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Knowledge and Attitude of Pharmacists toward Pharmaceutical Care in Saudi Arabia

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Abstract:

Background: Pharmaceutical care plays a vital role in improving patient outcomes and quality of life. In Saudi Arabia, there has been a recent emphasis on expanding pharmacy education and integrating pharmaceutical care into practice. However, there is a need to assess the knowledge and attitudes of pharmacists towards pharmaceutical care in the country.

Objective: This study aimed to evaluate the level of knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia through a systematic review of relevant literature.

Methods: A systematic review following PRISMA guidelines was conducted, searching major databases for studies conducted between 2008-2024 that summarized pharmacists' knowledge and attitudes towards pharmaceutical care in Saudi Arabia. Data extraction and risk of bias assessment were performed to synthesize the findings.

Results: The included studies indicated a generally positive attitude among pharmacists towards pharmaceutical care in Saudi Arabia. Pharmacists showed good knowledge, attitude, and practice related to pharmaceutical care, with variations based on demographic factors such as gender, years of experience, and practice setting.

Conclusion: The findings suggest that pharmacists in Saudi Arabia are increasingly recognizing the importance of pharmaceutical care in improving patient health outcomes. While there are areas for improvement, such as enhancing knowledge in community pharmacy practices, the overall trend indicates a positive shift towards a patient-focused approach in pharmaceutical care.

Keywords: Knowledge, attitudes, pharmaceutical care, hospital, community pharmacists, Saudi Arabia.

Introduction

Throughout the world, pharmacies are sites where people can get help managing their illnesses with medication and accept help from the healthcare system [1]. Patients' quality of life can be improved by pharmaceutical care, which is a philosophy of practice in which a pharmacist prescribes drugs to achieve particular outcomes. Pharmacists collaborate with other healthcare professionals and patients to develop, implement, and track a treatment plan to diagnose, treat, and prevent medication-related problems [2].

Pharmacists are often the first point of contact for patients who are unable to reach a doctor directly, and their specialized duties and activities in the healthcare system are evolving from old-style responsibilities such as dispensing and formulating drugs to increased attention on patient care. The practice of community pharmacy differs from country to country as community pharmacists are the closest healthcare experts to patients for their drugs and health-related advice [3].

Improvements are being made to pharmacy education in Saudi Arabia to ensure it matches international standards. The expansion of pharmacy schools in the country and the requirement for clinical practitioners are the primary factors behind this trend. The number of pharmacy schools in Saudi Arabia increased from two in 2002 to roughly 30 by 2012. However, most of these programs do not include specific university courses focusing on community pharmacy. Therefore, students still lack basic awareness of this scenario [4].

Pharmaceutical care PC has been described as "the responsible provision of medication therapy for the objective of producing consequences that enhance a patient's quality of life." There are three primary responsibilities that pharmacists should collaborate with other healthcare providers on. These include identifying and recognizing problems with medication therapy, resolving actual issues relating to pharmacological therapy, and preventing probable drug therapy difficulties [5].

Most Saudi pharmacy graduates work in hospitals or government agencies, and the number of pharmacy graduates employed in community pharmacies is quite low, with many new graduates unsure of their career paths in this sector. Pharmaceutical care is a relatively new service being adopted in Saudi Arabia, primarily by hospital pharmacists. Young Saudi pharmacists are becoming increasingly involved in basic healthcare, which is to be expected given the country's soaring number of pharmacy school graduates, which considerably exceeds the capacity of local hospitals. In the absence of a trained pharmacist, patients in private clinics and hospitals are referred to their local community pharmacy to obtain their prescribed prescriptions [6].

The quality of pharmaceutical care should be evaluated both from an individualist perspective, which emphasizes patient values, expectations, and desires, and a societal perspective, which determines the utility of pharmaceutical care regarding our healthcare system. Patients' opinions of the quality and value of care are critical, as these may influence their willingness to participate actively in healthcare services (e.g., ask questions, keep appointments, and comply with medical advice and treatment regimens) [7].

