RESEARCH ARTICLE

OPEN ACCESS

Journal of Pharmacy Practice and Community Medicine.2018, 4(1s):S01-S08 • http://dx.doi.org/10.5530/jppcm.2018.1s.12

e-ISSN: 2455-3255

National Survey of Pharmacy Practice at MOH Hospitals in Saudi Arabia 2016-2017: Clinical Pharmacy Services

Yousef Ahmed Alomi*[1], Saeed Jamaan Alghamdi[2], Radi Abdullah Alattyh[2]

[1]The Past General Manager of General Administration of Pharmaceutical Care and Head, National Clinical pharmacy, and pharmacy practice and Pharmacy R & D Administration, Ministry of Health, Riyadh, KSA.

[2]General Administration of Pharmaceutical Care, Ministry of Health, Riyadh, SAUDI ARABIA.

Received: 12 October 2017;

Accepted: 27 December 2017

***Correspondence to:**

Dr. Yousef Ahmed Alomi,

The Past General Manager of General Administration of Pharmaceutical Care Head, National Clinical pharmacy, and pharmacy practice Head, Pharmacy R and D Administration Ministry of Health, P.O.BOX 100, Riyadh 11392, Riyadh, SAUDI ARABIA. Riyadh, Saudi Arabia.

Email: yalomi@gmail.com

Copyright: © the author(s),publisher and licensee Indian Academy of Pharmacists. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract

Purpose: To explore National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia 2016-2017: Clinical pharmacy services. **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), Saudi Pharmaceutical Society (SPS) survey, and the international standard of Joint Commission of Hospital Accreditation. The parts were pharmacy management and resources, prescribing and medication control, preparation of medications and dispensing, Computerized and pharmacy technology, clinical pharmacy services, drug monitoring and patient's education, Pharmacy inventory control and stock management, Pharmacy education and training, and pharmacy total quality management. An electronic questionnaire distributed to the 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: Clinical Pharmacy Services. **Results:** The survey distributed to 185 of hospitals, the rate of reply, was 105 (56.75%) hospitals. The most clinical services provided at the hospitals was Medications Errors preventing & monitoring (3.63), followed by Patient Counseling (3.22) and Provider of Drug Information (3.18). The most of the clinical pharmacist regularly provided to patients was Preparation of written medication histories when the patient admitted to the hospital 35 (33.3%) and Counseling of patients on their medications either during their stay or at discharge 33 (31.4%). The Decentralized pharmaceutical services; with distributive functions by a central pharmacy 59 (56.2%) and Centralized pharmaceutical services with pharmacists occasionally visiting patient-care areas, but not on a daily basis 31 (29.5%). The pharmacy actively participates in the Antibiotics Team (3.26), followed by Pain Management Team (2.08) and IV Therapy Team (2.02). **Conclusion:** Clinical pharmacy services seldom implemented at MOH hospitals. The clinical pharmacy services are high demand for all medical and surgical for pediatric, adults, and geriatrics patients. Targeting to very comprehensive clinical pharmacy education and training is with scholarship of all required clinical pharmacy specialties is highly recommended.

Key words: Pharmacy Practice, Clinical Pharmacy, Ministry of Health, Saudi Arabia.

INTRODUCTION

The Role of pharmacist changed after implementation of pharmaceutical care from services oriented to patient-oriented.[1,2] The American Society of Health-System Pharmacist identified the critical element of pharmaceutical care services.[3] The clinical pharmacy services started in Kingdom of Saudi Arabia in early 1980s after established the college of pharmacy with the particular section of the clinical pharmacy.[4] Day by day there tremendous and quick development of clinical pharmacy services including Ministry of Health organization.[4-11] The pharmacy administration used measures pharmacy indicators to follow up the level of clinical pharmacy services at Hospitals and primary healthcare centers. Several studies conducted to explore the pharmacy practice including clinical pharmacy activities in different counties.[12-15] Other studies surveyed with clinical pharmacy services or per medication services with clinical pharmacy service provided.[16,17] Also, some studies published explore that is in Saudi Arabia.[18,19,20] However, the number of hospitals were few and not covered MOH hospitals. Also, some studies in Saudi Arabia focused on one specialty of clinical pharmacy services.[21,22,23] The objective of the study to examine the national survey of pharmacy practice with emphasis on clinical pharmacy in Kingdom of Saudi Arabia.

