

# National Survey of Clinical Pharmacy Practice in Saudi Arabia-2017-2018: Administration and Management

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## ABSTRACT

**Objectives:** In this study, we explored the national survey of clinical pharmacy practice in Saudi Arabia during 2017-2018 with an emphasis on the administration and management of pharmacy practice.

**Methods:** This is a 4-month cross-sectional national survey of clinical pharmacy practice in Saudi Arabia. The survey consisted of two parts: the demographic information and the second part comprised a questionnaire with 51 questions divided into four domains. The domains were derived from the standards and guidelines provided by the American Society of Health-System Pharmacists (ASHP), Saudi Pharmaceutical Society (SPS), the international standard of Joint Commission of Hospital Accreditation, in addition to the local standards of Saudi Center of Healthcare Accreditation. The four domains were the clinical pharmacy administration and management, performances and activities, education and training and workload documentation. We used 5-point Likert response scale system with close-and open-ended questions to obtain the responses. The questionnaire was distributed in an electronic format to the 31 directors of pharmacies at hospitals. In this study, we conducted a national survey of clinical pharmacy practice at hospitals in Saudi Arabia on performances and activities. All data were obtained through the Survey Monkey system. **Results:** The survey questionnaire was distributed to 31 hospitals. The average score of the elements related to the clinical pharmacy administration was 3.32 (66.31%). Most of the elements responded were policies and procedures of pharmacist privilege (4.00 (80.00%)) followed by the mission of clinical pharmacy (3.87 (77.40%)) and vision of clinical pharmacy administration (3.71 (74.20%)). Most of the clinical pharmacy services provided for adult, pediatric, neonate and geriatric patients was for critical care, medical services and for emergency. Most of the hospitals had no satellite services assistant the clinical pharmacy services (22 (70.97%)). The majority of the responders agreed that clinical pharmacy services improve the safety and effectiveness of patient care (27 (93.10%)), decreases morbidity and mortality rate (23 (79.31%)) and increases the pharmacist's role toward patient care (20 (68.97%)). **Conclusion:** The elements of clinical pharmacy administration were not adequate in the KSA. Most of the hospital services received the clinical pharmacy services not exceeding 50%. Despite the fact that the pharmacy administration has a good record of clinical pharmacy services, there are not enough resources to provide over 24-hr service. Revision of clinical pharmacy services is highly necessary in Saudi Arabia.

**Key words:** Clinical, Pharmacy, Practice, Administration, Management, Saudi Arabia.

## INTRODUCTION

The clinical pharmacy services were founded in the late 1970s when the clinical pharmacy department was established in the college of pharmacy.<sup>1</sup> Two famous hospitals in the KSA, King Khalid University Hospital and King Faisal Specialist Hospital and Research Center, started providing clinical pharmacy services at the same time in the early and mid-1980s. Then, the clinical pharmacy services were extended at the MOH hospital and National Guard Hospital in the late 1980s and in the early 1990s in Riyadh city. Thus, a significant expansion occurred when the college of pharmacies started providing Doctor of Pharmacy degree. The general administration of pharmaceutical care (GAPC) at the Ministry of Health (MOH) in Saudi Arabia was started on 13 December 2001; and encroach significant phases.<sup>2,3</sup> The advance developmental phase consists of five general goals including the first goal focused on updating the strategic plan (2012–2022) and on constructing the pharmacy practice based on clinical pharmacy.<sup>4</sup> It also focused to cope with the shift that the pharmacy