Pharmaceutical care is not fully adopted in any health system, but several developed countries have created promising projects. Pharmacists from various backgrounds and environments must identify their challenges and prioritize the issues that must be addressed first. For example, serious scarcity of resources appears to be the most significant obstacles to oversome in developing countries [8]. Predefined tasks such as drug order entry occupying pharmacists' time, personnel lacking clinical knowledge and communication skills, a lack of pharmacy technicians to assist with dispensing duties, pharmacists lacking confidence, and pharmacists being absent from patient care areas hindering pharmacist-patient interaction are common barriers. Furthermore, one of the most significant impediments to its practice has been pharmacists' poor views toward providing pharmaceutical care [9]. Hence, this study aims to evaluate the level of Knowledge and attitude of Pharmacists toward Pharmaceutical Care in Saudi Arabia [10].

Research Problem

Pharmaceutical care is a patient-centered, outcomes-oriented pharmacy practice that requires pharmacists to work collaboratively with patients and other healthcare providers to optimize medication therapy and improve patient outcomes. In Saudi Arabia, the concept of pharmaceutical care is still in its early stages of implementation and there is a lack of research on the knowledge and attitude of pharmacists towards this practice. Understanding the level of knowledge and attitude of pharmacists towards pharmaceutical care is crucial for enhancing the quality of pharmacy services and promoting better patient outcomes in the country.

The research problem addressed in this study is the need to assess the knowledge and attitude of pharmacists in Saudi Arabia towards pharmaceutical care. While pharmaceutical care has been recognized as a fundamental component of pharmacy practice worldwide, its implementation and adoption in Saudi Arabia may be hindered by various factors such as lack of awareness, training, and support. Therefore, there is a gap in the literature regarding the current state of knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia.

Pharmacists are key healthcare professionals who have a significant impact on patient care and medication management. Their knowledge and attitude towards pharmaceutical care can greatly influence the quality of pharmacy services and patient outcomes. By investigating the knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia, this study aims to provide valuable insights that can inform strategies for enhancing the practice of pharmaceutical care in the country.

Many pharmacists in Saudi Arabia may not be fully aware of the concept of pharmaceutical care and its importance in improving patient outcomes. There may also be a lack of formal education and training programs on pharmaceutical care in pharmacy schools and continuing education courses.

Pharmacists' attitudes towards patient-centered care and their willingness to engage in collaborative practice with patients and other healthcare providers may vary. Understanding pharmacists' attitudes

towards pharmaceutical care can provide insights into potential barriers to its implementation. Moreover, the availability of resources, support from pharmacy management, and integration of pharmaceutical care services into the workflow of pharmacies can impact pharmacists' ability to provide pharmaceutical care services effectively. Regulatory frameworks and policies related to pharmacy practice in Saudi Arabia may also influence the implementation of pharmaceutical care. Understanding the regulatory environment and policy implications is essential for promoting the adoption of pharmaceutical care practices.

Research Questions:

1. What is the level of knowledge of pharmacists in Saudi Arabia regarding pharmaceutical care?
2. What is the attitude of pharmacists in Saudi Arabia towards pharmaceutical care?
3. What are the factors influencing the knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia?
4. How can the knowledge and attitude of pharmacists towards pharmaceutical care be improved in Saudi Arabia?

Aim and Objectives:

The aim of this study is to assess the knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia. The specific objectives of the study are:

- To evaluate the level of knowledge of pharmacists in Saudi Arabia regarding pharmaceutical care.
- To assess the attitude of pharmacists in Saudi Arabia towards pharmaceutical care.
- To identify the factors influencing the knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia.
- To provide recommendations for improving the knowledge and attitude of pharmacists towards pharmaceutical care in Saudi Arabia.

Research significance

The significance of this research lies in its potential to drive improvements in pharmacy services, patient care, and professional development in Saudi Arabia. By assessing the knowledge and attitude of pharmacists towards pharmaceutical care, this study can provide valuable insights that can inform strategies for promoting the adoption and implementation of pharmaceutical care practices in the country. Pharmacists play a critical role in healthcare by ensuring the safe and effective use of medications. Their involvement in pharmaceutical care, a patient-centered approach to pharmacy practice, has the potential to significantly impact patient outcomes. Understanding pharmacists' knowledge and attitude towards pharmaceutical care is essential for identifying areas for improvement and developing interventions to enhance the quality of patient care. By exploring pharmacists' knowledge and attitude towards pharmaceutical care, this research can contribute to the advancement of pharmacy practice in Saudi

Arabia. It can help identify gaps in practice and inform the development of training programs and resources to support pharmacists in delivering high-quality pharmaceutical care services. This, in turn, can lead to better patient outcomes and improved medication management.