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 eight 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.[12,14,18-20,24,25] The parts were pharmacy management and resources, prescribing and medication control, preparation of medications and dispensing, Computerized and pharmacy technology, clinical pharmacy services, drug 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 closed and ended questions used. An electronic questionnaire

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License

distributed to the one hundred eighty-five directors of pharmacies at MOH hospitals. The follow-up system by the email and telephone did 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: the drug monitoring and patient's education. All analysis is done through survey monkey system.

RESULTS

The survey distributed to 185 of hospitals, the rate of reply, was 105 (56.75%) hospitals. Of that 30.5% of (< 50 beds) hospitals, 50-99), % 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 none accredited by any organizations, and 67 (63.8%) non-covered patient by health insurance. The majority age of responders were (18-40) years 99 (94.29%) while the nationalities were Saudi 101(96.2%) and Non-Saudi 4 (3.8%). The 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. The 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, and Table 2. The most clinical services provided at the hospitals was Medications Errors preventing & monitoring (3.63), followed by Patient Counseling (3.22) and Provider of Drug Information (3.18). The highest type adults' clinical pharmacy services

Table1: Demographic responder qualifications information

	Response Count	Response Percent		Response Count	Response Percent
Nationality	**Response Count**	**Response Percent**	**No. of hospital Licensed Beds**	**Response Count**	**Response Percent**
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 Count**	**Response Percent**	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	
Academic qualifications	**Response Count**	**Response Percent**	**Board of Pharmaceutical Specialty**	**Response Count**	**Response Percent**
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		Total number of patients covered by health insurance	Response Count	Response Percent
Skipped question	0		Non	67	63.8%
The hospital accreditation	**Response Count**	**Response Percent**	< 25%	23	21.9%
CIBAHI	51	48.57%	25-49%	9	8.6%
Joint Commotion USA	10	9.52%	50-74%	1	1.0%
Canada	1	0.95%	75-100% of our patients.	5	4.8%
Saudi Council	30	28.57%	Answered question	105	
None	22	20.95%	Skipped question	0	
Answered question	105				
Skipped question	0				

Table 2: The responder experiences information

Years of experience	Pharmacy Practice	Percent	Clinical Pharmacy	Percent	Pharmacy Administration	Percent	Response Count
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
Skipped question							0

Table 3: The most clinical services provided by the hospitals

Answer Options	Always	Often	Sometimes	Rarely	Never	Rating Average	Percent Average	Response Count
ADR (Identification & Reporting)	22	12	19	13	32	2.81	56.20	97
Ambulatory care clinic participation	9	4	8	17	59	1.85	37.00	96
Medications Errors preventing & monitoring	41	16	21	11	13	3.63	72.60	101
Drug Utilization Evaluation (DUE)	10	6	16	17	51	2.07	41.40	100
Perform clinical research, publishing articles	3	5	17	15	57	1.80	36.00	96
Provider of Drug Information	30	13	22	12	23	3.18	63.60	99
Provider of Poison Information	7	9	31	18	34	2.39	47.80	98
CPR team participation	20	8	11	15	46	2.41	48.20	100
Admission drug histories	14	12	14	17	39	2.43	48.60	96
Cost reduction project (Pharmacoeconomics)	5	7	6	13	64	1.69	33.80	95
Setting and evaluating therapeutic guidelines	12	8	23	14	40	2.36	47.20	97
Patient Counseling	28	18	22	12	20	3.22	64.40	100
Home Pharmaceutical care	13	4	9	9	63	1.93	38.60	98
Pharmacokinetic consultation	15	7	15	11	51	2.26	45.20	98
Nutrition Support	6	11	10	16	54	1.96	39.20	97
Residency or students Training	17	18	15	8	41	2.62	52.40	99
answered question								105
skipped question								0

