

Research Article

Pattern of Rational use of Psychotropic Drugs for People with Severe Mental Illness in a Mental Specialized Hospital in Addis Ababa, Ethiopia: A Mixed Method Study

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Abstract

Introduction: The World Health Organization (WHO) reports show that more than 50% of all medications are not correctly prescribed or dispensed, and more than 50% of patients take their medications incorrectly. In developing countries, only one third of patients are treated according to clinical guidelines. Psychotropic polypharmacy is increasing and its prevalence ranges between 13-90%. Misuse of benzodiazepines is also high in psychiatric facilities being prescribed to half of all admitted patients despite lack of clear indication. Studies addressing the issue of rational use of psychotropic drugs in Ethiopia are non-existent.

Methods: Institutional-based cross-sectional triangulated with qualitative study was conducted from May 15-July 15, 2016 at Amanuel Mental Specialized Hospital which is located in Addis Ababa, Ethiopia. A total of 600 medical charts of patients with severe mental illness attending the outpatient department were randomly included in the study. The issued prescription papers were studied and dispensed drugs were checked for pattern of labeling. Consultation and dispensing time were calculated and clients interviewed for their knowledge of correct doses. Relevant hospital personnel were interviewed and records checked for facility indicators. Focus group discussions included prescribing clinicians and dispensing pharmacists.

Results: The prevalence of irrational antipsychotic drug use was 32.6%. The average number of drugs per encounter was 1.6. Percentage of encounters with injections prescribed was 21.2%, and the percentage of encounters with benzodiazepines prescribed was 4.7%. Regarding patient care indicators, the average consultation time was 5.1 minutes and average dispensing time was 29 seconds. The study revealed that 354(59%) of the clients had knowledge of correct dosage of the drugs they were provided. In the focus group discussions, patient load, knowledge gap, inadequate communication between prescribers and dispensers were mentioned by most of the discussants.

Conclusions: A significant prevalence of irrational use of psychotropic drugs was identified at Amanuel Mental Specialized Hospital. Proper communication between prescribers and dispensers in the form of case discussions, seminars, feedback, etc is recommended. Developing clinical guidelines to help guide prescribing and dispensing, as well as developing monitoring and evaluation are expected from concerned hospital officials.

Keywords: Rational drug use; Psychotropic drugs; Psychiatric hospital; Prescribing indicators; Patient care indicators; Facility indicators; Ethiopia

Abbreviations

WHO: World Health Organization; DTC: Drugs and Therapeutics Committee; FGD: Focus Group Discussion; NPM: Non-pharmacologic Measures; OPD: Outpatient Department; SPSS: Statistical Program for Social Sciences

Introduction

It has been described that irrational prescribing is a worldwide

problem [1]. According to a fact sheet of the World Health Organization (WHO) which was published in 2010, more than 50% of all medications are not correctly prescribed or dispensed; besides, more than 50% of patients take their medications incorrectly [2]. For the purpose of this study *rational drug use* refers to the view accepted at the WHO conference of 1985 in Nairobi which states: "rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own requirements, for an adequate period of time, and at the lowest cost to them and

their community” * [3]. To address the issue of irrational use of drugs there are three important aspects that need to be considered: the type of irrational use, the magnitude of irrational use, and the reasons behind irrationality [4]. Even though it has been said “people often have very rational reasons for using medicines irrationally,” there are known causes of irrational use: lack of knowledge or skills, information; unrestricted availability of medications; and overwork of health professionals have been implicated [4]. The WHO has developed indicators which can help to investigate irrational use of drugs. However, some authors indicated that in addition to the WHO indicators, there is an additional requirement which is important; this requirement is the use of a standard in clinical practice [1]. This indicates that rationality could also be measured by a deviation from an agreed standard, which is the treatment protocol. In developing countries less than 40% of patients in the public sector and less than 30% of patients in the private sector are treated according to clinical guidelines [2]. There are studies indicating that education, as well as the use of guidelines and algorithms are effective ways to avoid irrational polypharmacy [5]. Some authors indicate that lack of knowledge on rational drug use is a factor in irrational prescribing. However, some literatures indicate that the presence of adequate knowledge does not always result in rational prescribing behavior [1].

