

# Analysis of Drug Information Inquires at a Mental Hospital in Saudi Arabia

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## Abstract

**Objective:** To explore the analysis of drug information inquiries at a Mental hospital in Saudi Arabia. **Method:** It is 4.5- years cohort analysis of drug Information centers inquiries at a 500-bed Mental hospital in Riyadh city, Saudi Arabia. All drug information centers should enter the electronic answer form of drug information inquiries. American Society of Health-System Pharmacist (ASHP) drug information model. The form consisted of questioner demographic information, questioner contact information, patient demographic data, patient diagnoses or health problems, question classification, the specific inquiry, and answer, drop list of references (Tertiary resources, secondary resources, and primary resources), and pharmacist answered demographic data. The form made through survey monkey system. The format analyzed through the Microsoft Excel sheet version 10<sup>th</sup>. **Results:** The total of drug information inquiries was (1088). Most of the inquiries asked by pharmacist 504 (46.32%), physician 496 (45.59%) and patients 49 (4.5%). The most type of inquiries was drug dose 272 (25%), and drug of choice 204 (16.74%), followed by drug interaction 186 (17.1%) and adverse drug reaction 172 (15.81%). The physician frequently asked about adverse drug reaction 120 (24.19%) followed by drug dosing 106 (21.37%) and drug of choice 101 (20.36%). While the pharmacist most frequently asked about drug dosing 156 (30.95%) followed by drug interaction 100 (19.84%) and drug of choice 85 (16.87%). The most type of references used to answer the question was other 416 (38.52%) and Drug.com website 263 (24.35%) followed by Medscape website 226 (20.35%) and prescribing guidelines in psychiatry book 162 (15%). **Conclusion:** The drug information services prove comprehensive answering of drug inquiries at a mental hospital in Riyadh city, Saudi Arabia. The drug information services need update references and more awareness to medical staff.

**Key words:** Drug information, Inquires, Mental hospital, Ministry of Health, Saudi Arabia.

## INTRODUCTION

The drug information services play an essential role in the pharmacy practice at several healthcare organizations including Mental or Psychiatric hospitals in Kingdom of Saudi Arabia.<sup>[1-2]</sup> Most of the drug information centers implemented the ASHP regulation and guidelines.<sup>[2]</sup> Its answer to drug information inquiries from healthcare professionals or public, publishing medications education brochures for patients, shared in the pharmacy and therapeutics committee and review new drug addition or delegation from hospital formulary, participated in the therapeutic guidelines, and educate and trains the Pharmacy students.<sup>[3-5]</sup> Several investigations related drug information inquiries analysis around the world including Saudi Arabia and Middle counties. Nevertheless, it seldom finds the drug information inquiries analysis from mental or psychiatric hospitals. The objective of the study to explore drug information inquiries analysis at a psychiatric hospital in Riyadh region, Saudi Arabia.

## METHODS

It is 4.5- years cohort analysis of drug Information centers inquiries at a 600-bed Mental hospital in Riyadh city, Saudi Arabia. It located in Riyadh city Saudi Arabia. It the most prominent Psychiatrist and Addiction Ministry of Health hospital in Riyadh region. It inpatient admission and ambulatory care clinics, and Emergency departments. The hospital had a different specialty for adults and pediatrics. The hospital treats the common psychiatric illness including depression, bipolar and schizophrenia. In addition to addiction diseases. The hospital had pharmacy serve the patient including inpatient pharmacy with units dose drug distribution system, outpatient pharmacy, and home healthcare services, and drug information center. The pharmacy computerized physician order entry with an electronic prescription. The pharmacy clinical pharmacy and satellite pharmacy to monitor and follow the patient. Also, the clinical pharmacist shared in the round with medical team and operated clozapine and patient counseling clinics. The pharmacy had medications safety program and with electronic clinical pharmacy

documentation. In addition to annual pharmacy psychiatric symposium and clinical and pharmacy student training programs. The drug information center receiving inquiries from healthcare staff over eight hours per days for five days per a week, updated the hospital formulary and make drug evaluation for a new addition or deletion from hospital formulary, and participated in the Pharmacy and Therapeutic committees. Also, the drug information shared in the training of pharmacy students, pharmacy staff, and distribute public drug information to all visitors. The All drug information centers should enter the electronic answer form of drug information inquiries based on the American Society of Health-System Pharmacist (ASHP) drug information model.<sup>61</sup> The form consisted of questioner demographic information, questioner contact information, patient demographic data, patient diagnoses or health problems, question classification, the specific inquiry, and answer, drop list of references (Tertiary resources, secondary resources, and primary resources), and pharmacist answered demographic data. The form made through survey monkey system. The format analyzed through the Microsoft Excel sheet version 10<sup>th</sup>.