available at the hospitals were Adult General Medicine and Surgery (2.71), followed by the Adult General Medicine (Adult Medication Safety) (2.64) and Adult General Medicine (Adults Emergency) (2.64). Type pediatrics clinical pharmacy services available at the hospitals was General Pediatrics (Pediatric Internal Medicine) (1.99) followed by the General Pediatrics (Pediatrics Medication Safety) (1.98) and General Pediatrics (Pediatrics Emergency) (1.98) as explored in Table 3, Table4, and Table 5. The most of the clinical pharmacist regularly provided to patients was Preparation of written medication histories when the patient admitted to the hospital 35 (33.3%) and Counseling of patients on their medications either during their stay or at discharge 33 (31.4%). The Decentralized pharmaceutical services; with distributive functions by a central pharmacy 59 (56.2%) and Centralized pharmaceutical services with pharmacists occasionally visiting patient-care areas, but not on a daily basis 31 (29.5%) as explored in Table 6 and Table 7. The pharmacy actively participates in the Antibiotics Team (3.26), followed by Pain Management Team (2.08) and IV Therapy Team (2.02). While the most type of medication for a pharmacokinetics consultationWarfarin (2.82, followed Heparin (2.74) and Aminoglycoside (2.65) as explored in Table 9.

DISCUSSION

The clinical pharmacy services started at most prominent Ministry of health hospital in Riyadh city in the mid-1980s and more development and expanded in mid-1990s and late 2000s. The clinical pharmacy services began with drug information services and doing round with medical and surgical departments. Then the services extended to cover clinical trials and pharmacy research. The clinical pharmacist started writing total parental nutrition, and drug utilization evaluation program then expanded to different specialty with full-time clinical pharmacy staff organized at surgical orthopedic, oncology services, pain management, anticoagulation services, and poising services(4). The pharmacy administration at MOH started more than thirty coordinated clinical pharmacy programs at twenty regions in Kingdom of Saudi Arabia. East program had the Central committee with representative's expert members from the different areas. The council had the strategic plan for each application with specialized training and education facilities. East clinical pharmacy program started with few hospitals they expanded thoroughly. The job description with three level of clinical pharmacist implemented and clinical pharmacy workforce released(5). The investigator tried to measure

Table 4: Type adults clinical pharmacy services available at the hospitals

Answer Options	Always	Often	Sometimes	Rarely	Never	Rating Average	Response Count
Adult General Medicine and Surgery	26	9	13	9	40	2.71	97
General Anesthesia and Surgery (Surgery)	17	11	10	12	46	2.39	96
General Anesthesia and Surgery (Adults Anesthesia and Surgery)	16	10	11	11	47	2.34	95
General Anesthesia and Surgery (Adult Intensive Care)	15	7	12	11	52	2.20	97
General Anesthesia and Surgery (Adults Total Parenteral Nutrition)	6	8	10	12	58	1.85	94
General Anesthesia and Surgery (Adults Pain Management)	6	8	14	14	54	1.94	96
General Psychiatry (Child / Adolescent)	6	11	11	11	56	1.95	95
General Psychiatry (Psychiatry Addiction)	2	8	9	17	61	1.69	97
General Psychiatry (Medicine Geriatric Psychiatry)	5	7	12	15	57	1.83	96
General Psychiatry (Adults Psychiatry)	4	8	13	16	56	1.85	97
General Family Medicine (Community pharmacy)	5	10	15	8	58	1.92	96
General Family Medicine (Pharmacy Public Health)	5	8	18	10	55	1.94	96
General Family Medicine (Geriatric Medicine)	7	12	9	13	55	1.99	96
General Family Medicine (Adults Ambulatory Care and Primary Care)	4	10	13	16	53	1.92	96
General Family Medicine (Pediatrics Ambulatory Care and Primary Care)	7	8	9	18	53	1.93	95
General Family Medicine (Pharmacy Home Health Care)	5	9	10	17	52	1.90	93
General Family Medicine (Mass Gathering Pharmaceutical Care)	3	5	8	12	64	1.60	92
General Family Medicine (Ramadan Pharmaceutical Care)	7	8	12	12	54	1.95	93
Adult General Medicine (Adult Internal Medicine)	17	9	15	9	44	2.43	94
Adult General Medicine (Adults Cardiology)	12	8	12	14	48	2.17	94
Adult General Medicine (Adults Gastroenterology)	12	10	12	12	48	2.21	94
Adult General Medicine (Adults Neurology)	9	9	8	11	57	1.96	94
Adult General Medicine (Adults Rheumatology)	11	8	12	12	52	2.09	95
Adult General Medicine (Adults Dermatology)	13	10	13	10	47	2.27	93
Adult General Medicine (Adults Forensic Medicine)	1	7	7	10	67	1.53	92
Adult General Medicine (Adults Nuclear Pharmacy)	1	5	4	7	76	1.37	93
Adult General Medicine (Adults Nephrology)	7	8	10	11	58	1.88	94
Adult General Medicine (Adults Infectious Diseases)	11	10	15	12	46	2.23	94
Adult General Medicine (Adults Pharmacy Infection Control)	9	10	17	10	48	2.17	94
Adult General Medicine (Adults Endocrinology & Metabolism)	8	10	13	9	54	2.03	94
Adult General Medicine (Adult Pulmonary Diseases)	10	9	13	14	46	2.16	92
Adult General Medicine (Adult Hematology and Anticoagulation)	9	8	13	14	50	2.06	94
Adult General Medicine (Adult OncologyAdult Pulmonary Diseases)	3	5	5	16	65	1.56	94
Adult General Medicine (Adult Drug Utilization Evaluation)	4	10	8	13	59	1.80	94
Adult General Medicine (Adult Drug Information)	16	9	16	8	42	2.44	91
Adult General Medicine (Adult Medication Safety)	19	12	16	10	37	2.64	94
Adult General Medicine (Adults Pharmacoeconomics)	0	13	9	15	56	1.77	93
Adult General Medicine (Adults Emergency)	16	20	10	12	37	2.64	95
Adult General Medicine (Adult Dental Therapy and oral medicine)	9	14	13	9	48	2.22	93
Adult General Medicine (Adults Therapeutic Drug Monitoring and Pharmacokinetics)	2	11	10	20	52	1.85	95
Adult General Medicine (Adult Organ Transplant)	0	7	3	8	76	1.37	94
Adult General Medicine (Adults Pharmacogenomics)	1	8	3	13	69	1.50	94
Adult General Medicine (Adults Pharmacy Research and Clinical Trail)	1	8	3	11	71	1.48	94
						answered question	100
						skipped question	5

