Journal of Pharmacy Practice and Community Medicine.2017, 3(3):154-160 • http://dx.doi.org/10.5530/jppcm.2017.3.32 e-ISSN: 2455-3255

RESEARCH ARTICLE

OPEN ACCESS

Impact of Clinical Pharmacist Consultation Visits at Ministry of Health Hospitals in Saudi Arabia: Clinical Pharmacy Services and Pharmacy Workforce

***Yousef Ahmed Alomi[1], Nasser Aldosori[2], Malika Alhadab[3], Nahedh Rashed Alotaibi[4], Nisreen Al-Shubbar[5], Mona Mustafa Jadkarim[6], Hussam Saad Almalki[7], Omer Mohammed Baqader[8], Adel Alghamdi[9]**

[1]The Past General Manager of General Administration of Pharmaceutical Care, Head, Saudi Clinical Pharmacy Forum and Pharmacy R & D Administration, SAUDI ARABIA.

[2]General Manager of medical affairs in Riyadh region, SAUDI ARABIA

[3]Head, Pharmacy services, Al Yamamah Hospital Riyadh, SAUDI ARABIA.

[4]Head, Pharmacy services, Aleman Hospital, Riyadh, SAUDI ARABIA

[5]Head, Pharmacy services, King Salman Hospital, Riyadh, SAUDI ARABIA

[6]Supervisor of inpatient pharmacy, Aleman Hospital, Riyadh, SAUDI ARABIA

[7]Supervisor of IV admixture services, Aleman Hospital, Riyadh, SAUDI ARABIA

[8]Head of Hospital, Aleman Hospital, Riyadh, SAUDI ARABIA

[9]Assistant Director of Hospital, Aleman Hospital, Ministry of Health, Riyadh, SAUDI ARABIA

Received: 19 April 2017;

Accepted: 5 June 2017

***Correspondence to:**

Yousef Ahmed Alomi,

The Past General Manager of General Administration of Pharmaceutical Care, Head, Saudi Clinical Pharmacy Forum and Pharmacy R & D Administration, SAUDI ARABIA.

Email: yalomi@gmail.com

Abstract

Background: Pharmacy practice residency program (PPRG) is one of a major professional degree in Saudi Arabia. The residency is very high demand in the pharmacy market. The clinical pharmacist required to visit hospitals to improve the services and start the program. **Objective:** The goal of this study to explore the value of clinical pharmacist consultation visit with emphasis on clinical pharmacy services (CPS) and pharmacy education and training (PET) at Ministry of Health hospitals in Riyadh, Saudi Arabia. **Methods:** It is a twelve months cohort study of a regular visit to three major hospitals included public, pediatrics with maternity and emergency specialties at Riyadh region. The assessment used based on Saudi hospital pharmacy standards, MOH pharmacy strategic plan, and the 6-points Likert assessment scale system before the study and by the end of the study. The total number of finished projects were eighteen projects divided between CPS (twelve projects) and PET (six projects). **Results:** The improvements range changes in CPS from 16.7% to 100% with average positive improvement 48%. In the PET the improvements range changes were 32.8% to 100% with average positive changes was 85%. The highest score of the projects of CPS was an assessment of pharmacy services, assessment of emergency pharmacy services, and assessment of critical pharmacy services. The maximum score of the projects of PET was doing an interview with hiring a new pharmacist, train drug Information for staff pharmacist, and apply on the job training for the new pharmacist. **Conclusion:** The pharmacist showed practical significance impact on the clinical pharmacy services and pharmacy education and training in Riyadh city, Saudi Arabia. The increasing number of consultation visit

Publishing Partner : EManuscript [www.emanuscript.in]

with regular evaluation is necessary to keep continues pharmacy improvement at all hospital pharmacies.

Key words: Impact, Clinical Pharmacist, Hospital Pharmacy, Ministry of Health, Saudi Arabia.

