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Healthcare Professionals' Attitude And Practice Toward Drug Allergy: A Cross-Sectional Study In Qassim, Saudi Arabia

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Abstract

Background: Drug hypersensitivity reactions (DHRs) pose significant challenges in clinical practice, requiring healthcare practitioners (HCPs) to have adequate knowledge and appropriate management strategies. The attitudes and practices of pharmacists and nurses toward drug allergies influence patient safety and the effectiveness of care. This study aims to assess the attitudes, and practices of pharmacists and nurses regarding drug allergy management in different healthcare settings.
Methodology: A cross-sectional study was conducted among pharmacists and nurses working in tertiary hospitals, secondary hospitals, and community health centers. Participants were recruited through convenience sampling, and data were collected using a structured questionnaire. The questionnaire assessed demographic characteristics, attitudes toward drug allergy, and current practices related to drug hypersensitivity management. Descriptive statistics, including frequencies and percentages, were used to analyze the responses.
Results: A total of 169 HCPs participated, including 50 (29.6%) males and 119 (70.4%) females. The majority held a bachelor's degree (81.7%) and worked as nurses (73.4%). Most participants were employed in tertiary (50.9%) and secondary (44.4%) hospitals. Regarding attitudes, 92.9% agreed that advanced training on DHRs is essential, and 79.8% supported in vivo or in vitro testing before drug administration. In practice, 56.8% reported that drug allergy tests were available and performed upon request, further, 67.7% always inquired about allergy history before drug administration. Continuous medical education participation was reported by 40.9% of respondents, highlighting the need for improved training.
Conclusion: Pharmacists and nurses demonstrated awareness of the importance of drug allergy management, yet gaps in positive attitude and inconsistencies in practice were identified. Standardized protocols, improved access to allergy testing, and enhanced training programs are necessary to ensure patient safety and optimal management of DHRs.
Key words: Health Care Professionals, Practice, Attitude, Drug Allergy, Saudi Arabia

Introduction

Drug allergies are a significant concern in clinical practice, impacting patient safety, treatment efficacy, and healthcare costs [1,2]. A drug allergy is an immune-mediated hypersensitivity reaction to a medication, which can range from mild cutaneous manifestations to life-threatening anaphylaxis [2,3]. Globally, the prevalence of drug allergies varies, with β-lactam antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs), and anticonvulsants being among

the most commonly implicated drug classes [4-6]. Inappropriate management of drug allergies, including misdiagnosis, unnecessary avoidance of essential medications, and failure to recognize severe allergic reactions, can lead to increased morbidity and healthcare burdens [7,8]. Healthcare professionals (HCPs) play a crucial role in identifying, documenting, and managing drug allergies [7,9]. Their knowledge, attitudes, and practices directly influence patient outcomes and the implementation of evidence-based allergy management strategies. Studies have highlighted gaps in HCPs' awareness and adherence to guidelines of drug allergy assessment, desensitization protocols, and alternative drug selection [7,8,10]. Moreover, improper labeling of drug allergies—particularly penicillin allergies—has led to the unnecessary use of broad-spectrum antibiotics, contributing to antimicrobial resistance and higher healthcare costs [11,12].

In Saudi Arabia, limited research has been conducted on the attitudes and practices of HCPs regarding drug allergies [10,11]. Understanding these factors is essential for improving patient safety, optimizing prescribing practices, and reducing medication-related adverse events [11]. The Qassim region, with its diverse healthcare settings, offers a valuable opportunity to assess the current state of drug allergy management among healthcare professionals.

This study aims to evaluate the attitudes and practices of healthcare professionals in Qassim, Saudi Arabia, regarding drug allergies. By identifying overall attitude, misconceptions, and barriers to optimal allergy management, this research seeks to provide insights for developing targeted educational interventions and policy recommendations to enhance patient safety and clinical practice.

Methodology

This cross-sectional study was conducted among healthcare professionals (HCPs) in the main hospitals of Al-Qassim region, Saudi Arabia. The primary objective was to evaluate the attitudes and practices of HCPs regarding drug allergy management. Data collection was carried out between 2023 and 2024, following ethical approval from the Qassim Cluster research committee and King Fahad Specialist Hospital.

A structured questionnaire served as the main tool for data collection. It comprised a total of 19 questions, divided into four sections: demographic characteristics (4 questions), attitude assessment (6 questions), and practice assessment (9 questions). The questionnaire was distributed in person to a diverse group of HCPs, specifically pharmacists and nurses, working in hospitals across the Qassim region. Participation was entirely voluntary, and each respondent provided informed consent before completing the survey. The consent form was included at the beginning of the questionnaire to ensure transparency and ethical compliance.

