

Privileges of Pharmacists in Saudi Arabia: Drug Monitoring and Providing Education to Healthcare Professionals

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ABSTRACT

Objectives: To explore the privileges of pharmacists with regard to the drug monitoring and providing education to healthcare professionals in Saudi Arabia. **Methods:** This is a 4-month cross-sectional survey regarding drug monitoring and providing education to healthcare professionals in Saudi Arabia. The study consisted of two parts: the first part collected demographic information and the second part comprised a questionnaire with 28 questions divided into 4 domains. The questions were derived from previous literature and from the regulatory standards of the American Society of Health-System Pharmacists (ASHP). The four domains were as follows: management and resources, pharmacist prescribing and therapeutic interchange, clinical and administration privilege and drug monitoring and healthcare education. The responses were obtained using a 5-point Likert response scale system with close- and open-ended questions. The survey questionnaire was distributed in an electronic format to the director of pharmacy. In this study, we analyzed pharmacist's privilege with regard to drug monitoring and the education of healthcare providers. All data were obtained through the Survey Monkey system. **Results:** The survey was distributed to 36 hospitals. Most of the pharmacist's privilege in drug monitoring and documentation of the clinical impact and cost avoidance was related to patient counseling (90.63%), adverse drug reactions (88.24%) and drug quality reporting (87.50%). Most of the candidates were students from Diploma in Pharmacy (50.00%) followed by (47.22%) pharmacy student and (44.44%) pharmacy technician. Majority of the pharmacists having privileges in providing education and training was available for pharmacists and clinical pharmacists. Finally, pharmacy technicians delivered most of the education and training to general physicians, nurses and specialist physicians. **Conclusion:** In Saudi Arabia, privileges of a pharmacist with regard to drug monitoring do not exist in various departments of hospitals such as neonates, pediatrics and geriatrics patients. Regular and clinical pharmacists had most of the privileges in providing education and training to the healthcare professionals and few of the healthcare professionals received education and training by the pharmacists. Therefore, there is an increasing demand of a comprehensive awareness program about privileges of a pharmacist in the Kingdom of Saudi Arabia.

Key words: Privileges, Pharmacists, Drug Monitoring, Education, Healthcare, Professionals, Saudi Arabia.

INTRODUCTION

The role of pharmacists has been expanding in the last few years, which involves different areas that define patient-centered care as the primary objective.^{1,2} The pharmacist's presence in the hospital ensures the safe and effective use of medicines. Furthermore, the participation of pharmacists in drug therapy management improves outcomes of drug therapy, facilitates patient adherence to therapy and increases the effectiveness of treatment.³ Providing patient education and counseling improves therapeutic outcomes, patient compliance and quality of life as well as increases patient's perception about medication and lifestyle modifications in chronic diseases.⁴ Due to the increase in wages, most Saudi pharmacists end up practicing in hospital settings rather than in retail pharmacies. The role of hospital staff pharmacists includes the management of medication storage and supplies, medication verification and dispensing, provision of drug information to other healthcare providers and training of students and residents.⁵ In addition, they participate in sterile preparation of chemotherapy or medications and are involved in the identification and reporting of adverse

drug events (ADEs).⁵ Most of the hospitals have an ADR reporting program, a medication error reporting program and a multidisciplinary medication safety committee.^{6,7} The committee's tasks are to analyze the reported ADRs and medication errors and create a modified system or policies to avoid further errors in the pharmacy department.⁶ Many hospitals in Saudi Arabia are accredited by the Joint Commission International, where the hospitals are aware of the importance of quality for improving healthcare. Quality indicators such as the number of prescriptions filled, patient satisfaction, patient's waiting time, number of dispensing errors and others are measured, where the services are modified based on their outcomes.⁸ The pharmacists play a critical role in developing the healthcare system through their involvement in the successful use of pharmacological therapies, medication safety activities, enhancing therapeutic plans along with patient counseling, increased patient adherence and practical cooperation within the medical team.⁹⁻¹⁵ ASHP national survey (2015) divided drug monitoring and patient counseling into a wide variety of activities such as handling of cases of

ADRs, identification of patients requiring monitoring, monitoring orders for inpatients and pharmacist performance inpatient counseling in the outpatient pharmacy.¹⁶ A previous study has focused on the pharmacy practice with an emphasis on drug monitoring and patient education in a local setting, however, it was conducted with limited number of hospitals in the Riyadh region.³ Another detailed study discussed about drug monitoring in 100 hospitals located at various regions in Saudi Arabia.⁷ Previous studies have only discussed the pattern of drug monitoring and education of healthcare providers, whereas no study has focused on pharmacists' privileges with regard to drug monitoring and providing education to healthcare professionals. Therefore, in this study, we aimed to explore the privileges of a pharmacist with emphasis on drug monitoring and providing education to healthcare professionals in the Kingdom of Saudi Arabia (KSA).