The literature defines psychotropic polypharmacy as the concurrent prescription of two or more psychiatric drugs to a patient [5]. It is known that psychotropic polypharmacy is a significant problem in psychiatric practice. There are reports showing that the practice of polypharmacy is increasing despite all advances in psychopharmacology, its prevalence ranging between 13-90% [5].

In addition to polypharmacy, there are other medication-related problems in psychiatric practice. Misuse of benzodiazepines is another problem that has been described. Studies indicate that misuse of benzodiazepines in psychiatric institutions is a problem with almost half of all patients admitted to some psychiatric facilities being prescribed with benzodiazepines despite lack of clear indication [6]. Discontinuation of such drugs has resulted in beneficial outcomes with regard to cognitive and psychomotor function, especially in the elderly [7].

Irrational use of psychotropic medications is a serious problem, given the nature of the medications with regard to the drug side effects they cause. However, studies addressing the issue of rational use of psychotropic medications in Ethiopia are non-existent.

The objective of the study was to assess the pattern of rational use of psychotropic drugs and associated reasons among patients with severe mental illness in Amanuel Mental Specialized Hospital.

Methods

Study design and setting

Institutional-based cross-sectional triangulated with qualitative study was conducted to assess rational use of drugs for outpatients with severe mental illness.

The study was conducted from May 15 to July 15, 2016 at Amanuel Mental Specialized Hospital in Addis Ababa, Ethiopia. Amanuel Mental Specialized Hospital is a psychiatric hospital with inpatient and outpatient psychiatric services. The hospital has 270

beds and annually it has about 130,000 out patients. The hospital clients are predominantly patients with severe mental illness such as schizophrenia and other psychoses, bipolar illness and severe forms of major depression. The hospital has 11 psychiatrists and other prescribers which include Bachelor- and master-level trained psychiatry officers, general practitioners, and public health officers. The hospital also has 45 pharmacists, some of which are clinical pharmacists. The hospital has a drug and therapeutics committee (DTC) which comprises of the relevant professionals including psychiatrists, pharmacists and nurses among others. The DTC has the mandate to ensure the safe and effective use of medications in the facility. In addition, the hospital is a teaching center for psychiatry for most health science students throughout the country; especially for practical learning purposes health science students come from most of the universities and colleges, both governmental and private teaching facilities to the hospital.

Study population

WHO's minimum sample of 600 for irrational drug use studies was taken. A total of 600 medical charts of patients with severe mental illness attending the outpatient department and corresponding prescriptions were reviewed. Patient medical charts which were incomplete and illegible were excluded. Prescriptions were tracked to the pharmacy and pattern of dispensing and labeling were studied. The clients were also interviewed. For qualitative method a representative group of participants was purposefully included in the focus group discussions (FGDs).

Data collection, processing and analyses

Four clinicians, two clinical pharmacists for data collection and one psychiatrist as supervisor were assigned. Medical charts of patients with severe mental illness attending outpatient department were randomly selected and included for study. Severe mental illness for the purpose of this study includes the following disorders according to DSM-V: schizophrenia and other psychotic disorders, bipolar affective disorders, and severe major depressive disorder. Prescription papers issued to the patients whose charts are reviewed are also reviewed and tracked to the pharmacy for further study. Dispensed drugs for the tracked prescriptions were also studied for evaluation of pattern of labeling. Consultation time and dispensing time were calculated by the data collectors, and clients were interviewed for their knowledge of correct doses. Relevant officials were interviewed and documents checked for facility indicators. The data was collected using structured formats which include demographic variables, as well as drug use variables which were prepared based on the WHO's rational drug use indicators.

Members of the FGD were purposively selected to take part in the study. The FGDs were carried out with prescribing clinicians and dispensing pharmacists. Focus group discussion guiding questions were developed after the findings of the quantitative study were analysed. The questions were meant to address issues not addressed by the quantitative data collection, but also were used to clarify and complement the quantitative data.

