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National Survey of Pharmacy Practice at MOH Hospitals in Saudi Arabia 2016-2017: Drug Monitoring and Patients Education

Yousef Ahmed Alomi*[1], Eman Shorog[2], Asma Alshahrani[2], Sara Alasmary[2], Hadeel Alenazi[3], Amani Almutairi[3], Masheal Almutairi[4]

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

[2]Department of Pharmacy Practice, College of Pharmacy, King Khalid University, Abha, SAUDI ARABIA.

[3]Department of Pharmacy, King Saud Medical City, Ministry of Health, P.O.BOX 100, Riyadh 11392, Riyadh, SAUDI ARABIA.

[4]Department of Pharmacy, Security Forces Hospital, Riyadh, SAUDI ARABIA.

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***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

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Abstract

Objective: To explore National Survey of Pharmacy Practice at MOH hospitals in Saudi Arabia 2016: drug monitoring and patient's education. **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.[1-7] 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, pharmacy total quality management and drug information services. 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: the drug monitoring and patient's education. 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%). The most type of drug monitoring reporting existed at hospitals was medication error monitoring 80 (80%) followed by patient counseling reporting 72 (79.12%) and drug information inquires 69 (73.4%). The highest type of drug monitoring was patient education reporting (720,000) annually, followed by pharmacist intervention (468,000) annually and a number of prevented medication error per year was (453,600). The most drug monitoring of clinical impact and cost avoidance in the neonates, pediatrics, adults, and geriatrics patients was poisoning information inquiries 59 (56.56%) followed by the pharmacist intervention 52 (57.61%), and drug information inquires 53 (57.61%). The pharmacy patient education given through outpatient services 86 (81.9% and at the bedside during Hospital stay 19 (24.8%) The most Patient Education program 53 (50.5%) covered less than 50% of the bed. The most hospital pharmacies shared in national diabetic world day 62 (59.0%) and national asthma day 30 (28.6%). **Conclusion:** The pharmacist had the active role in drug monitoring and patient counseling. Expanding the pharmacy services with regular documentation is highly recommended to improve the quality of the services and patient healthcare outcomes.

Key word: Drug monitoring, Patients education, Ministry of Health, Saudi Arabia.

INTRODUCTIONS

During the last years, the role of pharmacists has been broadening to involve different areas that define patient-focused care as the primary goal.[8-9] Pharmacists play a crucial role in advancing health care system through their participation in medication safety activities, successful use of pharmacological therapies, enhancing therapeutic plans along with patient counseling, increased patient adherence and practical cooperation within the medical team.[10-16] The ultimate result of these continuing efforts is to enhance the quality of life. Moreover many previous studies proved the significant advantages of decreased expenditure on healthcare services with improved overall patient's health outcomes.[17-19] ASHP national survey (2015) divided drug monitoring, and patient counseling into a wide variety of actions such as identification of patients require monitoring, handling cases of adverse drug events, monitoring orders for inpatients, operating new tools for management of this aspect and pharmacist performance in patient counseling in outpatient pharmacy.[20] Another local study discussed the pharmacy practice with emphasis on drug monitoring and patient education. The study limited to few number of hospitals, involved in one region, and not covered the Ministry of Health hospitals.[5] Despite all of the features mentioned above, many obstacles may cause poor establishment of these essential aspects phases. For example pharmacy staff shortage, inappropriate background to provide clinical services, and limited communication skills.

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[21] The purpose of this study was to explore the nature of drug monitoring and patient counseling in clinical practice of hospitals under Saudi Ministry of Health. To the best of authors knowledge, the nature of pharmacist's tendencies toward patient counseling and drug monitoring activities at a multicenter level in different regions of Saudi still needs to be investigated. As a result, this paper is the first to describe this area.

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 Accreditatio in addition to the local standards of Saudi Center of healthcare accreditation.[1-7] 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 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: the drug monitoring and patient's education. 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%). 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

Table 1: Demographic responder qualifications information.

