National Survey of Pharmacy Practice at MOH Hospitals in Saudi Arabia 2016-2017: Pharmacy Management and Resource

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Received: 12 October 2017;

Accepted: 27 December 2017

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Abstract

Objective: To explore the National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia 2016-2017: Pharmacy Management and resources. **Methods:** It is a 4-months cross-sectional National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia. The study consisted of two parts; the demographic information and the second part contained eighty-five questions divided into nine domains drove from American Society of Health-System Pharmacists (ASHP) and Saudi Pharmaceutical Society (SPS) survey, the international standard of Joint Commission of Hospital Accreditation, and the local standards of Saudi Center of healthcare accreditation. An electronic questionnaire was distributed to one hundred eighty-five directors of pharmacies at MOH hospitals. The study discussed and analyzed National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia: Pharmacy Management and resources. **All analysis was done through survey monkey system.** **Results:** The survey questionnaire was distributed to 185 hospitals, the rate of reply, was 105 (56.75%). The most of the hospital pharmacies provide their services to the adult emergency (91.18%), medical (90.82%), and surgical patients (87.76%). The highest number of prescriptions annually was adults emergency (5,094,000), Pediatrics emergency (3,357,000) and medical services (2,340,000). The majority of pharmacy services consisted of outpatient pharmacy 88 (92.63%), inpatient pharmacy 81 (82.65 %), pharmacy store 77 (77.00%), and emergency pharmacy 63 (68.48%). The seldom finding of pharmacy services were satellite pharmacy 7 (8.33%), clinical pharmacy 7 (10.47%), followed by repackaging system 27 (31.76%) and Intravenous admixture servicers 29 (32.22%). The total number prescriptions dispensed were (32,643,000) annually with (25,110.01) prescriptions per hospital per year. The total numbers of pharmacists were (953), and pharmacy technicians were (1251). The average space size of hospital pharmacy was (113.98 m²) with the highest space, outpatient pharmacy (32.16 m²) followed by inpatient pharmacy (24 m²) and pharmacy store (22.42 m²). **Conclusion:** Most of the hospital pharmacies missed some essential of pharmacy practice with emphasis on Human Resources and clinical pharmacy services. Implementing MOH pharmacy strategic plan with close monitoring is required for all hospitals in Saudi Arabia.

Key word: Pharmacy management, Human resources, Ministry of Health, Saudi Arabia.

INTRODUCTION

The Hospital pharmacy establishment needs minimum standard. The American society of hospital pharmacy published minimum standard of hospital pharmacy consisted of several elements for instance but not limited to the leadership, drug distribution and control Human Resources, education, training, and pharmacy research.^[1] The ASHP conducted a survey at every certain period to measure the pharmacy services across united states of America over past years until now.^[2,3,4,5,6,7] Recently the ASHP is focusing on six domain like prescribing, transcending, dispensing, Administration, drug monitoring, and patient education.^[2,3] Every year surveyed about two domains. The Saudi Pharmaceutical Society with the cooperation of ASHP before several years did a survey in Kingdom of Saudi Arabia with same six domains.^[8,9,10] However, the number of hospitals was few and not investigated Ministry of health hospitals. Also, it was hard to find hospital pharmacy practice in Gulf and Middle East counties. The objective of this

study is to explore the National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia, with emphasis on the pharmacy management and resources.

METHODS

It is a 4-months cross-sectional National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia. The study consisted of two parts; the demographic information and the second part contained eighty-five questions divided into nine domains drove from American Society of Health-System Pharmacists (ASHP) and Saudi Pharmaceutical Society (SPS) survey, the international standard of Joint Commission of Hospital Accreditation in addition to the local standards of Saudi Center of healthcare accreditation.^[3,5,8,9,10,11,12] The parts were pharmacy management and resources, prescribing and medication control, preparation of medications and dispensing, computerized and pharmacy technology, clinical pharmacy services, drug

Table 1: Demographic responder qualifications information.