Data management and analysis

For quantitative data analysis, after appropriate coding, the data was entered using Epi Info version 7 software and was exported to

statistical program for social sciences (SPSS) version 20 software for analysis. Descriptive analyses involved the use of numbers and percentage for variables.

For qualitative data analysis, tape recorded data from focus group discussions was transcribed and translated to English. Codes were developed based on original terms used by participants. The transcript and notes were analyzed by manual thematic analysis method.

Ethical consideration

Ethical approval was obtained from the Ethical review committee of Amanuel Mental Specialized Hospital. Participants were given explanation about the purpose of the study and they consented to participate in the study. Confidentiality was maintained at all levels of the study.

Results

Quantitative data analysis results

The mean age of the participants was 33.5 years with standard deviation of 10.9. Schizophrenia was the leading diagnosis identified in 365(60.8%) study participants and most of them were male with 365(60.8%). Majority of the participants, ie, 579(96.5%) have a history of at least 2 visits.

Among the antipsychotics, chlorpromazine was the most frequently prescribed antipsychotic drug prescribed for 271(45.2%) of the participants, followed by risperidone 154(25.7%). In 127(21.2%) of the encounters, the depo injectable antipsychotic fluphenazine decanoate was prescribed. A benzodiazepine was prescribed for 28(4.7%) of the participants. Carbamazepine was a leading drug among the mood stabilizing medications prescribed for 37(6.2%). Among the antidepressants, fluoxetine was the most frequently prescribed drug prescribed for 45(7.5%). Diazepam is a leading prescribed drug among benzodiazepines in 19(3.2%). The overall prevalence of irrational drug use was 32.6 %

Prescribing indicators

The average number of drugs per encounter was 1.6. Only 79.1% of the drugs were prescribed in generic name, and percentage of drugs prescribed from essential drug list is 97.5%. Percentage of encounters with injections prescribed was 21.2%. The percentage of encounters with a benzodiazepine prescribed was 4.7%.

Patient care indicators

The study revealed that the average consulting time for the patients is only 305sec (5.1min). The average dispensing time was 29sec. Among the prescribed medications 98.2% are actually dispensed. Regarding the labeling of drugs, only 354(59%) of the drugs were named correctly and only 477(79.5%) of the drugs' route was written appropriately. The study also revealed that 354(59%) of the clients had a knowledge of the correct dosage of the drug they were provided.

Facility indicators

The study has identified that the hospital has essential medicines formulary that is updated and notified regularly to the prescribers. However, there are no clinical guidelines for use of medicines in psychiatric disorder treatment. Among the 5 key (tracer) psychotropic drugs which were selected by the DTC of the hospital all were available during the study period.

Table 1: Socio-demographic and Clinical Characteristics Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Variables	Number (%)
Age(years)	(M±SD)/R 33.5 +10.9/15-80
Sex	Male 365(60.8)
	Female 235(39.2)
Type of diagnosis	Schizophrenia 460(76.7)
	Bipolar disorder 60(10.0)
	Severe major depression 80(13.3)
Number of visits	First 21(3.5)
	2 nd and above 579(96.5)

Table 2: Table Showing Type of Drugs Prescribed Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Drug	Number(%)
Antipsychotics	Chlorpromazine 271(45.2)
	Thioridazine 19(3.2)
	Trifluoperazine 16(2.7)
	Haloperidol 82(13.7)
	Fluphenazine Decanoate 127(21.2)
	Risperidone 154(25.7)
	Olanzapine 7(1.2)
	Pimozide 1(0.2)
Mood Stabilizers	Carbamazepine 37(6.2)
	Lithium 3(0.5)
	Sodium Valporate 21(3.5)
Antidepressants	Imipramine 8(1.3)
	Clomipramine 4(0.7)
	Flouxien 45(7.5)
	amitriptyline 78(13)
Anticholinergic	Trihexyphenidyl 48(8)
Benzodiazepines	Bromazepam 1(0.2)
	Clonazepam 8(1.3)
	diazepam 19(3.2)
Others	7(1.2)

Other indicators

The number of medications per prescription was one in 300(50%), and two in 249(41.5%). Only 272(45.3%) of the clients received a non-pharmacological measures (NPM) from prescribers and 273(45.5%) of the clients received a non-pharmacological measures from dispensers.