Eligible participants were actively engaged in patient care, with no restrictions based on years of experience or sub-specialty. The goal was to obtain a broad understanding of attitudes and practices related to drug allergy recognition, documentation, and patient counseling among different healthcare providers.

To facilitate participation, researchers visited hospital sites to distribute and collect completed questionnaires. The demographic section gathered essential information such as gender, education level, job title, and hospital type. The attitude section focused on assessing HCPs' perceptions of drug allergy seriousness, confidence in identifying allergic reactions, and adherence to guidelines. The practice section explored real-world behaviors, including documentation accuracy, patient counseling strategies, and handling of reported drug allergies. A target sample of 200 HCPs was established to ensure a comprehensive evaluation of attitudes and practices across various professional backgrounds. All research activities adhered to ethical principles set forth by the Qassim Regional Ethical Committee.

Upon completion of data collection, responses were systematically coded and analyzed using SPSS®, version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize participant characteristics and survey responses. Furthermore, chi-square test was conducted to examine potential associations between demographic factors and participants' attitudes and practices concerning drug allergy management.

Results:
The study included a total of 169 healthcare professionals, with the majority being female (70.4%), male (29.6%). Regarding educational qualifications, most participants held a bachelor's degree (81.7%), followed by diploma holders (11.2%), and a minority had a master's degree or board certification (7.1%). In terms of professional roles, nurses accounted for (73.4%) of the participants, while pharmacists comprised (26.6%). The majority of participants were from tertiary hospitals (50.9%), followed by secondary hospitals (44.4%), and a small percentage worked in community health centers (4.7%) (Table 1).

Table 1: Demographic factors of the included participants (n=169)

		Count	Column N %
Gender	Male	50	29.6%
	Female	119	70.4%
Education	Diploma	19	11.2%
	Bachelor	138	81.7%
	Master/bored certified and above	12	7.1%
Title	Pharmacist	45	26.6%
	Nurse	124	73.4%
Level of hospital	Tertiary hospital	86	50.9%
	Secondary hospital	75	44.4%
	Community health center	8	4.7%

Following analysis, findings reveal that a significant proportion of participants recognize the importance of advanced knowledge and training in Drug Hypersensitivity Reactions (DHRs), with (92.9%) of participants agreeing or strongly agreeing on the necessity of such training. Similarly, (79.8%) believed that in vivo or in vitro testing of drugs before administration is important, while (15.4%) were uncertain. When assessing confidence in their knowledge of DHRs, (66.8%) of participants expressed satisfaction, while (13.7%) disagreed and (19.5%) were uncertain. Regarding the impact of drug allergies on patient quality of life, (90.5%) of respondents agreed or strongly agreed that drug allergies negatively affect patients. However, when asked about the frequency of encountering drug allergies in their daily practice, opinions varied—(43.2%) reported that they frequently encountered such cases, while (37.4%) were uncertain or never encounter cases. The monthly exposure to drug allergy cases was mostly low, with (45%) encountering less than one case per month and (44.4%) handling one to five cases per month. A small percentage (4.7%) reported encountering more than five cases per month, whereas (5.9%) never encountered any cases (Table 2).

Table 2: Attitude of pharmacist and nurses toward drug allergy (n=169)

		Count	Column N %
Do you think HealthCare Practitioners (HCPs) should receive advanced knowledge and training of Drug Hypersensitivity Reactions (DHRs)?	Strongly disagree	1	0.6%
	Disagree	2	1.2%
	Uncertain	9	5.3%
	Agree	98	58.0%
	Strongly agree	59	34.9%
Do you think in vivo, or in vitro test of drug is very important before administration?	Strongly disagree	2	1.2%
	Disagree	6	3.6%
	Uncertain	26	15.4%
	Agree	92	54.4%
	Strongly agree	43	25.4%
	Strongly disagree	5	3.0%

Are you satisfied with your knowledge of DHRs?	Disagree	18	10.7%
	Uncertain	33	19.5%
	Agree	79	46.7%
	Strongly agree	34	20.1%
Do you think drug allergy has an adverse impact on patient's quality of life?	Strongly disagree	2	1.2%
	Disagree	5	3.0%
	Uncertain	9	5.3%
	Agree	80	47.3%
	Strongly agree	73	43.2%
Do you think drug allergy always occurred in your daily practice?	Strongly disagree	7	4.1%
	Disagree	33	19.5%
	Uncertain	32	18.9%
	Agree	73	43.2%
	Strongly agree	24	14.2%
On average, how many cases of drug allergy do you see in your daily practice, monthly?	Less than 1 case/month	76	45.0%
	1 to 5 cases	75	44.4%
	More than 5 cases	8	4.7%
	Never	10	5.9%