	Response N	Response %			
Nationality	Response N	Response %	No. of hospital Licensed Beds	Response N	Response %
Saudi	101	96.2%	< 50	32	30.5%
Non-Saudi	4	3.8%	50-99	21	20.0%
Answered question	105		100-199	16	15.2%
Skipped question	0		200-299	19	18.1%
Age	Response N	Response %	300-399	10	9.5%
18 - 40	99	94.29%	400-499	6	5.7%
40 - 56	5	4.76%	= or > 600	1	1.0%
65+	1	0.95%	Medical City	0	0.0%
Answered question	105		Answered question	105	
Skipped question	0		Skipped question	0	
Aacademic qulifications	Response N	Response %	Board of Pharmaceutical Specialty	Response N	Response %
Diploma Pharmacy	28	26.67%	Board Certified Ambulatory Care Pharmacist (BCACP)	1	1.0%
Bsc. Pharm	59	56.19%	Board Certified Critical Care Pharmacist (BCCCP)	1	1.0%
M.S	10	9.52%	Board Certified Nuclear Pharmacist (BCNP)	0	0.0%
Msc. Clinical Pharmacy	0	0.00%	Board Certified Nutrition Support Pharmacist (BCNSP)	0	0.0%
Pharm.D.	10	9.52%	Board Certified Oncology Pharmacist (BCOP)	0	0.0%
Ph.D	2	1.90%	Board Certified Pediatric Pharmacy Specialist (BCPPS)	0	0.0%
MBA	1	0.95%	Board Certified Pharmacotherapy Specialists (BCPS)	1	1.0%
Pharmacy Residency Two years (R1)	2	1.90%	Board Certified Psychiatric Pharmacist (BCPP)	0	0.0%
Pharmacy Residency one year (R2)	0	0.00%	Non	95	96.9%
Fellowship	1	0.95%	Answered question	98	
Other (please specify)	2	1.90%	Skipped question	7	
answered question: 105 and skipped question: 0					

Table 2: The hospital's accreditation and health insurance.

Hospital accreditation										
Answer Options	Hospital beds								Response %	Response N
	< 50	50-99	100-199	200-299	300-399	400-499	= or > 600	Medical City		
CIBAHI	12	6	7	14	8	3	1	0	48.6%	51
Joint CommotionUSA	1	0	1	3	2	2	1	0	9.5%	10
Canada	0	0	1	0	0	0	0	0	1.0%	1
Saudi Council	11	10	4	3	1	1	0	0	28.6%	30
Other (please specify)	9	5	5	3	1	2	0	0	23.8%	25
answered question: 105 and skipped question: 0										
Health insurance coverage										
Answer Options	Hospital Beds								Response %	Response N
	< 50	50-99	100-199	200-299	300-399	400-499	= or > 600	Medical City		
Non	25	14	11	8	5	4	0	0	63.8%	67
< 25%	4	3	4	7	2	2	1	0	21.9%	23
25-49%	1	3	0	3	2	0	0	0	8.6%	9
50-74%	1	0	0	0	0	0	0	0	1.0%	1
75-100% of our patients.	1	1	1	1	1	0	0	0	4.8%	5
answered question: 105 and skipped question: 0										

monitoring and patient's education, pharmacy inventory control and stock management, Pharmacy education and training, and pharmacy total quality management. The 5-point Likert response scale system with closed and ended questions was used. An electronic questionnaire distributed to the one hundred eighty-five directors of pharmacies at MOH hospitals. The follow-up was taken by the email and telephone at every one-two week. All primary care centers, pharmacy administration at MOH or regions excluded from the study. The study discussed and analyzed National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia: Pharmacy Management and resources. All analyses are done through survey monkey system.