Furthermore, the findings of this research can have implications for policy and regulation in the pharmacy sector. By identifying barriers and challenges to the implementation of pharmaceutical care practices, policymakers can develop policies that support and incentivize pharmacists to engage in patient-centered care and collaborative practice. This can help create an environment that fosters the delivery of high-quality pharmaceutical care services in Saudi Arabia.

Additionally, assessing pharmacists' knowledge and attitude towards pharmaceutical care can contribute to their professional development and continuing education. By identifying areas where pharmacists may need additional training or support, this research can inform the design of educational programs and resources to help pharmacists enhance their skills and competencies in pharmaceutical care. This, in turn, can contribute to the overall advancement of the pharmacy profession in the country.

Overall, this research is significant in its potential to drive improvements in pharmacy services, patient care, and professional development in Saudi Arabia. By addressing the knowledge and attitude of pharmacists towards pharmaceutical care, this study can contribute to the advancement of pharmacy practice and ultimately benefit patients, healthcare providers, and the healthcare system as a whole.

Methodology

The methodology section of the systematic review conducted following PRISMA guidelines includes the study design and duration, search strategy, inclusion and exclusion criteria, study selection process, data extraction, quality assessment, and data synthesis.

Study Design and Duration

The systematic review began in February 2024 and followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The study design involved a comprehensive search of the literature to identify relevant studies on the knowledge and attitudes of hospital and community pharmacists towards pharmaceutical care in Saudi Arabia.

Search strategy

A comprehensive search was conducted using four major databases: PubMed, SCOPUS, Web of Science, and Science Direct. The search strategy involved using a combination of keywords related to the study topic, such as "knowledge," "attitudes," "pharmaceutical care," "hospital," "community pharmacists," and "Saudi Arabia." The search terms were converted into PubMed Mesh terms to ensure accuracy and relevance. Boolean operators such as "OR," "AND," and "NOT" were used to combine and exclude keywords as needed. The search was limited to English-language publications and considered the unique search requirements of each database.

Inclusion and Exclusion Criteria:

The inclusion criteria for the studies considered in the review included:

- Studies that focused on the knowledge and attitudes of hospital and community pharmacists towards pharmaceutical care in Saudi Arabia.
- Studies that were human trials
- Studies that had full-text publications in English,
- Studies that were provided freely downloadable materials.

Exclusion criteria may have included:

- Studies that were not related to the topic
- Studies that were not conducted in Saudi Arabia
- Studies that did not meet the specified criteria.

Study Selection Process:

The initial search results were screened based on the title and abstract to determine relevance to the research question. Full-text articles that met the inclusion criteria were then reviewed for final selection. Any discrepancies in study selection were resolved through discussion or consultation with a third reviewer.

Data extraction

Data extraction involved systematically collecting relevant information from the selected studies, including study characteristics, methodology, key findings, and conclusions. A standardized data extraction form may have been used to ensure consistency in data collection. Rayyan (QCRI) was used twice to verify the search method's output. The researchers added inclusion/exclusion criteria to the combined search results in order to evaluate the relevance of the titles and abstracts. The reviewers gave each paper that met the inclusion criteria a thorough inspection. The authors talked about ways to resolve conflicts. The approved study was uploaded using an already-created data extraction form. The authors extracted data about the study titles, authors, study year, city, participants, gender, type of participants, prevalence of the two most frequent blood groups, and main outcomes. A separate sheet was created for the risk of bias assessment.

Strategy for data synthesis

By assembling summary tables using information from relevant studies, a qualitative assessment of the research's findings and components was given. After gathering the data for the systematic review, the most efficient way to use the information from the included study articles was chosen.

Risk of bias assessment

The ROBINS-I risk of bias assessment technique for non-randomized treatment trials was used to evaluate the quality of the included studies. Confounding, research participant selection, intervention classification, divergence from intended interventions, missing data, outcome assessment, and choice of the reported result were the seven assessed themes.