profession was facing from being product-oriented to patient-oriented.<sup>5</sup> According to the evaluation of the pharmacy strategic plan of 2013–2016 in Saudi Arabia, the national pharmacy administration programs have not fully implemented yet.<sup>2</sup> Several international and local investigations have published on the pharmacy practice, including clinical pharmacy services in 2012.<sup>6–11</sup> Recently, the pharmacy practice services were updated with a separate section on clinical pharmacy services.<sup>12–20</sup> However, various international studies have discussed on the clinical pharmacy services, including the administration of clinical pharmacy, education and training and workforce and performances.<sup>21–25</sup> However, to the best of our knowledge there are no studies conducted in the Saudi Arabia about clinical pharmacy practice. In the clinical pharmacy administration, the focus is on nine elements: vision of pharmacy, the mission of pharmacy, strategic plan, annual plan, policies and procedures, clinical pharmacist job satisfaction, clinical pharmacist competency, pharmacy technician competency and clinical

pharmacy quality. The purpose of this study was to measure the implementation of these elements among the participated hospitals in Saudi Arabia and to take a view of the most type of patients that benefit from the clinical pharmacy service.

## METHODS

This is a 4-month cross-sectional national survey of clinical pharmacy practice in Saudi Arabia. The study consisted of two parts: the first part collected the demographic information and the second part comprised a questionnaire with 51 questions divided into four domains. The domains were derived from American Society of Health-System Pharmacists (ASHP) and Saudi Pharmaceutical Society (SPS), the international standard of Joint Commission of Hospital Accreditation, as well as from the local standards of CBAHI.<sup>6-8,12-27</sup> The domains were clinical pharmacy administration and management, performances and activities, education and training and workload documentation. We used 5-point Likert response scale system with close- and open-ended questions to obtain responses. We distributed the questionnaire in an electronic format to 31 directors of pharmacies at various hospitals in Saudi Arabia. The patients were followed-up via email and telephonic call after every 1-2 weeks. All primary healthcare centers, regional pharmacy administrations at MOH were excluded from the study. In this study, we analyzed the national survey of clinical pharmacy practice at hospitals in Saudi Arabia with regard to performances and activities. All data were analyzed through the Survey Monkey system and analyzed using Statistical Package of Social Sciences (SPSS) version 20. The data were validated using three different methods and more than two authors reviewed the survey independently. Then, the pilot study was conducted and the survey data was corrected accordingly. The Cronbach's alpha test for internal validity was calculated. This survey was exempted from the international guidelines of institutional review boards (IRB).<sup>28</sup>

## RESULTS

The survey questionnaire was distributed to 31 hospitals. Most of the hospitals have 200–299 beds (7 (22.58%)), 300–299 beds (6 (19.35%)), 50–99 beds (5 (16.13%)) and 400–499 beds (5 (16.13%)). Of the total 31 hospitals, 19 (67.86%) hospitals were accredited by the CBAHI, 5 (17.86%) hospitals were accredited by the Saudi Commission of Health Specialties and 4 (14.29%) hospitals were accredited by the Joint Commission. Majority of the hospitals (23 (74.19%)) covered <25% of their patients with a health insurance. Most of the responders had obtained a BSc in Pharmacy degree (13 (41.94%)) and Doctor of Pharmacy (9 (29.03 %)) degree and none of the responders (31 (100%)) were certified by the Board of Pharmaceutical Specialties. Most of the responders had 1–3 years of experience in pharmacy (32.26%), whereas the others had 4–6 years of experience in pharmacy (22.58%) (Table 1). The average score of the elements of clinical pharmacy administration was 3.32 (66.31%). Most of the elements with responses belonged to the domains policy and procedure of pharmacist privilege (4.00 (80.00%)) followed by mission of clinical pharmacy (3.87 (77.40%)) and vision of clinical pharmacy administration (3.71 (74.20%)) (Table 2). Most of the clinical pharmacy services provided for the adults were related to the critical care (64.52%), medical services (61.29%) and emergency services (58.62%), whereas for pediatric patients were provided services for critical care (38.71%), medical services (38.71%) and emergency services (37.93%). In the case of neonates, most of the services provided were for critical care (25.81%), medical services (25.81%) and emergency services (20.69%) and for geriatric patients, it was for critical care (29.03%), emergency services (27.59%) and medical services (25.81%) (Table 3). Most of the hospitals have no assistant at their satellite service (22 (70.97%)). Most of the satellite pharmacy were provided for a duration of 8 hr (15 (48.39%))