RESULTS

The survey questionnaire was distributed to 185 hospitals, the rate of reply, was 105 (56.75%) hospitals. Of that 30.5% (< 50 beds) hospitals, 20.0% of (50-99 beds) hospitals, 15.2% of (100-199 beds) hospitals, 18.1% of (200-299 beds) hospitals, 16.5% of (= or > 300 beds) hospitals. Of those, fifty-one (48.57%) hospitals accredited by CIBAHI, 30 (28.57%) hospitals accredited by Saudi Commission of Health Specialties, and ten (9.52%) hospitals only accredited by Joint Commission. While twenty-two (20.95%) hospitals were not accredited by any organizations and 67 (63.8%) patient were not covered by any health insurance. The majority age of responders was (18-40) years 99 (94.29%) while the nationalities were Saudi 101 (96.2%) and Non-Saudi 4 (3.8%). Most of the responders had BSc Pharm 59 (56.19%) and diploma of pharmacy 28 (26.67%) while 95 (96.9%) none certified of Board of Pharmaceutical Specialties. Most of the responders had pharmacy experiences 4-6 years (72.34%), while (40.00%) of responders had 1-3 years pharmacy administration, and (73.33%) had no experiences in clinical pharmacy as explored in Table 1, Table 2, and Table 3. The most of the hospital pharmacies provide their services to the adult emergency (91.18%), medical (90.82%), and surgical patients (87.76%). While the highest number of prescription annually was adults emergency (5,094,000), Pediatrics emergency (3,357,000) and medical services (2,340,000) as explored in Table 4 and Table 5. The majority of pharmacy services consisted of outpatient pharmacy 88 (92.63%), inpatient pharmacy 81 (82.65 %%), pharmacy store 77 (77.00%), and emergency pharmacy 63 (68.48%). The seldom finding of pharmacy services were satellite pharmacy 7 (8.33%), clinical pharmacy 7 (10.47%), followed by repackaging system 27 (31.76%) and Intravenous admixture services 29 (32.22%). The total number of prescriptions dispensed (32,643,000) annually with (25,110.01) prescriptions per hospital per year as explored in Table 6 and Table 7. The total numbers of pharmacists were (953), and pharmacy technicians were (1251). The average space size of hospital pharmacy was (113.98 m²) with the highest space, outpatient pharmacy (32.16 m²) followed by inpatient pharmacy (24 m²) and pharmacy store (22.42 m²) as explored in Table 8, and Table 9.

DISCUSSION

The general administration of pharmaceutical care updated all hospital pharmacies related issues based on the pharmacy strategic plan that is approved by MOH [13]. They updated hospital pharmacy skeleton, new

vision and mission along with policy and procedures. The pharmacy workforce updated with five times folds incremental.[14] Several pharmacy administration programs implemented for instance pharmacist job satisfaction, patient pharmacy services satisfaction, pharmacist competencies, and pharmacy patient bill of rights.[15,16,17] A new system for incremental salary for directors and supervisors of hospital pharmacy department included directors of pharmacy, inpatient supervisor, outpatient supervisor and drug information center director. Several educational courses conducted about pharmacy leadership skills for directors of hospital pharmacy. The pharmacy administration followed the ASHP best practice standards and Saudi Center of Healthcare Institution Accreditation and required from all hospital pharmacies to get accreditation from them.[11] Task force committee on Pharmacy quality management was implemented. The committee conducted several courses to train pharmacy staff about quality management. The authors investigated the strengths and weakness of hospital pharmacy practice with emphasis on pharmacy management and resources. The finding showed the most of the hospital pharmacies provide their services to the adult emergency medical, and surgical patients; the results are usually because hospital had that department with emphasis on the patient at an emergency department and had more visitors than admission patients as reported by MOH statistical yearbook.[18] The majority of four pharmacy services included at hospitals were an outpatient pharmacy, inpatient pharmacy, pharmacy store, and emergency pharmacy that are present at most of the hospitals. The hospitals still apply the old role of the pharmacist as the distribution without the complete concept of pharmaceutical resemble what reported by Alsultan ME *et al.*, as drug distribution centered model. [9] It was challenging to find pharmacy services were satellite pharmacy or clinical pharmacy because the role of clinical specialist centered made by the pharmacist is low as reported by Alsultan ME *et al.* (9). The finding of presenting of Intravenous admixture services was low as reported by Alsultan ME *et al.* [9] The total numbers of pharmacists and pharmacy technicians were less than what reported by Pedersen CA *et al.*, and there was a high shortage of pharmacy staff and less than MOH hospital pharmacy staff requirement standard.[12,14] The finding of space size of hospital pharmacy as general or for each department, was not sufficient as compared with MOH practice standard. This finding could not compare with previous studies because of unavailability of the data.