Regarding the completeness of prescription information, important information on superscription and inscription like address 47(7.8%), diagnosis 90(15%) and full name of drug 393(65.5%) are mentioned on prescription showing that those important data are missing in marked proportion of prescriptions. Few important components of the subscription part of the prescription like qualification 8(1.3%) and seal 39(6.5%) are filled by the prescribers (Table 1-7).

Table 3: Table Showing Drug use Indicators Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Drug use indicators	Value
Total number of encounters	600
Total number of drugs prescribed in all encounters	956
Total number of generic drugs prescribed	756
Total number of prescription with at least one injection drug	127
Total number of prescriptions with at least one benzodiazepine	28
Total number of drugs prescribed from essential drug list	932
Average number of drugs per encounter	1.6
Percentage of drugs prescribed in generic name	79.1%
Percentage of encounters with injections prescribed	21.2%
Percentage of drugs prescribed from essential drug list	97.5%
Percentage of encounters with a benzodiazepine prescribed	4.7%

Table 4: Table Showing Pattern of Polypharmacy Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Number of medications per prescription	Number (%)
One	300(50)
Two medications	249(41.5)
Three medications	46(7.7)
Four medications	5(0.8)

Table 5: Composite Measure of Irrational Drug Use Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Indicator	Number (n)	Weights (n/N)	Percentages x weights
Benzodiazepine given	28 (4.7)	0.041	0.2
Non-generic drugs prescribed	200 (20.9%)	0.3	6.27
Injections given	127 (21.2%)	0.19	4.03
Use of polypharmacy	300 (50%)	0.44	22
Number of drugs not in the EDL	24 (2.5%)	0.04	0.1
Total	679		32.6

Qualitative results

Most of the FGD discussants emphasized that patient load, professional negligence, prescriber’s knowledge gap, and communication barriers between prescribers and dispensers, inadequacy of the hospital control and supervision system, patient noncompliance and incomplete patient assessment documentation were the major factors that influence irrational drug use.

Polypharmacy

Discussants agreed that prescribing two or more drugs is not advisable unless there is a condition clearly indicated. The discussants shared their idea that the possible conditions where more than one medication could be prescribed for a patient are: mood disorder with psychotic features where an antidepressant or mood stabilizer could be coupled with an antipsychotic; to overcome the side effect in which an anticholinergic drug could be prescribed with a typical antipsychotic, none compliance and non- adherence of the patient where a depo injectable antipsychotic could be prescribed together with a tablet form of another antipsychotic at the beginning.

Table 6: Table Showing Patient Care Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Indicator	Value
Average consulting time (sec)	305
Average dispensing time (sec)	29
Total number of drugs prescribed	956
Total number of drugs dispensed	939
Adequate Labeling of prescribed Meds	
Name	354(59%)
Route	477(79.5%)
Dose	597(99.5%)
Frequency	599(99.8%)
Duration	589(98.2%)
Others	5(0.8%)
Patient knowledge on dosage	354(59%)
NPM from prescriber	272(45.3%)
NPM from dispenser	273(45.5%)

Table 7: Table Showing Information Included in Prescription Paper Among Study Participants at Amanuel Hospital, Ethiopia, 2016.

Information	Number(%)
Superscription	
Name	596(99.3%)
Address	47(7.8%)
Age	376(62.7%)
Sex	511(85.2%)
Dx	90(15%)
Inscription/Drug information	
Full name	393(65.5%)
Dosage form	565(94.2%)
Dose	593(98.8%)
Subscription	
Name	521(86.8%)
Sig.	594(99%)
Qualification	8(1.3%)
Seal	39(6.5%)
Date of prescription	593(98.8%)

One of the discussant groups stated that:

“The patient may have “MDD with psychotic features, both antidepressant and antipsychotic medication might be prescribed. Sometime three medications might be ordered. E.g. if patient has sleep problem, clonazepam may be added”. On the top of this, when patients are non-compliant and non-adherent and a depo injectable antipsychotic is the option we prescribers are directed to prescribe two or more drugs.”