with 1–3 hr of services provided by the pharmacist and pharmacy technicians (14 (45.16%) and 9 (30%), respectively) (Table 4). Majority of the responders agreed that clinical pharmacy services improved the safety and efficacy of patient care (27 (93.10%)), with a decrease in the rate of morbidity and mortality (23 (79.31%)) and increase in the pharmacist's role toward patient care (20 (68.97%)). Despite this, 24-hr coverage of clinical pharmacy services was provided by some of the hospitals (21 (75%)) (Table 5). The Cronbach's alpha test value was found to be 0.765.

## DISCUSSION

New Saudi Vision 2030 was started to improve the healthcare system, including pharmacy services in the KSA.<sup>29</sup> The pharmaceutical care services has multiple sections for instance acute care inpatient pharmacy, ambulatory care as outpatient pharmacy, clinical pharmacy and inventory management and supply. In order to implement the policies of new vision in the clinical pharmacy practice, it is important to determine the baseline to set up the strategic plan in the future. This study analyzed the clinical pharmacy services at different hospitals in various regions in KSA. Our results of the survey showed that the response of the clinical pharmacy services was from different organizations that includes the MOH hospitals, governmental non-MOH hospitals and military and private hospitals within geographic areas in the KSA. This will provide a wider picture of the clinical pharmacy services at different healthcare institutions at different locations in the KSA. However, the number of responders was less and the view will not be fully and completed. Different hospitals had different numbers of bed sizes, from 200 to 500-bed capacity, which was good enough to reflect the status of the clinical pharmacy services at various bed sizes. The majority of the hospitals were not covered by medical insurance. This is expected because the number of private hospitals were not more and no hospitals had a complete coverage of their patients with medical insurance. Our results showed that most of the responders were BSc in Pharmacy or Doctor of Pharmacy degree holders with 1–6 years of experience in pharmacy. The responders did not have any residency or certificate of pharmaceutical board specialty. In addition, the number of responders with Master of Pharmacy degree was less. As results, thoseThe pharmacist's qualification might play an important role in the level of clinical pharmacy services provided and maybe expected the level of clinical pharmacy services not reach the optimal level. The clinical pharmacy administration is a new field,<sup>30</sup> and it consists of nine elements: vision of pharmacy, the mission of pharmacy, strategic plan, annual plan, policies and procedures, clinical pharmacist job satisfaction, clinical pharmacist competency, pharmacy technician competency and clinical pharmacy quality. The implementation of these elements has not been fully achieved in Saudi Arabia but was found to be better than the previous study because of the lag time of publications and the adaptation of new pharmacy model for Vision 2030 in Saudi Arabia. We expect that the implementation of the administration elements will improve and change after privatization.<sup>28</sup> The policies and procedures stand out, followed by the vision and mission of clinical pharmacy. This result is not surprising as a clear vision and mission always requires for strategic planning, which was already implemented and required annual reviewing and forecasting once in every 3- 4 years.<sup>31</sup> Critical care is considered the most important clinical pharmacy service provided for all age groups. The positive impact of clinical pharmacists, specifically in critical care and in medical and emergency services has been clearly documented; their impact is reflected in reducing drug costs, provides vital educational function and provides continuous and individualized pharmacotherapeutic care.<sup>32,33</sup> The majority of the participants agreed that the services of clinical pharmacy influence the safety and effectiveness of patient care alongside decreasing morbidity and mortality.<sup>33,34</sup> The clinical pharmacy services should be extended to cover all various specialties and medical departments in the KSA. Unfortunately, most of