INTRODUCTION

The first pharmacy practice residency program or post graduated year one (PGY1) in Saudi Arabia launched in the 2000s.[1-2] The author was a member of establishment organization committee. He coordinated the residency at several hospitals. The General Administration of Pharmaceutical care wishes to implement the residency program at MOH hospitals.[3] The author established and head the MOH residency committee and supervised overall the program at MOH. The residency needs the approval of pharmacy site from Saudi Commission to start the program.[4] The requirements for accreditation was almost same as American Society of Health-System Pharmacist (ASHP) requirements for PGY1. To get the program approval, it needs to expert clinical to establish the system for that. Three hospitals were chosen for the residency program and the author starts to visit them regularly 1-2 day per week for each hospital to work with the director of pharmacy and pharmacy staff to improve the pharmacy services. The requirements consisted of pharmacy practice and clinical pharmacy elements.[5] In 2012, the clinical pharmacy services existed in 36 % hospitals only. The type pharmacy consultations were drug utilization evaluation (42.1 %), drug information (77.8%), antibiotics (43.85%), anticoagulant (31.3%), nutrition support (16.7%), and therapeutic drug monitoring services (26-46%).[6-7] Recently in 2017, the clinical services measured by the author and his colleagues and they found some improvements with the clinical pharmacy services (13.73 %) of MOH hospitals including drug information services (55.56%), nutrition support (37.5%), drug utilization evaluation 51.67%. Also, the therapeutic drug monitoring services (48.28%), clinical research and publication (43.1%) of hospitals, and residency programs at MOH hospitals do not exceed (4 %) of hospitals.[8-9] Those clinical pharmacy services need to combine, organize and prepare them for Saudi Commission accreditation. The authors are not familiar with similar studies conducted in Gulf and Middle East countries or even overall the world. The objective of the study to explore the value clinical pharmacist consultation visit at three MOH hospitals with an emphasis on clinical pharmacy services and pharmacy workforce.

METHOD

It prospective analysis of 12-months clinical pharmacist visit value at three MOH hospitals in Riyadh city, Saudi Arabia. The hospitals consisted of public hospital, and pediatrics & maternity hospital and emergency hospital. The clinical pharmacist visited three hospitals on 3-4 days weekly basis. The expert clinical pharmacist with a master degree in clinical pharmacy and board-certified of pharmacotherapy specialist and board-certified of nutrition support pharmacy from unite the state of America. He had more than fifteen years of pharmacy practice, ten years in clinical pharmacy with the emphasis on critical care and nutrition support, and pharmacy administration. He was pharmacy practice residency program coordinator at different hospitals and pharmacy board member of Saudi Commission of Health Specialties. The public hospital contained more 270 beds with adult medical and surgical services. The pediatrics and materiality services and renal dialysis units, adult's critical care and neonatal intensive care department. The hospital ambulatory care clinic and diabetes mellitus center. The pharmacy works 24/7 with inpatient pharmacy services, outpatient pharmacy services, and emergency pharmacy. It had unit dose distribution system with computerized physician order entry. The pediatrics hospital included 280 beds with pediatrics and obstetrics and Gynecology services. It contained more 200 neonatal and pediatrics beds with 100 adult's maternity beds. The hospital had pediatrics and maternity emergency and critical care for neonate, pediatrics, and newborn services with ambulatory care clinic with diffident specialties in pediatrics and maternity. The pharmacy had ambulatory care pharmacy, and inpatient pharmacy offers 24/7 services. The pharmacy had unit dose distribution system with CPOE, emergency pharmacy services, drug information services. The third hospital was emergency hospitals with 207 beds provides to adults and pediatrics population. The hospital had very emergency services and adults and neonatal critical care. It contained ambulatory care clinics with different specialties with emphasis to diabetics and cardiovascular disease. The pharmacy consisted of emergency pharmacy, inpatient pharmacy, and ambulatory care pharmacy services. It has unit dose distribution system with CPOE. The pharmacy offers 24/7 services. The pharmacy recently started clinical pharmacy services including drug information, therapeutic drug monitoring, drug information services, stewardship, and anticoagulation program. The clinical pharmacist provides over six majors elements included intravenous admixture, medication safety, clinical pharmacy, pharmacy workforce, pharmacy quality management and pharmacy research and publications. The six elements chosen based on the measure as CIBAHI standers and pharmacy strategic plan of MOH. The measurement of value the 6-points Likert assessment scale system before the study and by

the end and percentage of changes from baseline. The assessment scale system defined as follows; No activity to implement or not in plan in the future = 0 , Discussed and plan but not implemented = 1, Partially implemented 0-25% = 2, Partially implemented 26-50% = 3, partially implemented 51-75 % = 4, Partially implemented 76-99 % = 5, Fully implemented 100 % = 6, and Not Applicable = NA. In the study, the authors explore the clinical pharmacy and pharmacy workforces. The system protocol approved by previous General Administration of Pharmaceutical Care, Ministry of Health, Riyadh, Saudi Arabia.