Results

Search results

After 57 duplicates were removed, the systematic search produced 143 study papers in total. 62 of the 86 studies that underwent title and abstract screening were eliminated. Ultimately, 24 papers were screened for full-text assessment; fourteen were excluded due to the incorrect population type, and two were excluded for incorrect research outcomes. This systematic review had eight study papers that met the eligibility criteria. An overview of the procedure used to choose studies is provided in **Figure 1.**

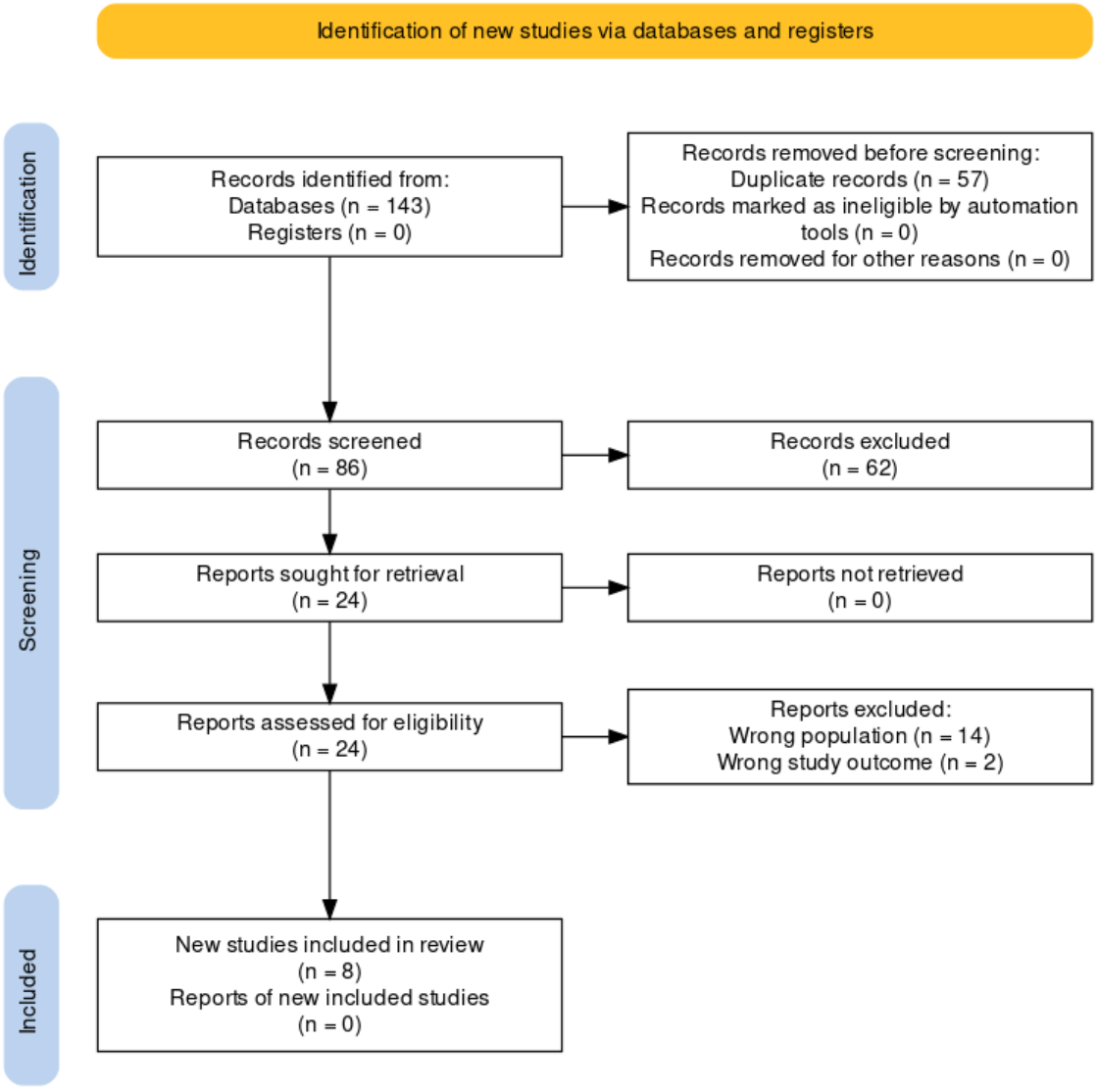

Figure (1): PRISMA flowchart for data extraction.

Table [1] Sociodemographic characteristics of the included participants.

