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

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Abstract

Objective: To explore National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia 2016: Prescribing and medication management. **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), Saudi Pharmaceutical Society (SPS) survey, and the international standard of Joint Commission of Hospital Accreditation. The 5-point Likert response scale system was used with closed and ended questions. An electronic questionnaire was 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: the prescribing and medication management. **Results:** The survey questionnaire distributed to 185 of hospitals, the rate of reply, was 105 (56.75%) hospitals. The highest score of committee shared by the hospital pharmacy was the pharmacy and therapeutics committee (4.33), quality management committee (4.06), infection control committee (3.88), while the lowest scores were Anticoagulation committee (2.14), DUE committee (2.16) and IV therapy committee (1.99). The most therapeutic guideline available in the hospital pharmacies were antibiotics guidelines (2.91) followed by infection control (2.84) and anticoagulation guidelines (2.13). The majority formulary management method used was restricted prescribing certain expensive drugs 33 (33.1%), review of non-formulary drugs prior approval 27 (25.7%), and the closed drug formulary 14(13.3%). The most drug utilization activities used at the hospitals were Used as the basis for revision of drug-use policies and procedures 44 (41.9%) and Incorporated into medical staff credentialing considerations 27 (25.7%) The pharmacist has the privilege to write medication orders were 18 (17.1%) only. The pharmacist commonly prescribed over the counter medications 19 (57.6%) and antibiotics 15 (45.5%) through the prescription cosigned by physician 55 (52.4%). Followed by Drugs under prescribing protocol 39 (37.1%) and Medications Refill Clinic 26 (24.8%). **Conclusion:** The hospital seldom participated in the therapeutic guidelines, and the few pharmacists shared in essential hospital committees despite the unique role of providing medication information. Expanding pharmacy activities will improve the prescribing system, patient clinical outcomes, and prevent drug misadventures.

Key word: Prescribing, Medication management, Ministry of health, Saudi arabia.

INTRODUCTION

The roles and responsibilities of pharmacists in the healthcare system recently, change from traditional duties such as medication compounding and dispensing with more care that is patient. Purpose of pharmaceutical care is to achieve0 definite outcomes that improve a patient's quality of life. American Society of Health-System Pharmacists (ASHP) employed in promoting the profession through an advanced pharmacy practice model initiative.[1,2] The ultimate goal of this initiative is to improve the health and safety of patients by capitalizing on pharmacists' unique knowledge of the medication use system and their professional acumen as direct patient care providers significantly. ASHP survey described six components of the medication-use system: prescribing, transcribing, dispensing, administration, monitoring, and patient education. ASHP each year focus on two possess. ASHP national survey of pharmacy practice in U.S was discussed Prescribing and transcribing and showed an increase in response rate from 28.9% in 2013 to 29.8% in 2016.[3,4] ASHP 2016 survey showed 63.0% of hospitals have strict formulary systems with use of clinical practice guidelines in 89.7% of hospitals. This survey reported 89.9% of Pharmacists have the authority to order laboratory tests while 86.8% have the authority to order medications. Moreover, implemented wholly or partially of Electronic health records (EHRs) about 99.1% of the hospital and 92.6% of hospitals have barcode-assisted medication (BCMA) administration hospitals provided consultations on dosage adjustments, drug information, Another minor issue was Medication-use safety technologies through CPOE was most

common way medication orders were received in the pharmacy (95.9%). They described Strategic practice initiatives through Antibiotic stewardship program, Anticoagulation management which 63.0% of hospitals had an antibiotic stewardship program and Pharmacists most commonly had a leadership and accountability role. While 24.7% of hospitals Pharmacists provide outpatient anticoagulation management.[3] Current research on Advancing the Pharmacy Practice Model focused on New Practitioner Attitudes and Opinions. They divided roles and responsibilities into operational, clinical, and administrative categories. New practitioners were undesirable tasks of entering or verifying physician orders into a computer system and checking medications or sterile products prepared by technicians. The Clinical roles of pharmacist is more favorably than operation role.[2] One of the first examples of pharmacy services in hospitals on a regional level in the Kingdom of Saudi Arabia presented in Hospital pharmacy practice in Saudi Arabia: Prescribing and transcribing in the Riyadh region, which focuses on practices and technologies for managing and improving the medication-use system. In particular, the report of this survey was 60.4% responding rate. Moreover, the hospitals required prior approval for the use of non-formulary medications about 60%. Likewise, approximately 65.4% of hospitals reported using clinical practice guidelines that include medications. Whereas 56% had a medication-use evaluation (MUE) program to monitor prescribing. Ninety-five percent of hospitals, Pharmacists provided prescribers accept consultations on drug information with 80% of the pharmacists' recommendations. Furthermore, the survey responses showed 34.5% of hospitals had a CPOE system, and 51.9% of hospitals had an EMR system.[5] No previous studies included Ministry of Health hospitals in wide range and number. Also, it is difficult to find an investigation about the prescribing and medication management practice at Ministry of Health (MOH) hospitals in Saudi Arabia or Gulf and Middle East countries. The goal of the study to explore the national survey of MOH hospital pharmacy practice with emphasis on the prescribing and medication management practice.