Nationality	Response N	Response %	No. of hospital licensed	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 %**	**Response N**	**Board of Pharmaceutical Specialty**	**Response N**	**Response %**
Diploma Pharmacy	28	26.67%	Board Certified Ambulatory Care Pharmacist	1	1.0%
Bsc. Pharm	59	56.19%	Board Certified Critical Care Pharmacist	1	1.0%
M.S	10	9.52%	Board Certified Nuclear Pharmacist	0	0.0%
Msc. Clinical Pharmacy	0	0.00%	Board Certified Nutrition Support Pharmacist	0	0.0%
Pharm.D.	10	9.52%	Board Certified Oncology Pharmacist	0	0.0%
Ph.D	2	1.90%	Board Certified Pediatric Pharmacy Specialist	0	0.0%
MBA	1	0.95%	Board Certified Pharmacotherapy Specialists	1	1.0%
Pharmacy Residency Two years (R1)	2	1.90%	Board Certified Psychiatric Pharmacist	0	0.0%
Residency 1 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 and skipped:0					

(9.52%) hospitals only accredited by Joint Commission. While twenty-two (20.95%) hospitals was 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 experience, and (73.33%) had no experiences in clinical pharmacy as explored in Table 1, Table 2, and Table 3. What the most type of drug monitoring reporting existed at hospitals was medication error monitoring 80 (80%) followed by patient counseling reporting 72 (79.12%) and drug information inquires 69 (73.4%). The highest type of drug monitoring was patient education reporting (720,000) annually, followed by pharmacist intervention (468,000) annually and a number of prevented medication error per year was (453,600). The most drug monitoring of clinical impact and cost avoidance in the neonates, pediatrics, adults, and geriatrics patients was poisoning information inquiries 59 (56.56%) followed by the pharmacist intervention 52 (57.61%) and drug information inquires 53 (57.61%) as explored in Table 3, and Table 4. The pharmacy patient education given through outpatient services 86 (81.9%) and at the bedside during Hospital stay 19 (24.8%) The most Patient Education program 53 (50.5%) covered less than 50% of the bed. The patient education provided to adult patient followed by pediatrics and geriatrics patient in outpatient and inpatient setting with emphasis on psychiatric patients. The most hospital pharmcies shared in national diabetic world day 62 (59.0%) and national asthma day 30 (28.6%). The most types of educational method and Material used for patient education was Arabic Printed Material 50 (47.6%), followed by Printed Booklet 22 (21%), and Pharmaceutical Companies Material 21 (20%) as explored in Table 5, Table 6, Table 7, and Table 8.The pharmaceutical care implemented and covered most of the hospital less than 25% of patients and the pharmacy not participated in clinical drug research 89 (84.8%) as explored in Table 9

DISCUSSION

The general administration of pharmaceutical at MOH in Saudi Arabia released the updated pharmacy strategic planning with an emphasis on essential pharmaceutical care services and advance clinical pharmacy included drug therapy monitoring and patient medication counseling.[22] The plan consisted of several stages including implementation stage. During that stage taskforce committees founded responsible for more thirty pharmacy practice programs with focusing on patient-orienter. For instance, medications safety program takes care of medication errors and adverse drug reaction detection and prevention. Also, it included all elements aspect of USA Institution of safe medication practice and all requirements of medications safety standards of Saudi center of organization accreditation.[23] One of the programs started was patient medications education. Special committee concerning about the program released the orientation manual for patient education, the participation of national world days, for example, pharmacist day, Asthma and diabetic days, the system of patient education at the outpatient pharmacy, discharge patient counseling and established ambulatory care clinics for patient counseling. The counseling focused on chronic diseases (Diabetes Miletus, Asthma, and Epilepsy then can be expanded to another chronic disease) and high economic burden of health care system at MOH hospitals and primary healthcare centers.[24-25]

The investigator tried to explore the national survey of pharmacy practice with emphasis on drug monitoring and patient education. The finding showed the medication error detection. The most drug monitoring was better than what reported by Alsultan, MS *et al.* and lower than what's reported by Pedersen, C *et al.* The results excepted due to the good implementation

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: The number of daily drug monitoring reporting at hospitals pharmacy.