METHODS

This is a 4-month cross-sectional survey regarding privileges of pharmacists in Saudi Arabia. The study consisted of two parts: the first part collects demographic information and the second part comprises a questionnaire with 28 questions divided into 4 domains: These domains are derived from previous literature and from the guidelines and regulations stated by the ASHP.¹⁷⁻²¹ The four domains are as follows: privilege management and resources, pharmacist prescribing and therapeutic interchange, clinical and administrative privilege and drug monitoring and healthcare education. The responses were obtained via a 5-point Likert response scale system with close- and open-ended questions. The survey was distributed in an electronic format and was distributed to the director of hospital pharmacy, deputy director, or to the pharmacy quality management. The follow-up was done via email and telephone after every 1-2 weeks. All primary healthcare centers and regional pharmacy administration at MOHs were excluded from the study. In this study, we analyzed privilege of a pharmacist with respect to drug monitoring and providing education and training to healthcare professionals. All data were obtained through the Survey Monkey system and analyzed using Statistical Package of Social Sciences (SPSS) version 20. The data were validated by 3 methods; three authors reviewed the survey independently. The pilot distribution of the survey had been done and the survey correct accordingly. Cronbach's alpha was calculated to test the internal validity. The survey was exempted from the international guidelines of institutional review boards (IRB).²²

RESULTS

The survey was distributed to 36 hospitals. Of them, 19.44% of the hospitals had 100–199 beds and had <50 beds, while 13.89% had 50–99 beds, 300–399 beds and ≥600 beds hospitals. Of the total 36 hospitals, 18 (50.00%) were accredited by the CBAHI, 17 (47.22%) were accredited by the Saudi Commission of Health Specialties and 13 (36.11%) were accredited by the Joint Commission, whereas 5 (13.89%) hospitals had no accreditation by any organization and 13 (36.11%) hospitals had their 50–74% of the patients covered by a health insurance. The majority of the responders were in the age group of 41–65 years (17 (47.22%)). Majority of the responders were Saudi (32 (88.89%)) and non-Saudi (4 (11.11%)) nationals. Most of the responders had a degree of Diploma in Pharmacy (14 (38.89%)) and the Bachelor of Science in Pharmacy (12 (33.33%)). Most of the responders had <1 year (46.67%) experience in pharmacy, whereas 30.77% of the responders had 4–6 years of experience in clinical pharmacy and 43.75% had >6 years of experience in pharmacy administration (Tables 1 and 2). Most of the privileges related to the drug monitoring and documentation of the clinical impact and cost avoidance was for patient counseling (90.63%) and ADRs (88.24%) followed by drug quality reporting (87.50%), nonformulary requests (84.85%)

and drug information inquiries (82.35%). Most of the privileges were related to the documentation of ADRs for neonatal patients (41.18%) and nonformulary requests (39.39%), whereas in the case of pediatrics, most of the privileges were related to the documentation of patient counseling (59.38%) and drug quality reporting (56.25%). In the case of adult patients, the privileges were related to patient counseling (84.38%) and pharmacist intervention (75.76%) and in geriatrics patients, it was patient counseling (46.88%), nonformulary requests (45.45%) and pharmacist intervention (45.45%) (Table 3). Most of the pharmacists had the privilege to provide education and training to Diploma in Pharmacy students (18 (50.00%)) followed by Pharmacy students (17 (47.22%)) and pharmacy technician (16 (44.44%)) (Table 4). The majority of the privilege of a pharmacist in providing education and training was for pharmacist (111) followed by clinical pharmacists (77) and pharmacy technician (63) periodically, whereas most of the education and training was delivered to the following healthcare professionals by the pharmacy staff: general physician (71), nurses (52) and specialist physicians (46) periodically (Tables 5 and 6). The Cronbach's alpha test results was 0.983.

