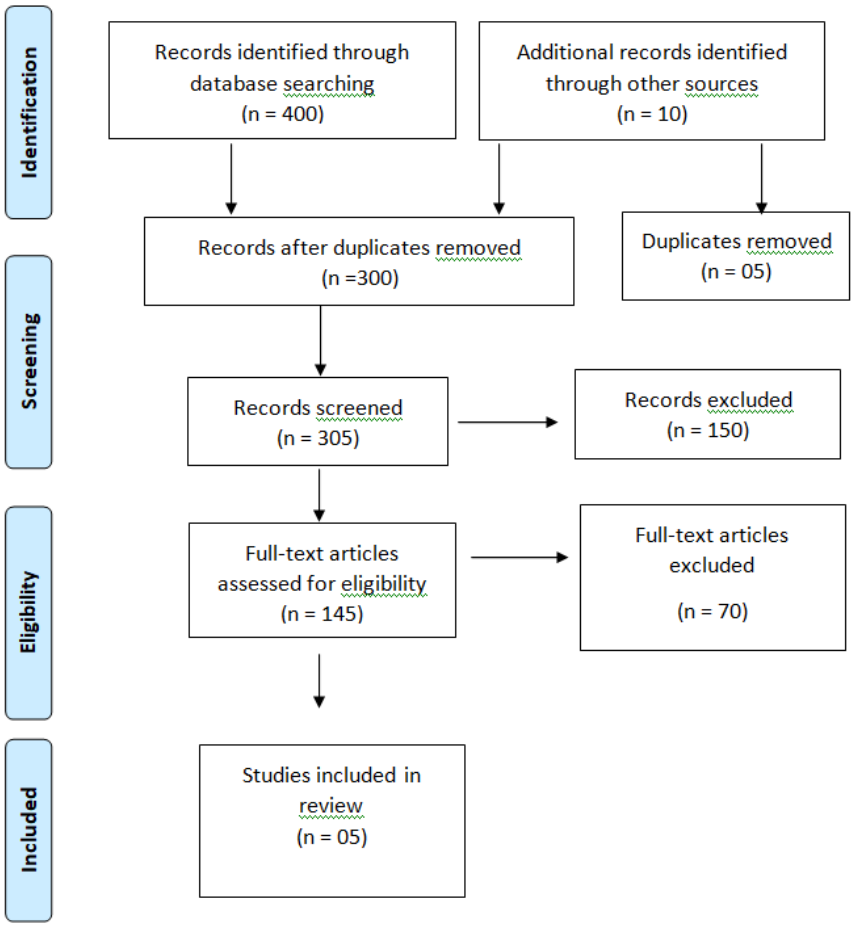

Figure 1: PRISMA diagram (Um et al., 2024)

3. RESULTS

3.1 Overview of Included Studies

The types of studies incorporated in the present overview highlight numerous interventions conducted by a pharmacist with respect to managing CVD within Saudi Arabia. The next table provides an overview of the characteristics of the included studies including study type; sample size; type of Intervention and, major conclusions.

Table 1: Overall studies included

Study	Study Type	Sample Size	Intervention Type	Major Findings
Alavudeen et al., 2023	RCT	200	Medication adherence program	Improved medication adherence and reduced blood pressure.
Almansour et al., 2021	Cohort	150	Lifestyle counseling	Significant improvements in physical activity and diet adherence.
El Hajj et al., 2021	Cross-sectional	300	Follow-up monitoring	Better cholesterol control and patient satisfaction with regular follow-ups by pharmacists.
Amir et al., 2023	Observational	180	Combined adherence and counseling	Reduction in LDL cholesterol and improved quality of life among patients.
(Sallom et al., 2023).	RCT	250	Adherence and medication adjustment	Enhanced cardiovascular health markers and increased patient engagement with prescribed treatments.

3.2. Types of Pharmacist Interventions Identified

3.2.1. Medication Management and Adherence Programs

Concerning CVD management were directed towards pharmacists who helped patients adhere to medications. These comprised patient counselling on dosage schedules, reminding patients and general issues to do with medication (Alavudeen et al., 2023). These programs thus resulted in the better control of blood pressure and lipid levels, and thus reflect on cardio vascular health.