Answer Options	Response Count	N of drug monitoring existed	% of drug monitoring existed	Average daily reports per hospital	Average monthly reports per hospital	Average annually reports per hospital	Average daily reports	Average monthly reports	Average annually reports
No of Medication errors	100	80	80.00%	14.82	444.71	5,336.47	1,260	37,800	453,600
No of Adverse drug reactions	95	60	63.16%	7.88	236.47	2,837.65	670	20,100	241,200
No of Drug quality reporting	91	47	51.65%	7.47	224.12	2,689.41	635	19,050	228,600
No of Patient counseling	91	72	79.12%	23.53	705.88	8,470.59	2,000	60,000	720,000
No of Pharmacist Intervention	96	70	72.92%	15.29	458.82	5,505.88	1,300	39,000	468,000
No of Drug information inquiries	94	69	73.40%	10.88	326.47	3,917.65	925	27,750	333,000
No of Poisoning information inquiries	94	43	45.74%	5.12	153.53	1,842.35	435	13,050	156,600
Answered question: 105 and skipped question: 0									

Table 4: Reporting of clinical impact and cost avoidance of drug monitoring activities at pharmacy.

Answer Options	Neonates	Pediatrics	Adults	Geriatrics	No. of hospitals not existed	% of hospital not existed	Response %
Medication errors	12	26	42	18	47	49.47%	95
Adverse drug reactions	10	27	31	18	53	56.38%	94
Drug quality reporting	9	15	33	12	53	58.24%	91
Patient counseling	12	19	39	16	47	50.54%	93
Pharmacist intervention	13	15	33	14	52	57.78%	90
Drug information inquiries	11	20	33	14	53	57.61%	92
Poisoning information inquiries	11	11	26	9	59	65.56%	90
answered question: 95 and skipped question 10							

Table 5: The type of Patient education at hospitals.

	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
At bedside during hospital stay	9	8	1	7	0	0	1	0	26	24.8%
At bedside on day of discharge	6	0	2	8	4	3	1	0	24	22.9%
At outpatient Pharmacy	25	13	16	17	8	6	1	0	86	81.9%
answered question: 105 and skipped question 0										
Percentage of patient covered by Education and Counseling Program										
	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
< 25%	16	14	8	7	3	5	0	0	53	50.5%
25-50 %	9	2	3	7	2	0	1	0	24	22.9%
50-75 %	4	4	4	4	5	1	0	0	22	21.0%
75-100% of Patients	3	1	1	1	0	0	0	0	6	5.7%
answered question: 105 and skipped question 0										

of medications safety program, and lower than USA results because the program just recently started.[5,20] The patient education result was better than what reported by Alsultan, MS *et al.* and lower than Pedersen, C *et al.* with discharge counseling that is related to proper implementation of the services although the services are newly established.[5,30] More than half of hospital pharmacies make sure the clinical impact of cost avoidance drug monitoring activities measured. The results excepted because the pharmacy administration started the measurements of the impact of pharmacy services through clinical and economic outcomes. The patient counseling findings are acceptable especially with ambulatory care patient. Some pharmacies conducted the patient education at the outpatient pharmacy, and others opened ambulatory care clinics operated by the pharmacist with low percentages. The result of patient education done by pharmacist was better than what's reported by Alsultan, MS *et al.* with significant improvement of implementations.[5] The coverage of patient education is expected to cover chronic disease only. The most type of patient reviewed at patient counseling was Psychiatric due to the high demand for medication information. The results of participation of wellness day, Diabetic and Asthma day with the utilization of Arabic printed material was most common due to the implementation of the patient education program with an emphasis on previous chronic disease and distribution of required educational materials. The implementation of pharmaceutical care is applied to about one-third of the patient due to the shortage of pharmacy staff, and most of the pharmacists did have an advanced degree in clinical pharmacy. The implementation of pharmacy research is deficient that is related to week background of research knowledge and unfortunate experience with scientific research.