## RESULTS

The total of drug information inquiries was (1088). Most of the inquiries asked by pharmacist 504 (46.32%), physician 496 (45.59%) and patients 49 (4.5%). The most type of inquiries was drug dose 272 (25%), and drug of choice 204 (16.74%), followed by drug interaction 186 (17.1%) and adverse drug reaction 172 (15.81%) as explores in Table 1 and 2. The physician frequently asked about adverse drug reaction 120 (24.19%) followed by drug dosing 106 (21.37%) and drug of choice 101 (20.36%). While the pharmacist most frequently asked about drug dosing 156 (30.95%) followed by drug interaction 100 (19.84%) and drug of choice 85 (16.87%) as expected in Table 3. The most type of references used to answer the question was other 416 (38.52%) and Drug.com website 263 (24.35%) followed by Medscape website 226 (20.35%) and prescribing guidelines in psychiatry book 162 (15%) as explores in Table 4. The Drug.com website most used to answered adverse drug reaction 80 (20.42%), drug dosing 70 (26.62%) and drug identification 41 (15/59%) of inquiries. The Medscape website most frequently used for drug interaction 160 (70.8%), drug dosing 25 (11.06%) and drug choice 25 (11.06%) as a type of drug information inquiries. The prescribing guidelines most frequently used to answer the drug of choice 63 (38.89%), drug dosing 46 (28.4%)

and adverse drug reaction 35 (21.6%) inquiries as explores in Table 5. The Drug.com website and Medscape most used to answered pharmacist 141 (53.61%), 113 (50%) and physician 105 (39.92%), 104 (46.02%) respectively

**Table 1: Types of Requester.**

Answer Choices	Responses	Percent
Physician	496	45.59%
Pharmacist	504	46.32%
Nurse	17	1.56%
Patient	49	4.50%
Other	22	2.02%
Answered	1088	
Skipped	0	

**Table 2: Type of drug information inquiries.**

Answer Choices	Responses	Percent
Adverse drug reaction	172	15.81%
Drug interaction	186	17.10%
Drug Dosage	272	25.00%
Availability	45	4.14%
Stability	33	3.03%
Drug of choice	204	18.75%
Identification	83	7.63%
Method of administration	40	3.68%
Pharmacoeconomics	1	0.09%
Pregnancy, lactation	44	4.04%
Poisoning, toxicology	4	0.37%
Others	25	2.30%
Answered	1088	
Skipped	0	

**Table 3: Type of drug information inquiries per each requester.**

No		Physician		Pharmacist		Nurse		Patient		Other		Total	
1	Adverse drug reaction	120	24.19%	37	7.34%	3	17.65%	5	10.20%	7	31.82%	172	15.81%
2	Drug interaction	81	16.33%	100	19.84%	2	11.76%	2	4.08%	1	4.55%	186	17.10%
3	Dosage	106	21.37%	156	30.95%	3	17.65%	5	10.20%	2	9.09%	272	25.00%
4	Availability	25	5.04%	5	0.99%	1	5.88%	9	18.37%	5	22.73%	45	4.14%
5	Stability	2	0.40%	27	5.36%	4	23.53%	0	0.00%	0	0.00%	33	3.03%
6	Drug of choice, therapeutics, pharmacology	101	20.36%	85	16.87%	0	0.00%	13	26.53%	5	22.73%	204	18.75%
7	Identification	25	5.04%	47	9.33%	3	17.65%	5	10.20%	3	13.64%	83	7.63%
8	Method of administration	12	2.42%	24	4.76%	0	0.00%	4	8.16%	0	0.00%	40	3.68%
9	Pharmacoeconomics	0	0.00%	0	0.00%	0	0.00%	1	2.04%	0	0.00%	1	0.09%
10	Pregnancy, lactation	25	5.04%	16	3.17%	1	5.88%	1	2.04%	1	4.55%	44	4.04%
11	Poisoning, toxicology	1	0.20%	2	0.40%	0	0.00%	1	2.04%	0	0.00%	4	0.37%
12	Others	7	1.41%	12	2.38%	0	0.00%	5	10.20%	1	4.55%	25	2.30%
	Total	496	100.00%	504	100.00%	17	100.00%	49	100.00%	22	100.00%	1088	100.00%
	Answered	1088											
	Skipped	0											