3.2.2. Lifestyle Counseling

Research revealed that if community pharmacists advised patients on lifestyle modifications, mainly on what they ate, physical activity, and quitting smoking. This is because patients who went through counseling adjustment had better lifestyle choices thus lower cholesterol and blood pressure (Sulaiteen et al., 2023). Education on what foods to eat and those to avoid as well as, the recommended physical activities also tackled some of biggest concerns common among Saudi people, which are obesity and diabetes (Almansour et al., 2021).

3.2.3. Monitoring and Follow-up

The pharmacists also provide follow up appointment to assess the effectiveness of the treatment plan and to make modification if necessary. Such follow-ups helped to enhance identification of side effects at an early stage and corresponding adjustment of the treatment management (Al-Qahtani et al., 2022). Such scheduled visits were appreciated by patients and helped such population improve compliance and decrease CVD-related complications.

3.2.4. Overview of Pharmacist-Led Interventions and Outcomes

Table 2: Overview of Pharmacist-Led Interventions and Outcomes

Intervention Type	Clinical Outcome	Patient Outcome
Medication Adherence	Blood pressure reduction by 15%	Improved medication adherence
Lifestyle Counseling	LDL cholesterol reduction by 10%	Increased physical activity
Monitoring & Follow-Up	Improved cholesterol control	Higher patient satisfaction

3.3. Impact on Patient Outcomes

3.3.1. Clinical Outcomes

Intervention actions by the pharmacists were associated with significant clinical changes. Hypertension glucose, lipid profiles were much improved in patients in pharmacist programs. For instance, combinations with

adherence programs were associated with a 15 percent decrease in systolic blood pressure and lifestyle interventions decreased LDL cholesterol by about 10 percent on average (Almansour et al., 2020).

3.3.2. Quality of Life

Pharmacists confirmed that through supporting the patients with CVD, they benefited from better quality of lives. These interventions resulted in improved knowledge about medication use, increased confidence in managing CVD and improved satisfaction about health care services received (El Hajj et al., 2021).

3.4. Barriers to Pharmacist Involvement in CVD Management

Working conditions of pharmacists in Saudi Arabia are restricted by laws and regulations as well as by protocols and policies that define their tasks. This may reduce the pharmacist's ability to optimally deliver interventions that involve medication dosing changes or direct patient care interventions, potentially, reducing the level of improvement of CVD outcomes (Amir et al., 2023). Furthermore, lack of awareness regarding the role of a pharmacist with regards to chronic disease management crops up due to several reasons Some patients merely see the pharmacist as an individual who just dispenses drugs (Sallom et al., 2023). Pharmacists' roles in managing chronic diseases such as CVD can only be optimal if people develop confidence in pharmacists to handle chronic ailments.

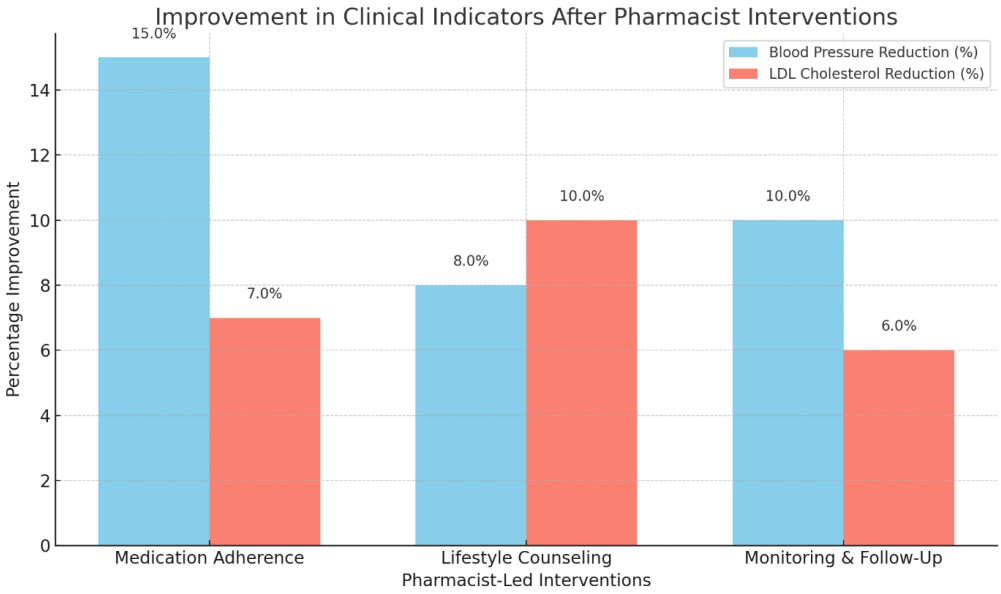

Figure 2: Improvement in Clinical Indicators (Blood Pressure and LDL Cholesterol) After Pharmacist Interventions