Author	Country	Study design	Participants (n)	Age (years)
Hanan S Alromaih et.al [11]	Saudi arabia	A descriptive cross-sectional survey	160	31-41
Abubakar Siddique e.al [12]	Saudi arabia, Qassim region	A Prospective Cross-sectional Study	150	NM
Sherihan A. Ghosn et.al [13]	Saudi Arabia, Al-Khobar Region	A Descriptive Cross-Sectional Study	102	30-39
Mohamed Nasser Al-Arifi et.al [14]	Saudi Arabia, Riyadh region	A Prospective Cross-sectional Study	214	20-24
Abdul Haseeb et.al [15]	Saudi Arabia	A descriptive cross-sectional study	520	31-40
Al-Jumah, K. A., et.al [16]	Saudi Arabia, Riyadh region	A cross-sectional study	300	NM
Al-Arifi, M. N., et.al [17]	Saudi Arabia	A cross-sectional study	400	31-39
Al-Jazairi AS, et.al [18]	Saudi Arabia, Riyadh region	A cross-sectional study	250	NM

Table [2] Clinical characteristics and outcomes of the included studies.

Study name	Year	Key findings	Conclusion
Pharmacists' Understanding and Attitudes Toward Pharmaceutical Care in Saudi Arabia	[2023]	The survey was completed by 130 of the 160 pharmacists during the four-week study period. The majority of pharmacists had favorable opinions on providing pharmaceutical care. Overall, 122 (93.9%) respondents knew what pharmaceutical care meant. Most pharmacists (120, 92.3%) agreed to always counsel the patient on how to use their medications. Nearly half of the pharmacists (58, 45.0%) lacked knowledge about the clinical disease states, and 108 (83.0%) pharmacists knew	Pharmacists reported a positive attitude regarding pharmaceutical treatment. Awareness and attitudes concerning pharmaceutical treatment were associated with a variety of demographic parameters, including gender, years of experience, and place of employment, to name a few. They reported that they were willing but concerned about their clinical expertise and ability to communicate effectively.

		how to obtain information.	
Exploring Community Pharmacist's Knowledge, Attitude, and Practice toward the Provision of Pharmaceutical Care. A Prospective Cross-sectional Study from Saudi Arabia	[2022]	The respondents showed a positive knowledge as 60% think that the medications should be dispensed to patients only, and 95.4% of the respondents are willing to counsel and offer advice to the patients. For attitude, there was also a positive response as 92.3% agreed that primary responsibility of community pharmacists is for providing PC. For practicing, a positive response was also found as 94.6% of the respondents do collect medication history from the patient.	Community pharmacists have shown good knowledge, attitude, and practice in relation to the provision of PC
Community Pharmacist's Knowledge, Attitude, and Practices towards Vitamin Supplements in Al-Khobar Region, Saudi Arabia: A Descriptive Cross-Sectional Study	[2019]	The mean average score of the participants in subjective assessment of knowledge was 62.45%. Half of the participants (51.96%) achieved good and excellent score in objective assessment regarding knowledge of vitamin, 66.67% of the respondents thought that pharmacists should be knowledgeable regarding vitamin supplements, and 81.37% declared that they inform the patients about possible adverse effects by the use of dietary supplements.	The study revealed a positive attitude of community pharmacists in Al-Khobar Region on their role in patients' counseling about the safe usage of vitamins as dietary supplements. However, their level of knowledge about vitamin supplements needs to be improved to meet consumer's needs regarding usage of dietary supplements.
Pharmacy students' attitudes toward pharmaceutical care in Riyadh	[2009]	Of the respondents, 95.2% felt that pharmaceutical care movement will improve patient health, 94.9% thought that the	Saudi pharmacy students in the study indicated favorable positive attitudes toward pharmaceutical care, and the attitude ratings were associated with age,

region Saudi Arabia		practice of pharmaceutical care is valuable, 85% "strongly agree" or "agree" that all pharmacists should perform pharmaceutical care, whereas, about two third (64.5%) "strongly agree" or "agree" that students should perform pharmaceutical care during their clerkships.	sex and marital status. A nationwide survey including all pharmacy faculties would provide further evidence.
Knowledge, attitude, and perception of community pharmacists [CP] towards antimicrobial stewardship in Saudi Arabia: A descriptive cross-sectional study	[2022]	Most of the pharmacists (n = 479, 92.1 %) accepted that antimicrobial stewardship programs are essential tools to limit injudicious usage of antimicrobials, very few (n = 105, 21 %) agreed to recommend antibiotics for common illnesses, including upper respiratory tract infections, cold, and flu without a valid prescription. Further, a significant role of Saudi health authorities, e.g., Saudi food & drug authorities and the Ministry of Health was found in restricting antimicrobials sale in community pharmacies without a valid prescription.	The study findings revealed that CPs had good knowledge about antimicrobial stewardship in Saudi Arabia. The CPs play an active role in the optimization of antimicrobial therapy and infections caused by different microbes.
Knowledge and attitude of pharmacists in Riyadh, Saudi Arabia towards medication counseling and adverse drug reaction reporting.	[2012]	The study found that 62.3% of pharmacists had good knowledge of medication counseling, while 64.7% had positive attitudes towards adverse drug reaction reporting.	The study has shown a good level of knowledge and attitude among pharmacists in Saudi arabia