**Table 1: Demographic information regarding responder qualifications.**

No. of hospital licensed	Response N	Response %	Response N	Response %	Response N
< 50	3	9.68%	Diploma. Pharmacy	3	9.68%
50-99	5	16.13%	Bsc. Pharmacy	13	41.94%
100-199	2	6.45%	Master of Science	7	22.58%
200-299	7	22.58%	Doctor of Pharmacy	9	29.03%
300-399	6	19.35%	Two years Residency (R1)	0	0.00%
400-499	5	16.13%	Three years Residency (R2)	1	3.23%
= or > 600	1	3.23%	Ph. D	1	3.23%
Medical City	2	6.45%	M.B.A.	0	0.00%
Answered question	31		Answered question	31	0.95%
Skipped question	0		Skipped question	0	1.90%
The hospital accreditation	Response N	Response %	Board of Pharmaceutical Specialty	Response N	Response %
CBAHI	19	67.86%	Board Certified Ambulatory Care Pharmacist	0	0.00%
Joint Commotion USA	4	14.29%	Board Certified Critical Care Pharmacist	0	0.00%
Canada	0	0.00%	Board Certified Nuclear Pharmacist	0	0.00%
Saudi Council	5	17.86%	Board Certified Nutrition Support Pharmacist	0	0.00%
None	0	00.00%	Board Certified Oncology Pharmacist	0	0.00%
Answered question:	28		Board Certified Pediatric Pharmacy Specialist	0	0.00%
skipped	3		Board Certified Pharmacotherapy Specialists	0	0.00%
<b>The patients covered by health issuance</b>			Board Certified Psychiatric Pharmacist	0	0.00%
< 25%	23	74.19%	Non	31	100.00%
25-50%	3	9.68%	Answered question	31	
51-75%	3	9.68%	Skipped question	0	
76-100% of our patients.	2	6.45%	Years of Experiences in Clinical Pharmacy	Response N	Response %
Answered	31		< 1	3	9.68%
Skipped	0		1 – 3	10	32.26%
			4-6	7	22.58%
			>6	3	9.68%
Answered question				31	
Skipped question				0	

the hospitals had no assistant at their satellite services in clinical pharmacy services. This finding is lower than previous studies because the majority of the hospitals had decentralized pharmacy and automated drug distribution system.<sup>6,35</sup> The satellite pharmacy does not exist at the previously surveyed hospitals, which needs to be developed and improved in the coming years. The new updated version of pharmacy strategic plan should provide excellent perception from pharmacy leaders.

## CONCLUSION

Clinical pharmacy services are very crucial elements in the KSA. The administration elements of clinical pharmacy services for instance strategic plan, annual plan, clinical pharmacist job satisfaction, clinical pharmacist competency, pharmacy technician competency and clinical pharmacy quality have not been fully implemented at hospitals. All clinical pharmacy services should be revised and further studies about clinical

**Table 2: Clinical pharmacy administration.**

Answer Options	76-100 % Existed		51-75 %		25-50 %		< 25 %		We do not have any it		Weighted Average	Percent Average	Response N
Vision of pharmacy	13	41.94%	6	19.35%	6	19.35%	2	6.45%	4	12.90%	3.71	74.20	31
Mission of pharmacy	14	45.16%	7	22.58%	5	16.13%	2	6.45%	3	9.68%	3.87	77.40	31
Strategic plan	10	32.26%	5	16.13%	7	22.58%	2	6.45%	7	22.58%	3.29	65.80	31
Annual plan	10	32.26%	2	6.45%	9	29.03%	3	9.68%	7	22.58%	3.16	63.20	31
Policy and procedure	13	41.94%	11	35.48%	4	12.90%	0	0.00%	3	9.68%	4.00	80.00	31
Clinical pharmacist Job satisfaction	7	22.58%	4	12.90%	5	16.13%	6	19.35%	9	29.03%	2.81	56.20	31
Clinical Pharmacist competency	6	19.35%	8	25.81%	5	16.13%	4	12.90%	8	25.81%	3.00	60.00	31
Pharmacy technician competency	4	12.90%	11	35.48%	7	22.58%	4	12.90%	5	16.13%	3.16	63.20	31
Clinical pharmacy quality management	8	25.81%	2	6.45%	6	19.35%	7	22.58%	8	25.81%	2.84	56.80	31
Average											3.32	66.31	
Answered													31
Skipped													0