CONCLUSION

The primary element of pharmacy services not existed at most of MOH hospitals, includes pharmacy human resources, satellite pharmacy missed clinical pharmacy, and shortages of Intravenous services. The clinical role of pharmacist missed to the majority of department included emergency, medical and surgical department. Targeting to implement general update administration of pharmaceutical care planning is highly recommended at MOH hospitals in Kingdom of Saudi Arabia.

ACKNOWLEDGEMENT

None

Table 3: The responder experiences information.

Years of experience	Pharmacy Practice	Percent	Clinical Pharmacy	Percent	Pharmacy Administration	Percent	Response N
0	2	13.33%	11	73.33%	2	13.33%	15
< 1 year	12	38.71%	8	25.81%	11	35.48%	31
1-3	23	57.50%	1	2.50%	16	40.00%	40
4-6	34	72.34%	1	2.13%	12	25.53%	47
> 6 years	43	84.31%	0	0.00%	8	15.69%	51
answered question: 105 and skipped question: 0							

Table 4: Type of hospital services received pharmaceutical care services.

Answer Options	Hospital bed size							Medical City	Response Count	Percent Count
	< 50	50-99	100-199	200-299	300-399	400-499	= or > 600			
Adults Emergency										
No	6	2	1	0	0	0	0	0	9	8.82%
Yes	26	17	14	19	10	6	1	0	93	91.18%
Pediatrics Emergency										
No	8	3	0	3	0	3	0	0	17	18.09%
Yes	21	14	14	15	10	2	1	0	77	81.91%
Adults Critical Care										
No	16	6	1	1	0	2	0	0	26	29.55%
Yes	9	9	14	16	9	4	1	0	62	70.45%
Pediatrics Critical Care										
No	14	8	2	5	1	5	0	0	35	40.23%
Yes	12	7	11	12	9	0	1	0	52	59.77%
Neonates Critical Care										
No	17	11	2	6	3	5	1	0	45	54.22%
Yes	5	4	12	11	6	0	0	0	38	45.78%
Medical										
No	5	2	0	1	0	1	0	0	9	9.18%
Yes	24	17	15	17	10	5	1	0	89	90.82%
Surgical										
No	6	2	2	1	0	1	0	0	12	12.24%
Yes	23	17	13	17	10	5	1	0	86	87.76%
Pediatrics										
No	7	2	1	4	0	3	1	0	18	19.15%
Yes	21	16	13	14	10	2	0	0	76	80.85%
Psychiatry										
No	17	10	4	4	2	2	0	0	39	44.32%
Yes	8	7	10	13	6	4	1	0	49	55.68%
Obstetrics and Gynecology										
No	11	7	4	4	2	5	1	0	34	36.96%
Yes	16	11	10	14	7	0	0	0	58	63.04%
Anesthesia and Operation										
No	11	3	4	2	0	1	0	0	21	22.11%
Yes	18	14	10	16	10	5	1	0	74	77.89%
answered question: 105 and skipped question: 0										