CONCLUSION

The level of drug therapy monitoring, and patient medications education tools were acceptable. Expanding the particle services to cover all the hospitals is required. The regular survey of pharmacy practice with focusing on drug therapy monitoring and patient medications educational every two or three years is highly recommended.

ACKNOWLEDGEMENT

None

CONFLICT OF INTEREST

None

SOURCE OF SUPPORT

None

Table 6: The type of hospital departments had patient education and counseling services inpatients pharmacy.						
Answer Options	**Pediatrics**	**Adults**	**Geriatrics**	**Never**	**% of never existed patient counseling**	**Response N**
Emergency	35	51	18	40	40.82%	98
Critical Care	18	34	8	52	57.14%	91
Medical	30	51	23	36	37.11%	97
Surgical	22	43	14	45	47.87%	94
Psychiatry	9	28	10	57	62.64%	91
Obstetrics and Gynecology	7	36	5	53	56.99%	93
The type of hospital departments had patient education and counseling services Ambulatory care pharmacy and clinics						
Answer Options	**Pediatrics**	**Adults**	**Geriatrics**	**Never**	**% of never existed patient counseling**	**Response N**
Emergency	33	49	14	41	41.41%	99
Critical Care	21	33	11	54	58.06%	93
Medical	27	48	18	41	41.84%	98
Surgical	20	39	12	48	50.53%	95
Psychiatry	14	28	10	59	62.11%	95
Obstetrics and Gynecology	10	35	8	55	58.51%	94

Table 7: The type wellness days program participated hospital pharmacy.										
	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
Diabetics Day	15	11	9	16	7	3	1	0	62	59.0%
National Asthma Day	7	6	4	8	3	1	1	0	30	28.6%
National AIDS	6	2	3	8	0	1	1	0	21	20.0%
Pregnancy and Lactation	5	3	3	8	1	1	1	0	22	21.0%
Nutrition	3	2	5	6	3	0	1	0	20	19.0%
Smoking cessation	5	6	6	3	4	2	0	0	26	24.8%
Weight Control	4	2	4	2	3	1	1	0	17	16.2%
Antibiotic day	0	0	0	0	2	0	0	0	2	1.9%
Psychiatric day	1	0	1	0	0	0	0	0	2	1.9%
Total quality day	0	0	1	0	0	0	0	0	1	0.95%
None	14	8	3	3	1	2	0	0	31	29.5%
answered question: 105 and skipped question 0										

Table 8: Type of method and Material used for patient education.										
	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
Video cassette	7	0	3	3	3	1	0	0	17	16.2%
Web sites	8	4	2	4	2	0	0	0	20	19.0%
Intranet Resources	2	2	1	3	0	0	0	0	8	7.6%
Arabic Printed Material	13	7	9	10	6	4	1	0	50	47.6%
Closed-circuit TV	1	0	0	2	0	1	0	0	4	3.8%
Printed Booklet	5	3	5	6	1	2	0	0	22	21.0%
Pharmaceutical Company Material	5	1	3	6	4	2	0	0	21	20.0%
None	10	7	5	4	2	1	0	0	29	27.6%
answered question:105 and skipped question 0										

Table 9: The extent of Pharmaceutical Care at pharmacy practice.

	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
< 25% of patients	11	8	5	6	2	2	0	0	34	32.4%
25-50% of patients	9	3	4	3	0	3	0	0	22	21.0%
50-75% of patients	7	6	5	4	8	0	1	0	31	29.5%
75-90% of the patients.	5	4	2	6	0	1	0	0	18	17.1%
answered question:105 and skipped question: 0										
The pharmacy participating in clinical drug research?										
	Hospital bed size									
Answer Options	**< 50**	**50-99**	**100-199**	**200-299**	**300-399**	**400-499**	**= or > 600**	**Medical City**	**Response N**	**Response %**
Yes	4	2	3	4	2	1	0	0	16	15.2%
No	28	19	13	15	8	5	1	0	89	84.8%
answered question:105 and skipped question: 0										

ABBREVIATION USED

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

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