RESULTS

The number of pharmacy staff at three hospitals was 127, the total number of the pharmacist was 57 (44.9%) while the number pharmacy technicians were 70(55.1%). The demand for pharmacy staff was (96.8 FTE). The majority of pharmacy staff was Saudi. The gender distribution female (34.65%) and the male were 83 (65.35%). None of the pharmacy staff had a board of pharmaceutical specialties. All of three hospitals had all departments except repackaging units, the extemporaneous preparation area, and satellite pharmacies. All three hospitals accredited by CBAHI and JCI. None of them accredited by Saudi Commission of health specialties for any pharmacy programs as explored in Table 1. The total number of projects were twelve and six for the clinical pharmacy services and pharmacy education and training respectively. All of the projects fill the requirement of MOH pharmacy plan and CBAHI standards. Most of the projects a newly establish started from scores (0) and without any baseline like an assessment of Clinical Pharmacy services, assessment of emergency clinical pharmacy services, assessment of critical care clinical pharmacy services while other projects already had existed with improving during the study like drug information services, and medication safety training. The scores of CPS projects were in a range between (1-6) average score (3.22), while scores of PET projects were in a range between (4-6) mean score (5.33). The highest score projects of CPS were an assessment of pharmacy services, assessment of emergency pharmacy services, and assessment of critical pharmacy services while the lowest projects were an anticoagulation program, drug utilization evaluation program, and emergency clinical pharmacy program as explored in Table 2. The highest score projects of PET were doing an interview with hiring a new pharmacist, drug information training, while the lowest scores applied on the job training for the new pharmacist, and pharmacist competency as explored in Table 3.

DISCUSSION

The pharmacy practice residency programs consisted of two years of different pharmacy practice and clinical rotation, each rotation five weeks. In the first year contained mandatory practice including nine rotations in the first year with various specialties including ambulatory care, inpatient care, sterile preparation, administration, medication safety, drug information, introduction to clinical, internal medicine). In the second year, there are six additional rotations included internal medicine, infectious diseases, cardiology, adult critical care. Moreover, three additional among elective rotation; ambulatory care, emergency medicine, pediatrics, hematology, nephrology, oncology, pain management, pediatric critical care, pediatric oncology, solid organ transplant, surgery, and parental nutrition.[5] The accreditation site process almost the same American Society of Health-System Pharmacist residency requirements, it contained high standards of pharmacy services and clinical pharmacy. The general administration of Pharmaceutical care let the author visit three chosen hospital to be residency site in the future to prepare them for the residency program. The author starts visiting three hospitals in Riyadh city, three to four days per a week from twelve months back. During the visit, the expert clinical pharmacist discussed with the director of pharmacy, supervisors, and pharmacy staff about the projects to improve the pharmacy services and get final accreditation. The author or expert clinical pharmacist established clinical pharmacy services in the hospital with different projects appropriate for the hospital. It included twelve programs, for instant stewardship antimicrobial program, drug information services, shared in 937 public drug information services, assessment clinical pharmacy services, assessment of critical care pharmacy services, and assessment of emergency pharmacy services. All those programs already implemented at MOH hospitals as Alomi studies.[11-12] The majority of clinical pharmacy project lower percentages than Alsutan and Alomi studies because of The majority of the projects newly established at the hospitals, which needs much effort of preparing a proposal, planning, training the staff.[6-9] Moreover, all the clinical pharmacy projects filled the requirements of the pharmacy residency program.[5] The author found the performance percentage of projects were not high because of non-availability of an expert clinical pharmacist at all three hospitals. It was only one hospital three new graduate Pharm D holder, and the expert trained them more to start round with medical, surgical, pediatrics, and ambulatory care specialties. In the pharmacy workforce was a large improvement with six projects because the pharmacy services had already experienced training pharmacy student like medication safety training and contours medical education while

Table 1: Demographic information.

Gender	Public hospital	Number Of shortage of staff	Pediatrics and Maternity Hospital	Number Of shortage of staff	Emergency hospital	Number Of shortage of staff	Board of Pharmaceutical Specialty	Public hospital	Pediatrics and Maternity Hospital	Emergency hospital
Male	40 (83.3%)		16 (40%)		27 (68.4%)		Board Certified Ambulatory Care Pharmacist (BCACP)	0	0	0
Female	8 (16.7%)		24 (60%)		12 (31.6%)		Board Certified Critical Care Pharmacist (BCCCP)	0	0	0
Total	48 (100%)	43.4	40 (100%)	16	39 (100%)	1.4	Board Certified Nuclear Pharmacist (BCNP)	0	0	0
Nationality							Board Certified Nutrition Support Pharmacist (BCNSP)	0	0	0
Saudi	40 (83.3%)		40 (100%)		38 (97.4%)		Board Certified Oncology Pharmacist (BCOP)	0	0	0
Non- Saudi	8 (16.7%)		0 (0%)		1 (2.5%)		Board Certified Pediatric Pharmacy Specialist (BCPPS)	0	0	0
Total	48 (100%)		40		39		Board Certified Pharmacotherapy Specialists (BCPS)	0	0	0
Number of beds							Board Certified Psychiatric Pharmacist (BCPP)	0	0	0
200-299	272		280		207		None		40	39
							The pharmacy practice areas			
The hospital accreditation							Inpatient Pharmacy	✓	✓	✓
CIBAHI	Yes		Yes		Yes		Outpatient Pharmacy	✓	✓	✓
Joint Commotion USA	Yes		Yes		Yes		Satellite Pharmacy	×	×	×
Canada	No		No		No		Narcotics	✓	✓	✓
Saudi commission of health accreditation for pharmacy programs	No		No		No		Extemporaneous Preparation	×	✓	×
Academic Qualification (s) of pharmacy staff:							Clinical Pharmacy	×	×	✓
Diploma Pharmacy	0		15		20		Inventory Control	✓	✓	✓