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

Table 1: Demographic responder qualifications information.

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	
Academic qualifications	**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		Total number of patients covered by health insurance	Response N	Response %
Skipped question	0		Non	67	63.8%
The hospital accreditation	Response N	Response %	< 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 and skipped question:0					

Accreditation in addition to the local standards of Saudi Center of healthcare accreditation.[3,5-10] 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. The 5-point Likert response scale system was used with closed and ended questions. An electronic questionnaire distributed to the one hundred eighty-five directors of pharmacies at MOH hospitals. The follow-up was taken through 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: the prescribing and medication management. All analysis is done through survey monkey system.

RESULTS

The survey questionnaire distributed to 185 hospitals, the rate of reply, was 105 (56.75%) hospitals. Of that 30.5% of (< 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%) patients 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 experience, and (73.33%) had no experiences in clinical pharmacy as explored in Table 1, and Table 2. The highest score of committee shared by the hospital pharmacy was the pharmacy and therapeutics committee (4.33), quality management committee (4.06), infection control committee (3.88), while the lowest scores were Anticoagulation committee (2.14), DUE committee (2.16) and IV therapy committee (1.99). The most therapeutic guideline available in the hospital pharmacies were antibiotics guidelines (2.91) followed by infection control (2.84) and anticoagulation guidelines (2.13) as explored in Table 3 and Table 4. The majority of formulary management method used was restricted prescribing of certain expensive drugs 33 (33.1%), review of non-formulary drugs prior approval 27 (25.7%), and the closed drug formulary 14(13.3%). The most drug utilization activities used at the hospitals were Used as the basis for revision of drug-use policies and procedures 44 (41.9%) and Incorporated into medical staff credentialing considerations 27 (25.7%) as explored in Table 5 and Table 6. The most therapeutic interchanged program medications were Non-Steroidal Anti-inflammatory Drugs (NSAIDs) 65 (61.9%) followed by Antacid 47 (44.8%) and Anti-Histamine 43 (41.0%).

Table 2: 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 3: Type the pharmacy actively participates in relevant hospital committees.

	Hospital bed size									
Answer Options	< 50	50-99	100-199	200-299	300-399	400-499	= or > 600	Medical City	Rating Average	Response N
Pharmacy and Therapeutic Committee	3.77	3.90	4.50	5.00	4.90	5.00	5.00	0.00	4.33	104
Antibiotics Committee	3.03	3.10	3.50	4.33	4.00	5.00	1.00	0.00	3.53	103
DUE Committee	1.89	2.00	2.54	2.28	2.50	2.33	1.00	0.00	2.16	96
Infection Control Committee	3.17	3.71	4.25	4.67	4.10	4.67	5.00	0.00	3.88	102
CPR Committee	2.27	2.38	3.57	4.22	3.80	4.17	5.00	0.00	3.12	100
Morbidity and Mortality Committee	1.76	2.43	2.86	3.28	2.56	1.83	5.00	0.00	2.45	98
Patient or Medication Safety Committee	3.33	3.33	4.13	4.41	4.30	5.00	5.00	0.00	3.85	101
Pharmacy and Nursing Committee	2.72	2.52	3.27	2.83	3.00	3.50	1.00	0.00	2.84	100
Quality Management Committee	3.32	3.86	4.50	4.67	4.30	5.00	5.00	0.00	4.06	103
Pain Management Committee	2.24	2.24	2.64	2.44	2.90	2.33	5.00	0.00	2.43	99
Anticoagulation Committee	1.93	2.19	2.00	2.41	2.60	2.00	1.00	0.00	2.14	98
IV Therapy Committee	1.69	1.62	2.29	2.33	2.60	2.20	1.00	0.00	1.99	98
Answered question: 105 and skipped question 0										

Table 4: Type of Therapeutics Guidelines in pharmacy practice.