Table 5: The average number of prescriptions dispensed to each hospital department daily.									
Answer Options	Total number of existed	Total percent of existed	Percent Count	Total average daily prescriptions	Total average monthly prescriptions	Total average annually prescriptions	Total average daily prescriptions per hospital	Total average monthly prescriptions per hospital	Total average annually prescriptions per hospital
Adults Emergency	93	91.18%	102	14,150	424,500	5,094,000	40.43	1,212.86	14,554.29
Pediatrics Emergency	77	81.91%	94	9,325	279,750	3,357,000	26.64	799.29	9,591.43
Adults Critical Care	62	70.45%	88	3,850	115,500	1,386,000	11.00	330.00	3,960.00
Pediatrics Critical Care	52	59.77%	87	2,325	69,750	837,000	6.64	199.29	2,391.43
Neonates Critical Care	38	45.78%	83	1,875	56,250	675,000	5.36	160.71	1,928.57
Medical	89	90.82%	98	6,500	195,000	2,340,000	18.57	557.14	6,685.71
Surgical	86	87.76%	98	4,875	146,250	1,755,000	13.93	417.86	5,014.29
Pediatrics	76	80.85%	94	5,050	151,500	1,818,000	14.43	432.86	5,194.29
Psychiatry	49	55.68%	88	2,900	87,000	1,044,000	8.29	248.57	2,982.86
Obstetrics and Gynecology	58	63.04%	92	3,375	101,250	1,215,000	9.64	289.29	3,471.43
Anesthesia and Operation	74	77.89%	95	2,775	83,250	999,000	7.93	237.86	2,854.29
				57,000.00	1,710,000.00	20,520,000.00	162.86	4,885.73	58,628.59
answered question: 105 and skipped question: 0									

Table 6: Pharmacy services and hospital beds distribution.

		Hospital bed size											
Answer Options		< 50	50-99	100-199	200-299	300-399	400-499	= or > 600	Medical City	Response N	Count %		
Inpatient pharmacy													
Non	8		8	1	0	0	0	0	0	17	17.35%		
Yes	20		11	14	19	10	6	1	0	81	82.65%		
IV admixture Pharmacy													
Non	22		17	12	6	3	1	0	0	61	67.78%		
Yes	1		0	3	12	7	5	1	0	29	32.22%		
Outpatient pharmacy													
Non	7		0	0	0	0	0	0	0	7	7.37%		
Yes	20		19	15	18	9	6	1	0	88	92.63%		
Satellite pharmacy													
Non	22		16	12	15	7	4	1	0	77	91.67%		
Yes	1		0	3	1	0	2	0	0	7	8.33%		
Emergency pharmacy													
Non	12		7	5	3	1	1	0	0	29	31.52%		
Yes	16		10	9	14	8	5	1	0	63	68.48%		
Drug information													
Non	19		15	5	2	2	0	0	0	43	48.31%		
Yes	2		3	11	16	8	5	1	0	46	51.69%		
Clinical Pharmacy													
Non	21		17	14	15	5	4	1	0	77	89.53%		
Yes	2		0	1	2	3	1	0	0	9	10.47%		
Extemporaneous Preparation area													
Non	23		16	8	7	3	2	0	0	59	67.05%		
Yes	0		1	7	11	5	4	1	0	29	32.95%		
Prepackaging area													
Non	21		14	11	7	4	1	0	0	58	68.24%		
Yes	2		2	3	10	4	5	1	0	27	31.76%		
Pharmacy Store													
Non	10		4	4	2	2	1	0	0	23	23.00%		
Yes	20		16	11	16	8	5	1	0	77	77.00%		

answered question: 105 and skipped question: 0

Table 7: The average number of prescriptions dispensed per each section daily.