Bsc. Pharm	0	25	15	Drug Information	✓	✓	✓
M.S	0	1	0	Emergency pharmacy	✓	✓	✓
Msc. Clinical Pharmacy	0	0	0	Medication safety	✓	✓	✓
Pharm.D.	2	2	4	Repacking	×	×	×
Ph.D	0	0	0	Pharmacy Education and Training	✓	✓	✓
MBA	0	0	0	Computerized Physician Order Entry (CPOE)	✓	✓	✓
Pharmacy Residency Two years (R2)	0	0	0				
Pharmacy Residency one year (R1)	0	0	0				
Fellowship	0	0	0				

Table 2: Clinical pharmacy services projects.

Clinical Pharmacy																		
				Public hospital				Pediatrics hospitals				Emergency Hospital						
No	Projects	Strategic Goals	CIBAHI standards	Before	After	Update	New	Before	After	Update	New	Before	After	Update	New	Average score before	Average score before	changes
1	Assessment of Clinical Pharmacy services	Goal No. 1 Provide Complete Pharmaceutical Care with Safety and Best Practice	MM.5.1 MM.5.2 MM.5.3 MM.5.4 (ESR) MM.36	0	6	×	✓	0	6	×	✓	0	6	×	✓	0	6	100 %
2	Assessment of ER Pharmacy services			0	6	×	✓	0	6	×	✓	0	6	×	✓	0	6	100 %
3	Assessment of Critical care Pharmacy services			0	6	×	✓	0	6	×	✓	0	6	×	✓	0	6	100 %
4	Assessment of Anticoagulation services			0	6	×	✓	0	6	×	✓	0	6	×	✓	0	6	100 %
5	Stewardship Antimicrobial programs			0	2	×	✓	0	2	×	✓	0	2	×	✓	0	2	33.33 %
6	Anticoagulation program			0	1	×	✓	0	1	×	✓	0	1	×	✓	0	1	16.7 %
7	Drug Information Center services			0	4	×	✓	5	6	✓	×	0	2	×	✓	1.7	3.33	27.22 %
8	Shares with Call Center 937			0	1	×	✓	6	6	×	✓	0	5	×	✓	2.3	4	28.4 %
9	Drug Utilization Evaluation program			0	1	×	✓	0	1	×	✓	0	1	×	✓	0	1	16.7 %

Table 2 (contd): Clinical pharmacy services projects.																		
10	Emergency clinical pharmacy program	Goal No. 1 Provide Complete Pharmaceutical Care with Safety and Best Practice	MM.5.1 MM.5.2 MM.5.3 MM.5.4 (ESR) MM.36	0	1	×	✓	0	1	×	✓	0	1	×	✓	0	1	16.7 %
11	Clinical compounding services			0	1	×	✓	0	1	×	✓	0	1	×	✓	0	1	16.7 %
12	Therapeutic Drug Monitoring program			0	1	×	✓	0	1	×	✓	0	2	×	✓	0	1.33	22.2 %

Table 3: Pharmacy workforces projects.