Table 5: Type pediatrics clinical pharmacy services available at the hospitals

Answer Options	Always	Often	Sometimes	Rarely	Never	Rating Average	Response Count
General Pediatrics (Pediatric Internal Medicine)	9	10	8	11	56	1.99	94
General Pediatrics (Pediatrics Endocrinology)	5	8	7	10	64	1.72	94
General Pediatrics (Pediatrics Nephrology)	3	8	5	12	66	1.62	94
General Pediatrics (Pediatrics Gastroenterology)	4	9	5	15	60	1.73	93
General Pediatrics (Pediatrics Neurology)	4	6	7	11	65	1.63	93
General Pediatrics (Pediatrics Rheumatology)	4	8	4	12	65	1.65	93
General Pediatrics (Pediatrics Dermatology)	5	7	9	15	56	1.80	92
General Pediatrics (Pediatrics Forensic Medicine)	3	4	4	11	71	1.46	93
General Pediatrics (Pediatrics Nuclear Pharmacy)	1	3	6	7	76	1.34	93
General Pediatrics (Pediatrics Hematology and Anticoagulation)	5	5	7	11	65	1.65	93
General Pediatrics (Pediatrics Oncology)	1	5	4	8	75	1.38	93
General Pediatrics (Pediatrics Infectious Diseases)	4	7	12	17	52	1.85	92
General Pediatrics (Pediatrics Pharmacy Infection Control)	4	8	9	12	60	1.75	93
General Pediatrics (Pediatrics Pulmonary Diseases)	4	10	10	13	55	1.86	92
General Pediatrics (Pediatrics Cardiology)	3	8	7	11	62	1.67	91
General Pediatrics (Pediatrics Drug Utilization Evaluation)	1	7	6	12	67	1.53	93
General Pediatrics (Pediatrics Drug Information)	7	8	9	15	54	1.91	93
General Pediatrics (Pediatrics Medication Safety)	6	10	11	13	51	1.98	91
General Pediatrics (Pediatrics Pharmacoeconomics)	1	8	7	10	67	1.56	93
General Pediatrics (Pediatrics Emergency)	5	8	14	16	47	1.98	90
General Pediatrics (Pediatrics and neonate Parenteral Nutrition)	5	6	9	8	64	1.70	92
General Pediatrics (Pediatrics Dental Therapy and oral medicine)	4	6	10	12	61	1.71	93
General Pediatrics (Pediatrics Therapeutic Drug Monitoring and Pharmacokinetics)	0	7	5	14	67	1.48	93
General Pediatrics (Pediatrics Pharmacy Infection control)	3	9	11	11	58	1.78	92
General Pediatrics (Pediatrics Organ Transplant)	1	5	5	5	75	1.37	91
General Pediatrics (Pediatrics Intensive Care)	7	7	10	6	63	1.81	93
General Pediatrics (Neonatal Intensive Care)	7	6	10	7	64	1.78	94
						answered question	100
						skipped question	5