Prescribing by brand name

All of the discussants admitted that previous malpractice trends and short-to-write is the major reasons to write on brand name. In

addition to this, the dispensers do not inform the prescribers and they do not complain prescriptions on brand name.

Discussants with psychiatrist and pharmacists said that:

“Actually from our practice we use Modecate or Stelazine brands on prescription at outpatient department (OPD). We don't know why we use brand names instead of generics. We believe that it came from previous practices. If you observe all prescriptions from OPD, some drugs are prescribed in brand names like Modecate and Stelazine. It is obvious that such practice is irrational.”

In all discussion groups most of the participants agreed that pharmacists did not complain while drugs were prescribed in brand names.

One of the discussant groups supported this idea by exploring as follows:

“The pharmacists accept the prescription without any complaint when prescribers prescribe in brand names. We may learn from the pharmacists if they send back the prescription to the responsible prescriber to correct it and the next generation can learn from us.”

The other group discussants explained deleterious consequences of prescribing in brand name and by abbreviations as follows:

“We didn't tell for patients whether the drug is written in generic or brand name and it brings some sort of conflicts. For example, when our patients go back to their home with injectable drug written in brand name, and they take to nearby health facility, the professionals see the ampule of the drug to cross check with what is written on prescription. If that health professional is not familiar with the brand name, they may reject it and the patient may not receive the treatment. The other problem is, there is confusion on non-standard abbreviations used, eg CBZ for Carbamazepine and CPZ for chlorpromazine at OPD. There were times when chlorpromazine was given instead of carbamazepine by mistake due to the use of non-standard abbreviations. So it is better to correct the way drug name is written on prescriptions.”

Consultation time with prescriber

Majority of the discussants believed that patient overload; patient care givers coming to hospital to receive the medications on behalf of the patients, and poor patient appointment system were the main factors to have less consultation time.

One of the group discussant shared their agreement as follows:

“In Amanuel hospital doctor patient consultation time is very low. This low consultation time is due to patient over load : at one OPD 50-60 patients seen at one day, and patients are appointed without considering equal distribution of patients on working days.”

Information filling on the prescription

All discussants believed that there is incomplete information on the prescription because of patient load, professional negligence, and lack of commitment from pharmacists to send back prescriptions with incomplete information for corrections.

Labeling

From the group discussant pharmacists agreed that there is no complete labeling of dispensed drugs because of high patient flow and

lack of commitment from the side of dispensing pharmacists.

Discussion

The average number of drugs per encounter in our study (1.6) is low as compared to other studies, which is 3.5 in Nigerian studies [8-13], 1.9 in Hawasa study, Ethiopia [9], 2.4 in a Zambian study [10], 2.2 in a Brazilian study [11], 3.7 in Ghana [12]. Compared to other studies in psychiatric centers, the finding is lower than that of a Nigerian study which shows average number of drugs per encounter being 3.5 [13] and comparable to a study done in Western Nepal, showing 1.55 in males and 1.89 in females [5]. Our finding shows that the number of drugs per encounter is in consistence with the WHO standard value of <2. However, the percentage of clients who were prescribed two or more drugs, i.e polypharmacy is 50%. This finding is high compared to a study done in a psychiatric center in India, which showed polypharmacy rate of 22% [14]. The percentage of encounters with a prescribed injection was 21.2; this is above the WHO standard of <20. This value is higher than studies conducted in other areas; 13.8 in Nigeria [8,13], 9.7 in Zambia [10], 2.5 in Brazil [11], 8.3 in Ghana [12]. It is lower than another Nigerian study 38.7 [13], and the study in Southern Ethiopia 38.1 [9]. The percentage of drugs prescribed in generic name (79.1) is short of the WHO standard of 100%, but better than the study in Zambia, 56.9 and the study in Nigeria, 58.5 [10,13], 62.6 in Ghana [12], 28.7 in a study in psychiatry outpatient in Western Nepal [15]; but worse than the study in Brazil, which is 86.1 [11]. The percentage of drugs prescribed from essential drug list (97.5) also is short of the WHO standard of 100%, and comparable to a Zambian study showing 95.9 and a Nigerian study showing 95.8 [10,13]. The WHO rational drug use indicator includes percentage of encounters with an antibiotic prescribed, but our study was conducted at a specialized psychiatric hospital, and the investigators thought benzodiazepines are more likely to be abused. With this consideration we instead included percentage of encounters with a benzodiazepine prescribed [16]. We found out that benzodiazepines were prescribed in 4.7% of encounters. The prevalence of irrational prescribing in our study was 32.6%, and this is low as compared to the finding in Zambia which is 51.4% [10]. However, this level of irrational prescribing of psychotropics is taken as quite high considering the potential adverse effects of the drugs in the short and long terms. Psychotropics are not benign drugs; they are associated with extrapyramidal side effects which hamper quality of life, and the occurrence of irreversible adverse effects like tardive dyskinesia should be strongly considered by prescribers. There also is a potential for metabolic side effects from atypical antipsychotics and dependence from benzodiazepines, which makes rational use of these drugs so valuable.