	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Rating Average**	**Response N**
Antibiotics Guidelines	2.78	2.65	2.88	3.05	3.20	3.67	3.00	0.00	2.91	104
Infection Control Guidelines	2.47	2.38	2.81	3.83	2.70	3.33	5.00	0.00	2.84	102
Anticoagulation Guidelines	2.07	1.85	1.87	2.78	1.80	2.33	4.00	0.00	2.13	100
Nutrition Support Guidelines	1.71	1.63	1.57	2.33	1.40	1.83	3.00	0.00	1.78	96
Electrolyte Disturbances Guidelines	1.69	1.65	2.00	2.67	1.80	1.83	3.00	0.00	1.94	98
Poisoning Management Guidelines	1.61	1.60	1.73	2.22	1.40	1.67	3.00	0.00	1.73	98
TDM Guidelines	1.57	1.35	1.50	2.00	1.22	1.80	3.00	0.00	1.59	94
IV Drips	1.41	1.30	2.00	2.29	2.00	2.60	3.00	0.00	1.77	96
Therapeutic Interchange	1.52	1.65	1.93	1.89	1.20	2.17	3.00	0.00	1.69	98
Pain Management Guidelines	1.70	1.70	1.86	2.22	1.20	2.33	4.00	0.00	1.83	96
Sedation and NMBA Guidelines	1.77	1.60	1.71	2.35	1.70	1.83	4.00	0.00	1.85	98
Answered question: 105 and skipped question: 0										

Table 5: The Program to reduce Drug Expenditures (Formulary Management Techniques).

	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
A well-controlled (closed) formulary	5	4	2	2	0	0	1	0	14	13.3%
Prescribing restrictions on certain expensive drugs	8	5	4	9	3	4	0	0	33	31.4%
Pharmacist intervention with Concurrent and/or prospective review by pharmacists of drug therapy using medical-staff-approved criteria.	1	0	2	1	0	1	0	0	5	4.8%
Keeping physicians aware of drug costs through pharmacy newsletter, in-service education programs or other means.	3	1	1	1	2	0	0	0	8	7.6%
Using Therapeutic Interchange program that approved by Pharmacy and Therapeutic Committee.	1	0	1	4	1	0	0	0	7	6.7%
Evaluation of prescriber adherence to medication use policy.	3	4	2	0	2	0	0	0	11	10.5%
Review of non-formulary drugs prior approval.	11	7	4	2	2	1	0	0	27	25.7%
Answered question: 105 and skipped question 0										

Table 6: If Yes: How find drug-use evaluation (DUE) activities used in your institutions?

	Hospital bed size								
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
Incorporated into medical staff credentialing considerations.	12	6	0	5	2	2	0	0	27	25.7%
Communicated to appropriate hospital staff for peer re-view purposes.	7	6	6	4	1	1	0	0	25	23.8%
Forwarded to appropriate hospital quality assurance person or committee in order to study and improve the DUE process.	0	5	1	4	2	0	0	0	12	11.4%
Used as the basis for formal educational programming (e.g., seminars and newsletters).	6	3	1	5	1	1	0	0	17	16.2%
Used as the basis for revision of drug-use policies and procedures (e.g., prescribing restrictions).	13	7	8	7	4	4	1	0	44	41.9%
answered question:105 and skipped question:0										

Table 7: Type therapeutic Interchange program medication										
	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
Antacid	16	9	5	10	4	2	1	0	47	44.8%
Vitamins	14	4	6	7	4	3	1	0	39	37.1%
Potassium Supplement	1	3	0	5	3	0	0	0	12	11.4%
Cephalosporins	5	9	4	7	2	0	1	0	28	26.7%
Laxatives	11	5	2	7	0	2	1	0	28	26.7%
Topical Corticosteroids	7	7	3	7	2	1	1	0	28	26.7%
NSAIDs	24	11	8	12	6	3	1	0	65	61.9%
Vaginal Antifungal	5	4	2	4	0	0	0	0	15	14.3%
Anti-Histamine	13	6	8	9	4	2	1	0	43	41.0%
Other (please specify)	3	4	1	0	1	2	0	0	11	10.5%
Antibiotics	1	0	0	0	0	0	0	0	1	0.95%
HTN medications	0	1	0	0	0	0	0	0	1	0.95%
Answered question: 105 and skipped question 0										