Table 6: Type of Clinical Services regularly provided by staff to patients

	Hospital beds size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response Count**	**Response Percent**
Preparation of written medication histories when the patient admitted to the hospital.	10	4	6	8	3	3	1	0	35	33.3%
Counseling of patients on their medications either during their stay or at discharge.	11	3	5	7	2	4	1	0	33	31.4%
Concurrent, routine monitoring of the drug therapy of the patients	3	1	3	5	3	2	1	0	18	17.1%
Rounds with the medical and nursing staffs	4	0	2	7	1	3	1	0	18	17.1%
Pharmacokinetic or nutritional support consultations	2	0	1	4	0	1	1	0	9	8.6%
None of the above.	14	5	9	4	4	1	0	0	47	44.76%
answered question									105	
skipped question									0	

Table 7: Pharmacy Centralized versus Decentralized services

	Hospital beds size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response Percent**	**Response Count**
Decentralized pharmaceutical services with distributive functions by a central pharmacy.	17	12	9	13	4	4	0	0	56.2%	59
Decentralized pharmaceutical services with distributive functions by satellite.	0	2	0	0	0	0	0	0	1.9%	2
Decentralized pharmaceutical services with distributive functions by mobile carts.	3	1	0	1	0	0	0	0	4.8%	5
Centralized pharmaceutical services with pharmacists visiting patient-care at least once daily.	3	2	1	3	4	0	0	0	12.4%	13
Centralized pharmaceutical services with pharmacists occasionally visiting patient-care areas, but not on a daily basis.	13	4	7	2	2	2	1	0	29.5%	31
									answered question	105
									skipped question	0

Table 8: Type of teams that's pharmacy actively participates

	Hospital beds size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Rating Average**	**Response Count**
Antibiotics Team	2.71	2.71	3.50	4.00	3.40	4.83	4.00	0.00	3.26	103
Pain Management Team	1.90	1.81	2.13	2.50	2.40	1.83	3.00	0.00	2.08	100
Anticoagulation Team	1.57	1.90	2.27	2.11	2.30	1.83	3.00	0.00	1.94	101
IV Therapy Team	1.40	1.67	2.27	2.94	2.67	2.17	1.00	0.00	2.02	100
Adults Nutrition Support Team	1.43	1.76	1.93	1.78	2.30	2.17	3.00	0.00	1.78	101
Pediatrics Nutrition Support Team	1.47	1.81	1.73	2.00	2.30	1.00	3.00	0.00	1.74	101
IV Chemotherapy Team	1.21	1.30	1.29	1.67	1.70	1.17	1.00	0.00	1.37	98
									answered question	105
									skipped question	0

Table 9: type of medication for a pharmacokinetics consultation

Answer Options	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Rating Average**	**Percent Average**	**Response Count**
Aminoglycoside	22	11	18	11	40	2.65	53.00	102
Vancomycin	22	9	17	12	39	2.63	52.60	99
Theophylline	12	6	12	22	44	2.17	43.40	96
Digoxin	21	7	14	15	42	2.49	49.80	99
Phenytoin	14	6	19	17	42	2.32	46.40	98
Carbamazepine	15	7	14	14	45	2.29	45.80	95
Lithium	9	4	6	12	63	1.77	35.40	94
Heparin	23	12	14	15	34	2.74	54.80	98
Warfarin	25	11	15	14	32	2.82	56.40	97
							answered question	105
							skipped question	0