DISCUSSION

The General Administration of Pharmaceutical Care at MOH in KSA released the updated pharmacy strategic plan with an emphasis on essential pharmaceutical care services and advanced clinical pharmacy services including patient medication counseling and drug therapy monitoring.²³ The strategic plan consisted of several phases, which also included the implementation phase. During this phase, the task force committee is responsible for establishing more than 30 pharmacy practice programs that are patient-centric. For instance, medications safety program takes care of the detection and prevention of medication errors by taking care of ADRs. Furthermore, the programs include all elements of Institution of Safe Medication Practice and all requirements of medication safety standards of the CBAHI.²⁴ In this study, we aimed to explore privileges of a pharmacist related to the drug monitoring and in providing education and training to the healthcare providers. Our results showed that most of the privileges related to the drug monitoring and documentation of the clinical impact and cost avoidance was recorded for patient counseling and ADRs. The results of drug monitoring was better than those that has been reported by Alomi *et al.*⁷ and lower than those that was reported by Pedersen *et al.*¹⁶ This result is expected because of the good implementation of medications safety program; however, our results were lower than that reported in the USA because the program was started recently.^{3,16} More than half of hospital pharmacies ensure that the clinical effectiveness of cost avoidance of drug monitoring activities is measured. This is expected because the pharmacy administration began to measure the effectiveness of pharmacy services through clinical and economic outcomes. The implementation of pharmacy research is insufficient, which is due to the poor knowledge and inadequate experience related to scientific research, which is reported by Alomi *et al.*⁷

Bachelor of Science in Pharmacy or Diploma in Pharmacy students are sent for training to most hospital pharmacies; therefore, it is normal to find an increased number of trainees every year. However, there were few pharmacy students because most of the hospitals need the accreditation by Saudi Commission for Healthcare Specialties for pharmacy residency program. However, the pharmacy residency programs were found to be better than previous study because of the expansion of the pharmacy training services in KSA.²⁵ Pharmacist and clinical pharmacist had most of the privileges in providing education and training on a weekly basis; they could also provide short courses (5 days). However, there were not many clinical pharmacy residency programs that existed in KSA. Resident trainees were very few in this study and higher than what has been reported by Alomi *et al.*²⁵ This is because hospitals have more number of Diploma students and difficult to apply for clinical pharmacy programs.

Table 1: Demographic information regarding responder's qualifications.

Nationality	Response Count	Response Percent	No. of hospital Licensed Beds	Response Count	Response Percent
Saudi	32	88.89%	< 50	7	19.44%
Non-Saudi	4	11.11%	50-99	5	13.89%
Answered question	36		100-199	7	19.44%
Skipped question	0		200-299	1	2.78%
Age	Response Count	Response Percent	300-399	5	13.89%
20-30 years	2	5.56%	400-499	3	8.33%
31 - 40 years	16	44.44%	= or > 600	5	13.89%
41 - 65 years	17	47.22%	Medical City	3	8.33%
more than 65 years	1	2.78%	Answered question	36	
Answered question	36		Skipped question	0	
Skipped question	0		The hospital accreditation	Response Count	Response Percent
Academic qualifications	Response Count	Response Percent	CIBAHI	18	50.00%
Diploma Pharmacy	3	8.33%	Joint Commotion USA	13	36.11%
Bsc. Pharm	12	33.33%	Canada	0	0.00%
M.S	2	5.56%	Saudi Council	17	47.22%
Msc. Clinical Pharmacy	6	16.67%	None	5	13.89%
Pharm.D.	14	38.89%	Answered question	36	
Ph.D	1	2.78%	Skipped question	0	
MBA	6	16.67%	Total number of patients covered by health insurance	Response Count	Response Percent
Pharmacy Residency Two years (R1)	2	5.56%	Non	6	16.67%
Pharmacy Residency one year (R2)	0	0.00%	< 25%	8	22.22%
Fellowship	1	2.78%	25-49%	6	16.67%
Other (please specify)	2	5.56%	50-74%	13	36.11%
Answered question	36		75-100% of our patients.	3	8.33%
Skipped question	0		Answered question	36	
			Skipped question	0	

Table 2: Information about responder's experiences.

Years of experience	Pharmacy Practice	Percent	Clinical Pharmacy	Percent	Pharmacy Administration	Percent	Response Count
0	4	30.77%	4	30.77%	5	38.46%	13
< 1 year	7	46.67%	4	26.67%	4	26.67%	15
1-3	9	39.13%	6	26.09%	8	34.78%	23
4-6	7	26.92%	8	30.77%	11	42.31%	26
> 6 years	14	43.75%	4	12.50%	14	43.75%	32
Answered question							36
Skipped question							0

Most of the education and training programs were delivered by the pharmacist to general physicians, nurses and specialized physicians and most of the educational courses were delivered weekly for CME, orientation program and short educational courses (1–5 days). This is because of the

requirements of the MOH or local or international accreditation organizations.²⁵ These investigations are not done previously with these details to compare the finding with either local or international studies in term of pharmacist privilege of education and training activities and the privi-

Table 3: pharmacist's privilege of drug monitoring and documentation of the clinical impact and cost avoidance.