**Table 3: Type of patient covered by clinical pharmacist.**

Answer Options	Adults		Pediatrics		Neonates		Geriatrics		Never		Response N
Critical care	20	64.52%	12	38.71%	8	25.81%	9	29.03%	11	35.48%	31
Emergency	17	58.62%	11	37.93%	6	20.69%	8	27.59%	13	44.83%	29
Medical	19	61.29%	12	38.71%	8	25.81%	8	25.81%	11	35.48%	31
Surgery	16	53.33%	9	30.00%	4	13.33%	6	20.00%	14	46.67%	30
Psychiatric	11	37.93%	6	20.69%	3	10.34%	6	20.69%	18	62.07%	29
Obstetrics and Gynecology	11	37.93%	5	17.24%	4	13.79%	5	17.24%	18	62.07%	29
Answered											31
Skipped											0

pharmacy services are highly suggested in the KSA.

## ACKNOWLEDGEMENT

None.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## ABBREVIATIONS

**MOH:** Ministry of Health; **ASHP:** American Society of Health-System Pharmacists; **SPS:** Saudi Pharmaceutical Society; **CBAHI:** Saudi Center for Healthcare Accreditation; **KSA:** Kingdom of Saudi Arabia; **SPSS:** Statistical Package of Social Sciences; **IRB:** Institutional Review Board; **GAPC:** General Administration of Pharmaceutical Care.

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**Table 4: The role of satellite pharmacy with clinical pharmacy services.**

**The number satellite pharmacy help in clinical pharmacy services**

Answer Choices	Responses	
Yes	9	29.03%
No	22	70.97%
Answered	31	
Skipped	0	

**The working hours of Satellite Pharmacy**

Answer Choices	Responses	
8 hr	15	48.39%
16 hr	0	0.00%
24 hr	3	9.68%
Not exist	13	41.94%
Answered	31	
Skipped	0	

**The No. Pharmacists at Satellite Pharmacy over 24 hrs.**

Answer Choices	Responses	
1-3	14	45.16%
4-6	0	0.00%
7-9	1	3.23%
10-12	0	0.00%
= or > 12	1	3.23%
Not exist	15	48.39%
Answered	31	
Skipped	0	

**The No Pharmacy Technicians at Satellite Pharmacy over 24 hrs.**

Answer Choices	Responses	
1-3	9	30.00%
4-6	4	13.33%
7-9	1	3.33%
10-12	0	0.00%
= or > 12	1	3.33%
Not exist	15	50.00%
Answered	30	
Skipped	1	

**Table 5: The perception impact of clinical pharmacy services.**

**The clinical pharmacy service in the Hospital improve the safety and effectiveness of patients care?**

Answer Choices	Responses	
Yes	27	93.10%
No	2	6.90%
Answered	29	
Skipped	2	

**Clinical pharmacy service in the Hospital decrease worsening of clinical outcomes.(medication errors , death..)**

Answer Choices	Responses	
Yes	23	79.31%
No	2	6.90%
Don't know	4	13.79%
Answered	29	
Skipped	2	

**Are clinical pharmacists available over 24 hr, especially at weekend**

Answer Choices	Responses	
Always	1	3.57%
often	1	3.57%
sometimes	5	17.86%
rarely	21	75.00%
Answered	28	
Skipped	3	

**The implementation of 24\_hr clinical pharmacy service in institutions increased the role of pharmacists in the Patient care**

Answer Choices	Responses	
Yes	20	68.97%
No	4	13.79%
Don't know	5	17.24%
Answered	29	
Skipped	2	

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