



Quality Assessment and Perception of Dental Prescriptions in Bangalore City: A Cross-Sectional Study

Ritu Maiti, Umashankar G.K and Niharika Benjamin

M.R Ambedkar Dental College, 1/36, Cline Road, Bangalore – 560005.

Received: 26 Mar 2019 / Accepted: 23 Apr 2019 / Published online: 1 Jul 2019

*Corresponding Author Email: ritu.maiti@yahoo.co.in

Abstract

Background: prescription auditing is an integral part of the healthcare system. It should be conducted periodically to ensure quality healthcare and to bring about transparency so that corrective actions can be initiated then and there. **Aim:** The study was aimed to carry out Quality Assessment and Perception of Dental Prescriptions. **Settings and design:** A cross-sectional study was carried out in dental teaching hospital and pharmacy shops near the vicinity of college in Bangalore. **Method and material:** Prescriptions were collected and analyzed for different parameters and as per WHO core prescribing indicators. A self-administered questionnaire was used to know about the perception of patients and pharmacist towards health-care. **Statistical analysis used:** data was entered in MS-excel and descriptive statistical analysis was done using SPSS 24. **Results:** A total of 100 prescriptions were analyzed. The different parameters of prescription had one or the other data missing. The average number of drugs per prescription was 1.95. Drugs with generic names constituted 28%. 68% of prescriptions had at least one antibiotic, whereas 14 % had injective. The medicines from essential drug list constituted 65%. Mixed response was received by patients and pharmacist. **Conclusions:** The prescriptions generated were incomplete and sizeable proportions did not adhere to WHO prescribing indicators. Patients and pharmacist perception towards prescription was satisfactory

Keywords

Dental, Pharmacy, Prescription, Auditing.

INTRODUCTION:

The word "prescription" is derived from latin prefix "pre" ("before") and "script" ("to write"). It is defined

as an instruction written by medical practitioner that authorizes a patient to be issued with a medicine or treatment.¹ The parts of prescription are

superscription, inscription, subscription and transcription. The first section is called superscription, which includes date, name, age, sex, address, weight of the patient etc. and a symbol 'R' meaning "take thou". Inscription is the main body and it consists of medications including dosage etc. Subscription contains direction to the pharmacist. Signa is the portion containing direction to the patients. At the end there is signature which contains prescriber's name, signature, designation, regd. no. etc.²⁻⁴

Dentists prescribe a wide range of medicines for either therapeutic or prophylactic use. It is already established that treatment with medicines is one of the most cost-effective medical interventions.⁵ The cost of prescribed drugs is a major problem in developing countries such as India, which allocates only 0.9% of its Gross Domestic Product (GDP), i.e. Rs. 200 per capita, to health.⁶

The concept of rational drug use is not new and dates back to 300 B.C as evident by statement made by the physician "Alexandrian Herophilus" that is: Medicines are nothing in themselves but are the very hands of God if employed with reason and prudence.⁷ Rational drug prescribing has been defined as using the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost. Important criteria to achieve the rational drug use includes accurate diagnosis, proper prescription, correct dispensing, suitable packing and patient adherence.⁸

Prescription audit is defined as studying the prescribing pattern in order to monitor, evaluate and if necessary, suggest modifications in the prescribing practices of health care practitioners, so as to make the medical care rational and cost effective.⁹ Prescription audit should be conducted periodically to ensure quality healthcare and to bring about transparency so that corrective actions can be initiated then and there. Although, a number of studies have been reported to study the drug prescription pattern of physicians, but the data is scarce on the dental practitioners.¹⁰ Hence, the present study was aimed to carry out Quality Assessment and Perception of Dental Prescriptions in Bangalore.

The objectives were:

- To analyse the proportion of prescriptions which are legible and written in complete format.
- To assess the ratio drug use as per the WHO core prescribing indicators.
- Also to know the perceptions and knowledge of patients and pharmacist towards healthcare.

MATERIALS AND METHODS:

This cross-sectional study was conducted in the pharmacy shop of dental teaching hospital for duration of 10 days in the month of November. For collection of prescriptions, a total of 100 prescriptions were collected conveniently through carbon copy of original prescription. Out of which, prescriptions which did not meet the legibility criteria were excluded.

Checking all the parameters a total of 100 prescriptions were chosen.

Prescriptions were audited for different parameters (superscription, inscription, transcription and subscription) and as per WHO core prescribers¹¹.

- Average number of drugs prescribed per encounter (whether the patient actually received the drugs or not). Optimal level: ≤ 3 .
- Percentage of drugs prescribed by generic name. Optimal level: 100%.
- Percentage of patient encounters with an antibiotic prescribed. Optimal level: $\leq 30\%$.
- Percentage of patient encounters with an injection prescribed. Optimal level: $\leq 10\%$.
- Percentage of drugs prescribed from the national EDL or the facility's formulary. Optimal level: 100%.

To know the perception of pharmacist, 10 pharmacy shops near the vicinity of the college was chosen. To understand the perception of patients, the ones who visited the pharmacy shops during the study duration were selected. A self-administered questionnaire was used to know perceptions of patients and pharmacist about the medication prescribed and legibility of prescription. Finally, the data was entered in MS-Excel and was analyzed by Statistical Package for Social Sciences (SPSS 24).