**Table 4: Type of References of Drug Information Inquiries.**

Answer Choices	N	%
Drug.com	263	24.35%
Medscape	226	20.93%
Prescribing guidelines in psychiatry	162	15.00%
BNF	30	2.78%
Lexi comp-drug information	3	0.28%
Nice guidelines	1	0.09%
Others	416	38.52%
Answered	1080	
Skipped	8	

questions. While The prescribing guidelines most frequently used to answer physicians 124 (76.54%) and pharmacist inquiries 33 (20.37%) as explored in Table 6.

**DISCUSSION**

During past several years, the General Administration of Pharmaceutical established the National Pharmacy psychiatric program as part of pharmacy strategic plan at Ministry of Health hospitals.<sup>[1,7]</sup> The administration formulated central committee for the program from twenty representatives regions. The plan of the program for five founded by the committee. The drug information services was a part of the national pharmacy psychiatric program.<sup>[5]</sup> It was one of the famous drug information center located at the most significant mental hospital in Riyadh region Saudi Arabia. The drug information established from more five years with several services as mentioned before. The authors tried to analyze the drug information inquiries over the past more four years. The results of the study showed that is the number of drug information inquiries around one thousand over four years and half that is mean around two hundred and forty inquiries per year and twenty question monthly. The number of inquiries is very low with almost one question daily. That is may be related the hospital staff including physician and nurses were not familiar with drug information services or the drug information pharmacist not very helpful with their answers and may properly the first reason is correct. It was lower than what reported by Alomi YA *et al.* as public drug information center, or by reported by Asiri, YA as public hospital drug information center, so the finding was normal due limited services, healthcare professionals and population provided by mental drug information center.<sup>[5,8]</sup> The most of caller was pharmacist because they knew the services better than physicians or patients or even nurses. That's different what reported by Alomi YA *et al.* Asiri, YA, and Rosenberg, JM, more healthcare professional than public with the mental drug information center through served specialized hospital while the national served all public or general hospitals.<sup>[5,8-9]</sup> The least number of the caller was nurses and most property they were not familiar with drug information services or them very high qualified nurses and did not need to ask drug information center or they a lot of drug information references with demand of utilization of drug information services. The results showed the highest type of inquiries was drug dosing and drug of choice. That's resemble what reported by Alomi YA *et al.* Asiri, YA, and Rosenberg, JM in dosing standardization with highest type of inquiries.<sup>[5,8-9]</sup> It differs from other types of inquiries because the type of caller was different. The second type of inquiries was the drug of choice that may relate to the psychiatric management guidelines not existed or not

**Table 5: Type of Drug Information Inquiries vs. Type of References.**

No	Characteristics	FDA	Medscape	Prescribing guidelines in psychiatry	BNF	Lexi comp-Drug information	Nice guidelines	Others	Total
1	Adverse drug reaction	80	9	35	0	0	0	50	172
2	Drug interaction	3	160	3	0	0	0	22	186
3	Dosage	70	25	46	29	3	0	104	272
4	Availability	1	2	0	0	0	1	36	45
5	Stability	6	0	0	0	0	0	27	33
6	Drug of choice, therapeutics, pharmacology	35	25	63	0	0	0	90	204
7	Identification	41	0	0	0	0	0	42	83
8	Method of administration	6	4	6	1	0	0	23	40
9	Pharmacoeconomics	0	1	0	0	0	1	0	1
10	Pregnancy/lactation	26	2	7	0	0	0	9	44
11	Poisoning/toxicology	0	1	0	0	0	1	3	4
12	Others	3	3	3	0	0	0	16	25
	Total	263	226	162	30	3	2	416	1088
	Answered	1088							
	Skipped	0							