the performance level and clinical services at MOH hospitals. The finding showed the most three clinical pharmacies provided to the patient at the MOH hospital were the medication safety program, patient counselling and drug information. The finding was better than what reported from Poland by Pawłowska I et.al in term of medication error detection and prevention while lower than it did in term of adverse drug reaction prevention.[15] That's finding expected because there were the primary clinical pharmacy program stated at MOH hospital after implementation the update pharmacy strategic planning.[6,26] while the other clinical pharmacy services under development. In addition, there was more focusing on MOH administration on medication errors while adverse drug reaction more focusing by Saudi Food and Drug Authority and most of healthcare professional documented mistakes not side effects of medications. In addition, the results lower than that reported in Australia by Peter C Tenni JDH, Pedersen C in USA, and Alsultan MS et al in Saudi Arabia that is due the medication safety program recently stated at MOH hospitals.[12,16,20] The findings overall sub-specialties of clinical pharmacist not founded at MOH hospitals because the number of clinical pharmacists were few with limited advance specialties, the most specialties existed was medication safety for adults and pediatrics, that's related due highest services for adults medication safety with full existed program while very high limited clinical pharmacy services available. The clinical pharmacist specialties challenging to compare with other study because all of then not reported any resemble results. The results of activities regularly provided to patients for instant taking of medication histories during admission and patient medication education lower than whats reported by Peter C Tenni JDH, and Alsultan MS et al that's related the services is newly founded at MOH hospital pharmacies.[12,18,20]

The most of the clinical pharmacist participated in the team that has had clinical pharmacy program, for instance, pain management services. Stewardship antimicrobial program, anticoagulation services. All studies did not mention particularly team they mention program. The finding showed higher with same activities like antibiotics as reported Alsultan MS et al. and some clinical activities had higher results than what reported by the same study that had some improvement of clinical pharmacy services at MOH hospitals. Other clinical activities by lower than the study by that are due to the hospital pharmacy at MOH just recently started during the last updated of pharmacy strategic planning including clinical pharmacy services.[18] The most type of medication for a pharmacokinetics consultation was same as the study reported by Pedersen C *et al*., with different percentage due to the clinical pharmacy services founded at MOH hospital after USA hospital with a new update of clinical pharmacy strategic planning at MOH hospitals.[27] The study represented as first study in Saudi Arabia, Gulf or Middle East countries with such details, and it is highly recommended to repeat the survey of pharmacy practice at MOH hospitals with an emphasis on clinical pharmacy survives every two to three years.

CONCLUSION

The most of the clinical pharmacy services are poor at most of MOH hospitals in Kingdom of Saudi Arabia. The number of clinical pharmacists does not acquit to cover most of the hospital department and advance clinical pharmacist Specialty is missed. Targeting to increase the quantity and quality of clinical pharmacy services is highly recommended to improve patient clinical outcomes and prevent economic burden on health care system at MOH system in Saudi Arabia.

ACKNOWLEDGEMENT

None

CONFLICT OF INTEREST

None

SOURCE OF SUPPORT

None

ABBREVIATION USED

KSA: Kingdom of Saudi Arabia; **MOH:** Ministry of Health.