Answer Options	Response Count	Percent Count	Total average daily prescriptions	Total average monthly prescriptions	Total average annually prescriptions	Total average prescriptions/hospital	Total average monthly prescriptions/hospital	Total average annually prescriptions per hospital
Inpatient pharmacy	100	95.24%	13,225	396,750	4,761,000	10.17	305.19	3,662.31
IV admixture Pharmacy	60	57.14%	3,325	99,750	1,197,000	2.56	76.73	920.77
Outpatient pharmacy	94	89.52%	25,650	789,500	9,234,000	19.73	591.92	7,103.08
Satellite pharmacy	47	44.76%	1,525	45,750	549,000	1.17	35.19	422.31
Emergency pharmacy	94	89.52%	28,525	855,750	10,269,000	21.94	658.27	7,899.23
Drug information	67	63.81%	2,200	66,000	792,000	1.69	50.77	609.23
Clinical Pharmacy	53	50.48%	1,475	44,250	531,000	1.13	34.04	408.46
Extemporaneous Preparation area	59	56.19%	2,075	62,250	747,000	1.60	47.88	574.62
Prepackaging area	55	52.38%	3,350	100,500	1,206,000	2.58	77.31	927.69
Pharmacy Store	74	70.48%	9,325	279,750	3,357,000	7.17	215.19	2,582.31
			90,675	2,720,250	32,643,000	70	2,092	25,110
answered question: 105 and skipped question: 0								

Table 8: The size space of the following areas in meter square of hospital. pharmacy (m2):

Answer Options	N of not existed space	% of not existed space	Response N	Average space for each section m2
Inpatient pharmacy	17	17.35%	98	24.00
IV admixture Pharmacy	61	67.78%	90	7.08
Outpatient pharmacy	7	7.37%	95	32.16
Satellite pharmacy	77	91.67%	84	2.75
Emergency pharmacy	29	31.52%	92	12.84
Drug information	43	48.31%	89	4.71
Clinical Pharmacy	77	89.53%	86	1.03
Extemporaneous Preparation area	59	67.05%	88	4.14
Prepackaging area	58	68.24%	85	2.84
Pharmacy Store	23	23.00%	100	22.42
Total				113.96
answered question: 105 and skipped question: 0				

Table 9: The total number of Pharmacists and Pharmacy technician per each section.

Answer Options	Total number of existed	Total percent of existed	Response Count	Total number of pharmacist	Total number of pharmacist per section	Total number of existed	Total percent of existed	Response Count	Total number of pharmacy technician	Total number of pharmacy technician per hospital
Inpatient pharmacy	79	80.61%	98	251	3.18	77	24.84%	97	310	4.03
IV admixture Pharmacy	23	27.71%	83	67	2.91	16	24.62%	83	65	4.06
Outpatient pharmacy	86	89.58%	96	279	3.24	84	23.08%	96	364	4.33
Satellite pharmacy	1	1.30%	77	1	1.00	1	100.00%	76	1	1.00
Emergency pharmacy	52	58.43%	89	136	2.62	69	24.13%	94	286	4.14
Drug information	46	52.27%	88	61	1.33	7	87.50%	85	8	1.14
Clinical Pharmacy	16	19.51%	82	32	2.00	5	62.50%	84	8	1.60
Extemporaneous Preparation area	18	21.69%	83	22	1.22	22	73.33%	85	30	1.36
Prepackaging area	16	19.75%	81	32	2.00	19	57.58%	86	33	1.74
Pharmacy Store	36	40.45%	89	72	2.00	61	41.78%	93	146	2.39
Total				953	21.5				1251	25.79
answered question: 105 and skipped question: 0										

CONFLICT OF INTEREST

None

SOURCE OF SUPPORT

None

ABBREVIATION USED

KSA: Kingdom of Saudi Arabia, MOH: Ministry of Health.

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Cite this article as: Alomi YA, Shorog E, Alshahrani A, Alasmay S, Alenazi H, Almutairi A, Almutairi M. National Survey of Pharmacy Practice at MOH Hospitals in Saudi Arabia 2016-2017: Pharmacy Management and Resource. *J Pharm Pract Community Med.* 2018;4(1s):S9-S16.