Answer Options	Neonates	Pediatrics	Adults	Geriatrics	We do not have it	Response Count	Number of existed services	Percentage of existed services
Medication errors	29.41%	44.12%	67.65%	38.24%	23.53%	34	26	76.47%
Adverse drug reactions	41.18%	50.00%	73.53%	44.12%	11.76%	34	30	88.24%
Drug quality reporting	34.38%	56.25%	75.00%	40.63%	12.50%	32	28	87.50%
Patient counseling	34.38%	59.38%	84.38%	46.88%	9.38%	32	29	90.63%
Pharmacist intervention	33.33%	48.48%	75.76%	45.45%	18.18%	33	27	81.82%
Drug information inquiries	35.29%	41.18%	73.53%	44.12%	17.65%	34	28	82.35%
Poisoning information inquiries	29.03%	32.26%	58.06%	32.26%	32.26%	31	21	67.74%
Drug Utilitarian Evaluation activities	30.30%	39.39%	60.61%	33.33%	27.27%	33	24	72.73%
Home healthcare activities	19.35%	19.35%	48.39%	32.26%	35.48%	31	20	64.52%
Therapeutic Interchange activities	31.25%	43.75%	53.13%	43.75%	31.25%	32	22	68.75%
Pharmacy Research	19.35%	12.90%	41.94%	19.35%	45.16%	31	17	54.84%
Non formulary requests	39.39%	42.42%	69.70%	45.45%	15.15%	33	28	84.85%
answered question								35
skipped question								1

Table 4: The hospital pharmacist's privilege in education and training for students and hospital staff.

Answer Options	Response Count	Response Percentages
Pharmacy Technician students	12	33.33%
Pharmacy Technician	16	44.44%
Pharmacist Student	17	47.22%
Pharm. D degree students	18	50.00%
Bsc. Pharm. (New Employee)	10	27.78%
Bsc Residency	5	13.89%
Post Pharm D or Master Residency	9	25.00%
Post Pharmacy Technician Residency	2	5.56%
Nursing school	2	5.56%
Medical school	5	13.89%
Non	1	2.78%
Answered	36	
Skipped	0	

Table 5: The pharmacist's privilege in education and training available for pharmacy staff.

Answer Options	Pharmacy Technician	Pharmacist	Clinical Pharmacist	Pharmacist supervisor	Assistant director of pharmacy	Director of Pharmacy	Total	Response Count
Weekly lecture CME	15	28	20	13	8	9	93	34
Short education course 1-5 days	12	20	16	6	6	4	64	30
Long training session 4-5 weeks	9	19	15	6	5	4	58	29
General Pharmacist residency program	6	16	9	6	4	4	45	26
Specialized pharmacist residency program	8	11	11	3	3	4	40	25
Distance learning pharmacy education	13	17	6	7	5	2	50	25
Total	63	111	77	41	31	27	350	
answered question								35
skipped question								1

Table 6: The pharmacist's privilege of education and training delivered to Healthcare professionals by pharmacy staff.

Answer Options	Nurse	Nurse Supervisor	General Physician	Specialist Physician	Consultant Physician	Nutritionist	Other health care provider	Total	Response Count
Weekly lecture CME	13	6	18	13	10	7	2	69	31
Short education course 1-5 days	9	8	12	12	5	1	4	51	25
Long training session 4-5 weeks	9	4	12	7	3	0	3	38	25
Orientation program	13	9	17	9	10	4	6	68	28
Distance learning CME education by pharmacy	8	3	12	5	4	1	4	37	24
Total	52	30	71	46	32	13	19	263	
answered question									34
skipped question									2

lege of pharmacy education and training programs at MOH hospitals. Further studies should focus on monitoring this information every year in order to improve the services at hospital pharmacies.

CONCLUSION

Two-thirds of the privileges of the pharmacist is given to monitoring drug therapy and one-third on education and training in the KSA. Majority of the privilege related to drug therapy monitoring activities were common with few improvements. Further studies should target a comprehensive review of pharmacist's privilege with regard to drug therapy monitoring and education and training in KSA.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

ADRs: adverse drug reactions; **CME:** continuing medical education; **MOH:** Ministry of Health; **KSA:** Kingdom of Saudi Arabia; **CBAHI:** Saudi Central Board for Healthcare Accreditation; **ASHP:** American Society of Health-System Pharmacists; **SPSS:** Statistical Package of Social Sciences.

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