In terms of institutional availability of drug allergy testing, (56.8%) of participants reported that testing was available and performed upon request, while (16.6%) stated that testing was available but not routinely conducted. A smaller proportion (11.2%) noted that testing was limited to specific specialties, whereas (15.4%) mentioned that drug allergy testing was either unavailable or could not be requested. A high proportion of participants demonstrated adherence to patient safety practices, as (67.7%) always inquired about a patient's allergy history before drug administration, and (18.6%) did so often. Similarly, (60.4%) always evaluated drug skin test results accurately and in a timely manner, while (18.3%) often ensured proper evaluation. However, when asked about performing positive and negative control tests during drug skin testing, (43.8%) reported that they always conduct these tests, while (22.5%) did so sometimes, and (16%) rarely or never performed such test. Timely recognition and management of DHRs were consistently reported by participants, with (56.2%) stating they always managed allergic reactions promptly, while (17.2%) often did so. However, (13.6%) of participants never handled such cases, and (9.5%) responded "sometimes". Institutional support varied, with (38.5%) of participants reporting that internal medicine specialists were available for consultation on drug allergy cases, while (24.9%) relied on immunologists, and (18.3%) consulted allergy specialists. However, (18.3%) of respondents stated that no specialized team is available for drug allergy cases. Similarly, while (50.9%) reported that their institutions had widely distributed protocols or guidelines for managing drug allergies, (21.9%) indicated that guidelines were available but not widely distributed, and (26.7%) mentioned that either outdated or no guidelines were available. Participation in continuous medical education (CME) programs related to drug allergies was variable. A (40.9%) of respondents stated they always attended such programs, while (18.3%) participated often, and (24.4%) sometimes engaged in educational activities. However, (16.4%) rarely or never participated in CME programs on drug allergy. Finally, access to patient allergy information was reported to be adequate, with (33.7%) of participants stating they always found the required allergy information, while (36.1%) found it often. However, (23.7%) of respondents reported occasional difficulty in accessing patient allergy records, and (8.9%) rarely or never had access to such information (Table 3).

Table 3: Practices of pharmacist and nurses toward drug allergy

		Count	**Column N %**
At your institute, drug allergy test is available. Performed?	Available and performed once requested	96	56.8%

	Available, but not routinely performed	28	16.6%
	Available, but only for certain specialties	19	11.2%
	Not available, but can be requested	20	11.8%
	Not available, and can't be requested	6	3.6%
Do you take the patient's (any) allergy history before drug dispensing/administration or upon admission?	Never	3	1.8%
	Rarely	4	2.4%
	Sometimes	16	9.6%
	Often	31	18.6%
	Always	113	67.7%
Do you evaluate the drug skin test result timely and accurately (If available)?	Never	11	6.5%
	Rarely	3	1.8%
	Sometimes	22	13.0%
	Often	31	18.3%
	Always	102	60.4%
Do you perform positive control and negative control during drug skin test?	Never	22	13.0%
	Rarely	5	3.0%
	Sometimes	38	22.5%
	Often	30	17.8%
	Always	74	43.8%
Do you recognize and manage DHRs timely when it occurs?	Never	23	13.6%
	Rarely	6	3.6%
	Sometimes	16	9.5%
	Often	29	17.2%
	Always	95	56.2%
At your institute, is there an available team, specialties, or a doctor that * can be counselled in case of drug allergy patients?	Immunologist	42	24.9%
	Internal medicine	65	38.5%
	Allergic expert	31	18.3%
	None	31	18.3%
At your institute, is there an available protocol or a guideline that can be * referred to in case of drug allergy patients?	Other	1	0.6%
	Yes, available and widely distributed	86	50.9%
	Yes, available but not distributed	37	21.9%
	Yes, but not available or outdated	16	9.5%
	None	29	17.2%
Do you participate continuous medical education regarding drug allergy?	Never	13	7.9%
	Rarely	14	8.5%
	Sometimes	40	24.4%
	Often	30	18.3%
	Always	67	40.9%
At your institute, do you find the required information of patient's allergy?	Never	11	6.5%
	Rarely	4	2.4%
	Sometimes	36	21.3%
	Often	61	36.1%
	Always	57	33.7%

Discussion

Demographic Characteristics

The predominance of female healthcare professionals (HCPs) in this study, accounting for (70.4%) of participants, aligns with global trends indicating a higher representation of women in nursing and pharmacy professions [12]. The majority of participants held a bachelor's degree (81.7%), suggesting a well-educated workforce, which is crucial for effective healthcare delivery.