**Table 6: Type of drug information caller vs. type of references used.**

	Drug.com		Medscape		Prescribing guidelines in psychiatry		BNF		Lexi-Comp		Nice guidelines		Others		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Physician	105	39.92%	104	46.02%	124	76.54%	16	53.33%	2	66.67%	0	0.00%	149	35.82%	490	45.37%
Pharmacist	141	53.61%	113	50.00%	33	20.37%	14	46.67%	1	33.33%	0	0.00%	212	50.96%	504	46.67%
Nurse	6	2.28%	2	0.88%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	9	2.16%	17	1.57%
Patient	4	1.52%	3	1.33%	4	2.47%	0	0.00%	0	0.00%	1	100.00%	38	9.13%	49	4.54%
Other	7	2.66%	4	1.77%	1	0.62%	0	0.00%	0	0.00%	0	0.00%	8	1.92%	20	1.85%
Total	263	100.00%	226	100.00%	162	100.00%	30	100.00%	3	100.00%	1	100.00%	416	100.00%	1080	100.00%
Answered	1080															
Skipped	8															

familiar with hospital staff. The drug dosing was not clear of answering the question was that's under or overdose or for adults or pediatrics. All those information was not documented. Otherwise. The hospital drug formulary may be not well distributed to all medical staff or not existed even. The results showed that's the most of physicians asked about adverse drug reaction and this normal occurring with medical staff because most of them did not study detail in medical school about drug adverse effects while the pharmacist asked about drug doing and drug interaction. This is normal finding become the pharmacist focused correcting medications dosing errors and had active of preventing of drug interaction. It does not look like the physician. The results different what reported by Alomi YA, the healthcare professional asked more about drug standardization while in the current study about adverse drug reaction, that's due to antipsychotic medication many adverse even more than other normal medications.<sup>[5]</sup> The finding showed inadequate drug information resources available in hospital with limited drug information references either primary, secondary or tertiary resources. The results of type and common references used different what report by other, because they had organized library and good references.<sup>[5,8-9]</sup> The majority of references was through the internet with free of charge. In addition the documentation of type of references is not clear because the pharmacist searching with a lot of resources and forget to document or the there is not resources available all time to utilize them. The most website used was drug.com and Medscape while other free website not used. That's maybe the pharmacist more familiar with those website only. The pharmacist need more training with internet resources. The drug can use frequently in answering adverse drug reaction and this resources not appropriate for that's may other references are better than it for instance Myles side effect or Micromedex drug information. The Medscape more used in answering drug interaction become electronic system of drug interaction and friendly used. While the prescribing guidelines used for drug of choice inquiries and this is normal because that's resources is good for that's the type of drug information inquiries. The Medscape website more frequently used to answer pharmacist inquiries. This normal because of their question about drug interaction while the prescribing guidelines most used to answer the physician inquiries to answer their type of question about dosing and drug of choice in specific disease. All previous compared results with hospital or public drug information center, the author could not compare with mental hospital due limited published data. Despite of the beneficial results the study had several limitations including the documentation of drug information inquiries not adequate they more information about patient demographics data. The very important references not available during answering the question with type detail documentation. The pharmacist may had basic training of drug information services while need more high advances training in drug information services. The hospital staff and patient need awareness of drug information services. The study showed first done at mental hospital and had a good review analysis of drug information services performance and need to correct or defect of the services.

## CONCLUSION

The pharmacy department at the Mental hospital of Ministry of health provides drug information services to all healthcare providers and patients. The drug information center demands updated references and high advance training of drug information pharmacist. In addition to upgrading electronic documentation system for drug information inquiries.

## ACKNOWLEDGMENT

None.

## CONFLICT OF INTEREST

None.

## ABBREVIATIONS

KSA: Kingdom of Saudi Arabia; ASHP: American Society of Health-System Pharmacist; MOH: Ministry of Health; USA: United States of America.

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