Table 8: The pharmacist had the authority to write medication orders or prescriptions.										
	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
Yes	7	3	4	3	1	0	0	0	18	17.1%
No	25	18	12	16	9	6	1	0	87	82.9%
The situations of prescribing medication										
Pharmacokinetic consultation	7	4	3	3	0	1	0	0	18	17.1%
When prescription cosigned by physician	20	14	8	7	5	1	0	0	55	52.4%
Drugs under prescribing protocol	12	6	4	11	4	2	0	0	39	37.1%
Medications Refill Clinic	7	4	4	8	1	2	0	0	26	24.8%
Ambulatory Care Clinic	3	2	1	4	0	1	0	0	11	10.5%
Supply and ostomy products	2	1	1	1	2	1	0	0	8	7.6%
The status of drug selection by pharmacists (Drug selection" means the initiation of new or revised drug orders for patients.										
Our pharmacists do not directly select drugs for patient.	22	13	11	9	6	3	0	0	64	61.0%
For certain drugs and/or therapeutic situations, some of our pharmacists are explicitly authorized to select a drug. (Prescribing by protocol would fit this choice.).	4	3	3	4	2	3	0	0	19	18.1%
Our pharmacists are not explicitly authorized to select drugs directly.	6	5	2	6	2	0	1	0	22	21.0%
Answered question: 105 and skipped question 0										
The class of medication most commonly prescribed by pharmacist										
Aminoglycoside	3	0	1	1	0	0	0	0	5	15.2%
Antibiotics	7	3	2	2	1	0	0	0	15	45.5%
Anticoagulant	2	1	1	1	0	0	0	0	5	15.2%
OTC Medications	6	3	5	3	2	0	0	0	19	57.6%
Anti-Hypertensive	2	1	0	1	0	0	0	0	4	12.1%
answered question:33 and skipped question 72										

The pharmacist has the privilege to write medication orders were 18 (17.1%) only. The pharmacist commonly prescribed over the counter medications 19 (57.6%) and antibiotics 15 (45.5%) through the prescription cosigned by physician 55 (52.4%). Followed by Drugs under prescribing protocol 39 (37.1%) and Medications Refill Clinic 26 (24.8%) and the pharmacists do not directly select drugs for patient 64 (61.0%) as explored in Table 7 and Table 8.

DISCUSSION

The results of this survey indicate that most pharmacists have a role in developing strategies for improving prescribing that include established guideline and formulary management. This study showed that pharmacists are involved in the principal committee that address problems with drug shortages and address the quality of prescribing such as the pharmacy and therapeutics committee, quality management committee and infection control committee. Furthermore, pharmacist are involved in the drug utilization activities used at the hospitals as the basis for revision of drug-use policies, procedures, and Incorporated into medical staff credentialing considerations. These results are in good agreement with national ASHP studies, which have shown that Drug policies developed by pharmacy and therapeutics committees continue to be an essential strategy for improving prescribing. However role of the pharmacist in drug development policies is less frequent in our survey than ASHP survey.[4] Comparing with previous national survey 105 hospital response with 51 hospitals have Saudi Central Board of Healthcare Accreditation while only 24 with 16 hospitals have accreditation in the previous one. Furthermore, the previous survey included only Riyadh region.[5] Majority of the hospital have an antibiotic guideline that is broadly consistent with the important recommendation, guideline provides the grounds for rational use of antibiotics in the hospital to counteract antimicrobial resistance and to improve the quality of care of patients with infections by maximizing clinical outcomes while minimizing toxicity.[11] This surveillance is the first one reported the drug utilization activity in Saudi Arabia which indicated that pharmacist routinely monitored drug-use policies and procedures while in the previous report (2013) medication therapy monitoring and ADR was included.[8] A significant percentage of formulary management was restricted prescribing certain expensive drugs, and only low percentage of the hospital has closed formulary. These results differ from 2016 ASHP national survey, which found lower than them in hospitals have closed formulary. We found pharmacist have a significant role in therapeutic interchange mainly in NSAID interchanged, these results match those observed in recent report form ASHP national survey of pharmacy practice. In the current study, comparing medication most commonly prescribed by the pharmacist with ASHP survey showed only one-third of hospital pharmacy in our survey have the authority to prescribe while three times fold more in ASHP 2016 survey.[3] This survey assessed the current situation of pharmacy practice in Saudi Arabia, but there are still many unanswered questions about the role of the pharmacist in an ambulatory clinic. Further work is required to establish the viability of electronic health system and the impact on pharmacy service.

CONCLUSIONS

The prescribing and medication management is not at optimal level at MOH hospital pharmacy. The role of the pharmacist is improved from past but still need more involvement in entire therapeutic committee or guidelines. It needs more control of prescribing of medication and therapeutic interchange policy. Also, the pharmacist need privilege of direct patient care at MOH hospitals in Kingdom of Saudi Arabia.

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None

CONFLICT OF INTEREST

None

SOURCE OF SUPPORT

None

ABBREVIATION USED

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

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