Pharmacy workforces																		
				Public hospital				Pediatrics hospitals				Emergency Hospital						
No	Projects	Strategic Goals	CIBAHI standards	Before	After	Update	New	Before	After	Update	New	Before	After	Update	New	Average score before	Average score before	changes
1	Doing an interview with hiring new pharmacist	Goal No. 2 Develop and Implement Pharmacy Human Resources	MM.3.1, MM.3.2 MM.3.3 MM.3.4 MM.3.5 MM.3.6 MM.3.7	0	6	×	✓	0	6	×	✓	0	6	×	✓	0	6	100 %
2	Train drug Information for staff pharmacist			0	6	×	✓	6	6	×	✓	0	6	✓	×	2	6	66.6 %
3	Apply on job training for new pharmacist			0	4	×	✓	0	4	×	✓	0	4	×	✓	0	4	66.8 %
4	Train Medication Safety for staff pharmacist			0	6	×	✓	4	6	×	✓	0	6	×	✓	1.33	6	78 %
5	CME Training			4	6	✓	×	NA	NA	NA	NA	NA	NA	NA	NA	4	6	32.8 %
6	Pharmacist competency			0	4	×	✓	0	4	×	✓	0	4	×	✓	0	4	66.8 %

the other projects newly established for example doing interviews with hiring pharmacy jobs, and implemented on the job training for the new pharmacist. Those projects already found in the study of Alomi as newly established[11] Most of the workforce projects had good percentages of improvement because all hospital pharmacies had real experiences in the training of pharmacy technician students, pharmacist students, Pharm D students.

Although the expert clinical pharmacist found an excellent support from hospital directors, medical directors, pharmacy directors, and pharmacy staff. However, the author found several barriers slow or delay of projects implementation including a shortage of pharmacy staff, shortage or absent of clinical pharmacists, shortage support pharmacy personal like porters or secretaries. Also, the resistance of some old physician with newly established clinical pharmacy services. The expert clinical pharmacist should keep continued with same work with expanding the projects until filling the residency requirements.

CONCLUSION

The value of expert clinical pharmacist consultation visit is crucial to prepare the hospital pharmacies for the pharmacy practice residency program and improve pharmacy education and training at public, emergency, pediatrics and maternity hospitals in Riyadh region of Saudi Arabia.

ACKNOWLEDGEMENT

I want to thank all hospital and pharmacy staff for their cooperation and assistant.

CONFLICT OF INTEREST

None.

ABBREVIATION USED

CPS: Clinical Pharmacy Services, PET: Pharmacy Education and Training, MOH: Ministry of Health, GAPC: General Administration of Pharmaceutical Care, PPRG: Pharmacy practice residency program, PGY1: Post Graduated Year One.

REFERENCES

1. Al-Haidari KM, Al-Jazairi AS. Establishment of a national pharmacy practice residency program in Saudi Arabia. American Journal of Health-System Pharmacy. 2010;67(17):1467-70.
2. Al-Qadheeb NS, Alissa DA, Al-Jedai A, Ajlan A, Al-Jazairi AS. The first international residency program accredited by the American Society of Health-System Pharmacists. American journal of pharmaceutical education. 2012;76(10):190.
3. Alomi YA, Alghamdi SJ, Alattyh RA. Strategic Plan of General Administration of Pharmaceutical Care at Ministry of Health in Saudi Arabia 2012–2022. J Pharm Pharm Scien. 2015;1(3):1-8.
4. Central Committee for Accreditation. Training Centers Accreditation Regulations. 2014. Saudi Commission for Health Specialties (SCFHS). Available from: http://www.scfhs.org.sa/en/Reglations/Documents/Regulation%20for%20Training%20Center%20Accreditation.pdf
5. Scientific Council of pharmacy. Candidate information for clinical pharmacy residency programs. 2017. 2nd edition. Available from: http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/ClinicalPharmacy/Documents/Program%20Booklit.pdf
6. 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 Pharmaceutical Journal. 2012;20(3):203-10.
7. 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 Pharmaceutical Journal. 2013;21(4):361-70.
8. Alomi YA, Zahran R. Self-Assessment of mass gathering (Hajj) pharmaceutical care program in Saudi Arabia. Clinical Trail. 2015;1(004).
9. Alomi YA, Alghamdi SJ, Alattyh RA, *et al*. National survey of pharmacy practice at MOH hospitals 2016: Pharmacy Education and Training services. Value in Health 2017;20(5): A1–A383.
10. Alomi YA. National Pharmacy Practice Programs at Ministry of Health in Saudi Arabia. J Pharm Pharm Scien. 2015;1(2):17-8.
11. Alomi YA. National Pharmacy Administration Programs at Ministry of Health in Saudi Arabia. BAOJ Pharm Sci. 2015;1: 009.

Cite this article as: Alomi YA, Aldosori N, Alhadab M, Alotaibi NR, Al- Shubbar, Jadkarim MM, Almalki HS, Baqader OM, Alghamdi A. Impact of Clinical Pharmacist Consultation Visits at Ministry of Health Hospitals in Saudi Arabia: Clinical Pharmacy Services and Pharmacy Workforce. J Pharm Pract Community Med. 2017;3(3):154-160.