Attitudes Toward Drug Allergy

A significant majority of targeted HCPs (92.9%) in this study acknowledged the necessity for advanced knowledge and training in Drug Hypersensitivity Reactions (DHRs). This finding aligns with global efforts to enhance healthcare professionals' competencies in managing DHRs and reflects similar trends observed in other countries, emphasizing the universal need for continuous professional development to ensure patient safety and high-quality care [13, A, B]. Similarly, about 80% of participants recognized the importance of conducting allergy diagnostics tests before drug administration, highlighting a proactive approach to preventing adverse drug reactions. Despite that most of the participant are highly qualified, only (66.8%) expressed satisfaction with their current knowledge of DHRs, indicating a gap that could be addressed through targeted educational programs [14,15]. Furthermore, there were strong agreement, (90.5%), among perception that drug allergies adversely affect patients' quality of life, reflecting a strong awareness of the broader implications of drug allergies on patient well-being. The variability in reported frequency of encountering drug allergies in daily practice suggests differences in clinical exposure and possibly varying levels of vigilance or reporting practices among HCPs.

Practices Toward Drug Allergy

The availability and utilization of drug allergy testing varied among healthcare providers sitting. While (56.8%) of HCPs reported that testing was available and performed upon request, a notable proportion indicated limited or no access to such testing. This disparity could lead to inconsistent identification and management of drug allergies, potentially compromising patient safety [16,17]. Furthermore, the result highlights a possible gap between attitude reported earlier and practices. Although, a majority of participants consistently inquired about patients' allergy histories (67.7%) and evaluate drug skin test results (60.4%), there high margin of improvement in this area. However, the fact that (16%) of respondents rarely or never performed control tests during drug skin testing raises concerns about adherence to best practices in allergy testing protocols, which commonly seen highlighted in well written protocols [18]. Timely recognition and management of DHRs were reported by (56.2%) of HCPs, but the (13.6%) who never addressed such cases may indicate a need for improved training and support. The availability of specialized consultation pathway of services varied, with (18.3%) of participants indicating the absence of such resources, potentially hindering optimal patient management. While over half of the respondent reported accessible and widely distributed guidelines, the lack of standardized protocols in some institutions could lead to inconsistent practices [19], even more, a national protocol would be an added value. Participation in continuous medical education (CME) related to drug allergies was reported by (40.9%) of respondents, suggesting room for improvement in ongoing professional development. Access to patient allergy information was generally adequate, though (8.9%) of HCPs reported challenges in obtaining necessary data, which could impede safe prescribing practices.

Implications for Practice

The findings of this study highlight several areas for improvement in the attitudes and practices of HCPs toward drug allergies. The recognition of the importance of advanced training and testing is a positive indicator; however, the gaps in knowledge satisfaction and inconsistent practices suggest the need for targeted interventions. Implementing comprehensive training

programs on DHRs, ensuring the availability and proper use of testing protocols, and fostering a culture of continuous education are essential steps toward enhancing patient safety. Additionally, standardizing guidelines and ensuring their accessibility across all healthcare settings can promote uniformity in drug allergy management [18,19]. Addressing these areas can lead to improved identification, documentation, and management of drug allergies, ultimately enhancing patient outcomes.

Limitations

This study has certain limitations that should be considered when interpreting the results. The cross-sectional design captures attitudes and practices at a single point in time, which may not reflect changes over time. The reliance on self-reported data may introduce response bias, as participants might overreport desirable behaviors or underreport undesirable ones. Additionally, the study was conducted in a specific region, which may limit the generalizability of the findings to other settings with different healthcare infrastructures or cultural contexts.

Conclusion

The study reveals a generally positive attitude among HCPs toward the importance of advanced knowledge and proactive practices in managing drug allergies. However, identified gaps in knowledge satisfaction, reflection on practice, inconsistent testing practices, and variability in institutional support highlight the need for targeted educational interventions, standardized protocols, and improved access to resources. By addressing these areas, healthcare systems can enhance the quality of care provided to patients with drug allergies, thereby improving patient safety and outcomes.

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