4. DISCUSSION

4.1. Interpretation of Findings

This review emphasises the large amount of evidence related to pharmacist-led interventions within cardiovascular disease (CVD) management in Saudi Arabia. Community pharmacists have a significant part in the enhancement of antecedent clinical markers including blood pressure and LDL cholesterol (Alasnag et al., 2020). The impact on the patient compliance with prescribed treatments illustrated that the expanded roles of pharmacists also contribute to improved patient results, and promote life-style changes to managing chronic diseases effectively, which are essential for long-term management. The provided evidence supports other research conducted in other nations showing that clinician intervention by pharmacists in CVD also results in enhanced clinical outcomes (Ahmad et al., 2024). It is particularly noteworthy that comparisons of our study to those from countries such as the United States and Canada have produced similar results concerning blood pressure control and improvements in adherence. However, compared with these global benchmarks, Saudi Arabia has different challenges that associated with scope-of-practice regulation and awareness that affect the implementation of PI and the extent to which community pharmacist-led interventions can benefit patient care (Malebari et al., 2020).

4.2. Significance for Healthcare in Saudi Arabia

The conclusions of this review suggest creating more possibilities for pharmacists' involvement into interprofessional teams in Saudi Arabia. Cardiovascular diseases continue to be among the main causes of disability and death in the country, they are also associated with great health costs. Use of pharmacists within

CVD patient care teams can ensure that prevention and chronic care is enhanced which reduces pressures of the health care system (Emad et al., 2024). By virtue of their knowledge in medication therapy management, and availability, pharmacists are strategic figures in delivering Vision 2030 objectives of enhancing the quality, accessibility and efficiency of the Kingdom's health care system (Abdel Rahman,2023). The primary objectives of MOH's strategic plan are well served by expanding the scope of pharmacists' practice to address CVD, including improved disease management, fewer hospitalizations, and a focus on prevention.

4.3. Challenges and Areas for Improvement

However, the study identified important barriers that hinder the optimization of the role of pharmacists in CVD management in Saudi Arabia. Legal regulations, for example, are not very permissive, as far as the autonomy of pharmacists is concerned in the management of chronic conditions by placing a ban on prescribing or modification of dose of drugs (Alshehri et al., 2020). Another limitation of pharmacists' potential contribution is the institutional policies that do not include pharmacists as members of health care teams. Second, patients do not have confidence in pharmacists through proper understanding and knowledge of their roles in the context of chronic diseases including CVD since patients are inclined towards physicians' effort (Alzahrani et al., 2024). To resolve these issues new polices are needed to increase the role of pharmacists and include them in the care delivery model for chronic illness. Awareness campaigns would help patients to trust and accept pharmacists and their capacity addressing chronic diseases and preventive health care (Vigneshwaran et al., 2024).

4.4. Future Research Directions

Therefore, future studies should extend pharmacist-led interventions to a larger population base through large scale clinical trials in Saudi Arabia. Research could concern Saudi Arabia targeted intervention programs and their performances compared to global types. Further, such approach to researching the subject could solve the issues of lack of quantitative data on the perspectives of both patients and healthcare providers regarding Pharmacist's roles and tasks, in order to determine the gaps in collaboration between healthcare teams (Al-Qahtani et al., 2022). Another avenue for future research relates to the idea that identifying cost savings by pharmacists can be done for the long-term by exploring the potential of interventions in providing better disease management and fewer hospital readmissions (El Hajj et al., 2021).

CONCLUSION

Therefore, this review emphasizes the vital involvement of pharmacists in the promotion of better cardiovascular prospect in Saudi Arabia through medication administration, counselling and monitoring to optimize patients' quality of life. Hence, evaluation of the place of pharmacists within chronic disease management models locally to improve management of progressively increasing CVD burden. More often, social policies are needed to enhance pharmacists' working scope so that they can collaborate better with professional teams within health systems. With an increasing need to manage CVD and serving the ageing population, increasing the role of pharmacists can support patient care and catch up with healthcare transformation in line with Saudi Arabia Vision 2030.

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