Knowledge, attitude, and practice of pharmacists toward pharmaceutical care in Saudi Arabia	[2016]	The study found that 57.5% of pharmacists had good knowledge about pharmaceutical care, 70.5% had a positive attitude towards pharmaceutical care, and 56.5% reported practicing pharmaceutical care in their daily practice.	The study has shown that above half of the studied participants had good level of knowledge and positive attitude towards pharmaceutical care.
Knowledge and attitudes of pharmacists in Riyadh, Saudi Arabia towards the implementation of pharmaceutical care	[2012]	The study found that 62% of pharmacists had good knowledge about pharmaceutical care, and 76% had a positive attitude towards the implementation of pharmaceutical care in their practice.	The study has shown a good level of knowledge and attitude among the studied pharmacists in Saudi Arabia

Discussion:

It has been proposed that pharmacy practice moves from product-focused to patient-focused. The major goals of pharmaceutical care are to improve the patient's quality of life, approve the safety of drug therapy, and seek to enhance the quality of life related to the patient's health within reasonable financial constraints. One of the biggest issues facing Saudi Arabia's healthcare system is including a pharmacist in the healthcare team who uses the most up-to-date pharmaceutical services and cares for the patient with medical and nursing care [19].

According to the previously mentioned studies, Hanan S Alromaih et.al [2023] reported that the majority of pharmacists had favorable opinions on providing pharmaceutical care. Awareness and attitudes concerning pharmaceutical treatment were associated with a variety of demographic parameters, including gender, years of experience, and place of employment.

Abubakar Siddique et.al [2022], Sherihan A. Ghosn et.al [2019] reported similar results. Consistently, Mohamed Nasser Al-Arifi et.al [2009] revealed that Saudi pharmacy students in the study indicated favorable positive attitudes toward pharmaceutical care with 95.2% felt that pharmaceutical care movement will improve patient health, 94.9% thought that the practice of pharmaceutical care is valuable, 85% "strongly agree" or "agree" that all pharmacists should perform pharmaceutical care.

Moreover, Abdul Haseeb et.al [2022] revealed that most of the pharmacists 92.1 % accepted that antimicrobial stewardship programs are essential tools to limit injudicious usage of antimicrobials, very few 21 % agreed to recommend antibiotics for common illnesses, including upper respiratory tract infections, cold, and flu without a valid prescription. On the other hand, several studies conducted in Saudi arabia reported a good level of knowledge and attitude among the studied pharmacists as mentioned by Al-Jumah et al. who revealed that 62.3% of pharmacists had good knowledge of medication counseling, while 64.7% had positive attitudes towards adverse drug reaction reporting. Al-Arifi, M. N., et.al also reported that 57.5% of pharmacists had good knowledge about pharmaceutical care, 70.5% had a positive attitude towards pharmaceutical care, and 56.5% reported practicing pharmaceutical care in their daily practice.

Consistently, Al-Jazairi AS, et.al found that 62% of pharmacists had good knowledge about pharmaceutical care, and 76% had a positive attitude towards the implementation of pharmaceutical care in their practice. This figure is similar to studies done in New Zeeland, Turkey, and Jordan that reported that 60% [20], 78.9% [21], and 90% [22] of the respondents had a positive attitude toward PC, respectively.

Conclusion:

In conclusion, the study conducted in Saudi Arabia revealed that pharmacists generally have a positive attitude towards pharmaceutical care. There is a growing awareness among pharmacists about the importance of providing pharmaceutical care to improve patient health outcomes. While there are still areas for improvement, such as the need for more education and training in community pharmacy practices, the overall findings suggest that pharmacists in Saudi Arabia are moving towards a patient-focused approach in their practice. By continuing to enhance their knowledge and attitudes towards pharmaceutical care, pharmacists can play a crucial role in improving healthcare outcomes for patients in the country.

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