The findings in our study have shown that the prescribing decisions could probably have been not thoroughly considered given the very low average consultation time for the patients, which is only 305 sec (5.1min) which is far from the WHO standard for average consulting time. The consultation time is shorter than a finding from a Ghanaian study in a general hospital showing consultation time of 8 minutes [12]. It is definitely too short compared to the amount of time psychiatric evaluations require. This short consultation time implies the inadequate time allocated to make the minimum required time to make adequate patient evaluation to make proper prescribing

decisions, as well as to give the proper counseling regarding medication use as well as non-pharmacologic measures. The average dispensing time is also low compared to a finding from a Ghanaian study of 1.52 minutes [12], it hardly makes it possible to counsel patients properly and making sure they capture the information they are provided. This has been reflected in the fact that only 59% of the clients had the knowledge on the correct dosage of the drugs they were provided. This is slightly lower compared to the Ghanaian study which showed 62.5% of clients knew the correct drug dosage of their medications [12]. This shows that apart from the irrationally prescribed medications, even the rationally prescribed may have been improperly used by the clients, showing that the level of patient care being so compromised. To make things worse, the labeling of the drugs was not adequate given that only 59% of the drugs named correctly and only 79.5% of the drug route was written appropriately. This could be due to, but not solely explained by incomplete prescriptions coming to dispensers, given that little important information on superscription and inscription like address (7.8%), diagnosis (15%) and full name (65.5%) are written on prescription by prescribers. Important components of the subscription part of the prescription like name 521 (86.8%), qualification 8 (1.3%) and seal 39 (6.5%) are not filled by a majority of the prescribers and dispensers.

Less than half the clients received non-pharmacological measures from prescribers or dispensers (45.3% and 45.5%, respectively). This makes it difficult to achieve the optimal response the patients get from the prescribed medicines given the complementary benefit of non-pharmacologic measures on patient outcomes. Again this could be a reflection of the inadequate consultation and dispensing time allocated for the clients.

From the focus group discussion it was evident that patient load was giving clinicians less time for proper evaluation, less time for making sound prescribing decision and writing complete prescriptions, as well as giving them less time for educating and counseling patients and their caregivers. But professional negligence was also a factor in causing bad prescribing trends to continue. This bad prescribing trend is continued due to lack of reaction from dispensing pharmacists who lack the commitment to make sure correct prescribing trends are followed. This is compounded by the lack of control mechanisms from the hospital.

All these problems could be aggravated by the lack of prescribing guidelines and protocols available to prescribers and dispensers. The absence of prescribing and dispensing standards could have significant effects on the level of the irrational prescribing trends.

Conclusion and Recommendations

A significant prevalence of irrational use of drugs was identified at Amanuel Mental Specialized Hospital. Patient load, professional negligence, poor communication between prescribers and dispensers, and inadequacy of control system in the hospital has been the identified causes of the irrational drug use in the hospital.