REFERENCES

1. American Society of Hospital Pharmacists. ASHP Statement on Pharmaceutical Care. Am J Hosp Pharm. 1993;50:1720-3.
2. American Society of Hospital Pharmacists. ASHP Guidelines on a Standardized Method for Pharmaceutical Care. Am Soc Heal Pharm. 53:1713-6.
3. Brenner TS, Godwin HN, Gouveia WA, Hodgkins BD, Kent SS, Kienle PC, *et al*. ASHP guidelines: Minimum standard for pharmacies in hospitals. Am J Heal Pharm [Internet]. 2013 Sep 15 [cited 2017 Nov 1];70(18):1619–30. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23988605
4. Alomi YA. National Pharmacy Practice Programs at Ministry of Health in Saudi Arabia. JPharm Pharm Scien. 2015;1(2):17–8.
5. Alomi YA. National Pharmacy Administration Programs at Ministry of Health in Saudi Arabia. BAOJ Pharm Sci. 2015;1(9).
6. YA A. National Drug Information Center Program at Ministry of Health in Saudi Arabia. Adv Pharmacoepidemiol Drug Saf [Internet]. 2015;5(1):1–2. Available from: http://dx.doi.org/10.4172/2167-1052.1000e140
7. Alomi YA. National pharmacy anticoagulation program at Ministry of Health in Saudi Arabia. BAOJ Pharm Sci. 2017;3(3):3–7.
8. Alomi YA, Ahmed Alomi Y, Pharm B, Clin Pharm M. National Mass Gathering Pharmaceutical Care Program at MOH in Saudi Arabia. J Pharm Pract Community Med. 2016;2(3):102–3.
9. Alomi YA. National Total Parenteral Nutrition Program at MOH in Saudi Arabia. EC Nutr. 2016;3:697–9.
10. Alomi YA. National Pharmacy Pain Management Program at Ministry of Health in Saudi Arabia. J Pharmacol Clin Res. 2017;3(2).
11. Alomi YA. National Antimicrobial Stewardship Program in Saudi Arabia; Initiative and the Future. Open Access J Surg. 2017;4555646(45).
12. Pedersen C, Pharm, Schneider P, Scheckelhoff D, Pedersen. ASHP national survey of pharmacy practice in hospital settings: Prescribing and transcribing—2016. Am J Heal Syst Pharm. 2017;74:411–27.
13. Pedersen CA, Schneider PJ, Scheckelhoff DJ. ASHP national survey of pharmacy practice in hospital settings: Monitoring and patient education-2015. Am J Heal Pharm. 2016;73(17):1307–30.
14. Pedersen CA, Schneider PJ, Scheckelhoff DJ. ASHP national survey of pharmacy practice in hospital settings: Dispensing and administration - 2014. Am J Heal Pharm. 2015;72:1119–37.
15. Pawłowska I, Pawłowski L, Kocić I, Krzyżaniak N. Clinical and conventional pharmacy services in Polish hospitals: a national survey. Int J Clin Pharm. 2016;38(2):271–9.
16. Peter C Tenni JDH. A national survey of clinical pharmacy services. J Pharm Pract Res.1996;26:416–27.
17. Wanbon R, Lyder C, Villeneuve E, Shalansky S, Manuel L, Harding M. Clinical Pharmacy Services in Canadian Emergency Departments: A National Survey. Can J Hosp Pharm. 2015;68(3):191–201.
18. Alsultan MS, Khurshid F, Salamah HJ, Mayet AY, Al-Jedai AH. Hospital pharmacy practice in Saudi Arabia: Prescribing and transcribing in the Riyadh region. Saudi Pharm J. 2012;20(3):203–10.
19. Alsultan MS, Khurshid F, Mayet AY, Al-Jedai AH. Hospital pharmacy practice in Saudi Arabia: Dispensing and administration in the Riyadh region. Saudi Pharm J. 2012;20(4):307–15.
20. Alsultan MS, Mayet AY, Khurshid F, Al-jedai AH. Hospital pharmacy practice in Saudi Arabia: Drug monitoring and patient education in the Riyadh region. Saudi Pharm J. 2013;21(4):361–70.
21. Alomi YA, Ajudaibi SM and A. National Survey of Total Parenteral Nutrition practice in Saudi Arabia: Prescribing and transcribing at MOH Hospitals. EC

Nutr. 2016;(4.1):795–803.
22. Alomi YA, Aljudaibi SM. National Survey of Total Parenteral Nutrition Practice in Saudi Arabia: Drug Monitoring and Patient Education at MOH Hospitals. EC Nutr. 2016;4:784–92.
23. Alomi YA et.al. National Survey of Total Parenteral Nutrition practice in Saudi Arabia: Dispensing and administration at MOH Hospitals. EC Nutr. 2016;(3.6):748–56.
24. Medication Management (MM). In: National Hospital Standards. 2nd Editio. Saudi Central Board for Accreditation of Healthcare Institutions.; 2015. p. 194–211. Available from: http://www.cbahi.gov.sa
25. The Joint Commission. Comprehensive Accreditation Manuals. Joint Commission Resources. Available from: http://www.jcrinc.com/store/publications/manuals/
26. Alomi YA. National Medication Safety Program at Ministry of Health in Saudi Arabia. J Pharmacovigi. 2015;3(5):1–2.
27. Pedersen C, Schneider P, Scheckelhoff D. ASHP national survey of pharmacy practice in hospital settings: monitoring and patient education-2003. Am J Heal Syst Pharm. 2004;61(5):457–71.

Cite this article as: Alomi YA, Shorog E, Alshahrani A, Alasmary S, Alenazi H, Almutairi A, Almutairi M. National Survey of Pharmacy Practice at MOH Hospitals in Saudi Arabia 2016-2017: Clinical Pharmacy Services. J Pharm Pract Community Med. 2018;4(1s):S1-S8.