As recommendation we suggest proper communication means could be devised including regular forums for discussion on rational drug use between prescribers and dispensers. This could be in the form of case discussions, seminars, feedback etc. Developing clinical guidelines by hospital management to help guide evidence-based

prescribing and dispensing, as well as developing monitoring and evaluation of rational use of drugs and devising interventions are also recommended.

Authors' Contributions

DA and KH conceived of the study and were involved in the design of the study, in the coordination and reviewed the article, analysis, report writing and drafted the manuscript. CK, AB, TF, TA and MG were involved in the study design, analysis and drafted the manuscript. All authors read and approved the final manuscript.

Authors' Information

DA and TA are public health specialists, KH is a psychiatrist, CK and MG are clinical pharmacists, AB and TF are expert psychiatry professionals.

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References

- Hans V. Hogerzeil. Promoting Rational Prescribing: An International Perspective. *Br J Clin Pharmacol*. 1995; 39: 1-6.
- WWW. TheLancet.com. Vol 375 June 12, 2010.
- World Health Organization. How to Investigate Drug Use in Health Facilities. Selected Drug Use Indicators. WHO 1993.
- World Health Organization, Geneva. Promoting Rational Use of Medicines; Core Components. September 2002.
- Sanjay Kukreja, Gurvinder Kalra, Nilesh Shah, and Amresh Shrivastava. Polypharmacy in Psychiatry: A Review. *Mens Sana Monogr*. 2013; 11: 82-99.
- Helen C. Gallagher. Addressing the Issue of Chronic, Inappropriate Benzodiazepine Use: How Can Pharmacists Play a Role. *Pharmacy*. 2013; 1: 65-93.
- Hiroto Ito, Asuka Koyama, Teruhiko Higuchi. Polypharmacy and Excessive Dosing: Psychiatrists' Perceptions of Antipsychotic Drug Prescription. *The British Journal of Psychiatry*. 2005; 187: 243-247.
- OO Odusanya. Drug Use Indicators at a Secondary Health Care Facility in Lagos, Nigeria. *Journal of Community Medicine and Primary Health Care*. 2004; 16: 21-24.
- Anteneh Assefa Desalegn. Assessment of Drug Use Pattern Using WHO Prescribing Indicators at Hawassa University Teaching and Referral Hospital, South Ethiopia: A Cross-Sectional Study. *BMC Health Services Research*. 2013; 13: 170.
- V Lukali, C Michelo. Factors Associated with Irrational Drug Use at a District Hospital in Zambia: Patient Record-based Observations. *Medical Journal of Zambia*. 2015; 42: 25-30.
- Maria Beatriz Cardoso Ferreira, Isabela Heineck, Liziane Maahs Flores, et al. Rational Use of Medicines: Prescribing Indicators at Different Levels of Health Care. *Brazilian Journal of Pharmaceutical Sciences*. 2013; 49.
- Daniel Kwame Afriye and Tetteh, Raymond. A Description of the Pattern of Rational Drug Use in Ghana Police Hospital. *International Journal of Pharmacy and Pharmacology*. 2014; 3 :143-148.
- Moses A. Ojo, Cecilia I. Igwito, Thomas Emedoh. Prescribing Patterns and

- Perceptions of Health Care Professionals About Rational Drug Use in a Specialist Hospital Clinic. *Journal of Public Health in Africa*. 2014; 5: 242.
14. Chetna A. Shamkuwar, Ashish D. Chakravorty, Meena P. Shrivastava, et al. Pattern of Prescription and Drug Use in Psychiatry Outpatient Department of Private Practitioners of Central India. *International Journal of Basic and Clinical Pharmacology*. 2013; 2: 777-782.
15. P Shankar, S Roy. Patterns of Prescription and Drug Use in a Psychiatry Outpatient Department in a Teaching Hospital in Western Nepal. *The Internet Journal of Pharmacology*. 2001; 1: 2.
16. Karen B. Thakkar, Mangal M. Jain, Gauri Billa, Abhijit Joshi, and Akash A. Khobragade. A Drug Utilization Study of Psychotropic Drugs Prescribed in the Psychiatry Outpatient Department of a Tertiary Care Hospital. *J Clin Diagn Res*. 2013; 7: 2759-2764.