RESULTS:

The results are presented in tables, text and figures. Figure 1 shows the age wise distribution with majority of patients belonging to age group 20-40 years i.e. 50%.

Fig 2 shows the number of prescriptions generated in different departments. Highest was in oral surgery 37% followed by conservative dentistry 17%.

Fig 3 shows the different parameters of prescriptions and had one or the other data missing.

Fig 4 shows some degree of poly pharmacy was seen i.e. more than 60% of prescriptions had two or more drugs. The average number of prescribed drugs was 1.65

Fig 5 shows the other WHO core prescribing indicators. Generic medicine was present only 28% prescriptions. Antibiotics were prescribed in 68% of

prescriptions. Injections were less prescribed i.e. 14%. Medicines from essential drug list constituted 65%.

Perception of patients:

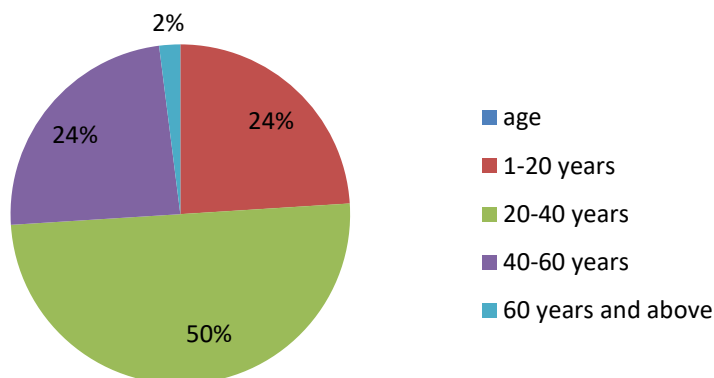
The patients were sometimes aware of the medicine prescribed i.e. 52% and that they always received clear instructions from the doctors (68%). They always followed the instructions (68%) and informed about their medical condition (74%). 64% of patients reported of allergy after taking the prescribed medicine. When asked about self-medication majority said never (64%) and sometimes in 36%. If doctors give more medicine, the response was "Yes" in more than 50% as always and sometimes. 56% of subjects felt medicine to be cost effective. However,

medicine prescribed to be effective was perceived by 72% of patients. Discontinuation of medicine was found to be low (66%).

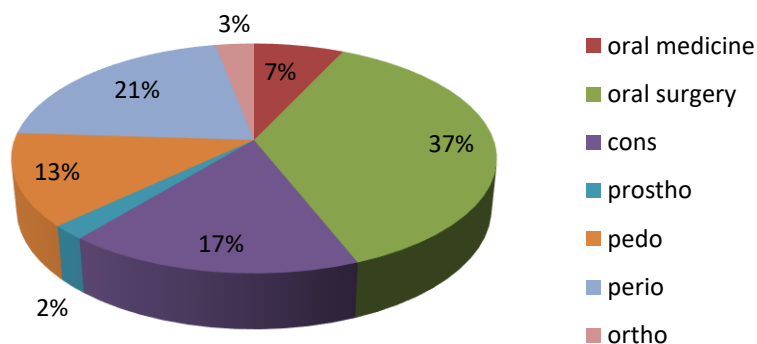
Perception of pharmacist:

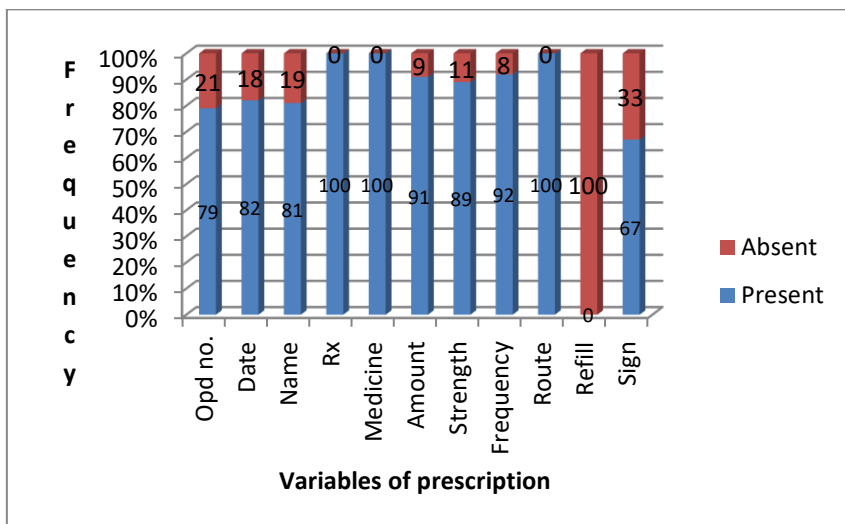
Pharmacist adhered to the protocol of giving of always giving medicine with valid prescription (96%). However, the recording of patients details was low (<50%). Prescribing of alternative medicine was 54% and when asked about whether patients asked for reduction in cost the response was sometimes in 66%. Dispensing of generic medicine was low (<50%). They reported of errors in the prescriptions written. It was also reported that not all medicines are purchased. However, pharmacist felt they felt an important role in safety of patients.

Age wise distribution



Department wise distribution





WHO Core indicators

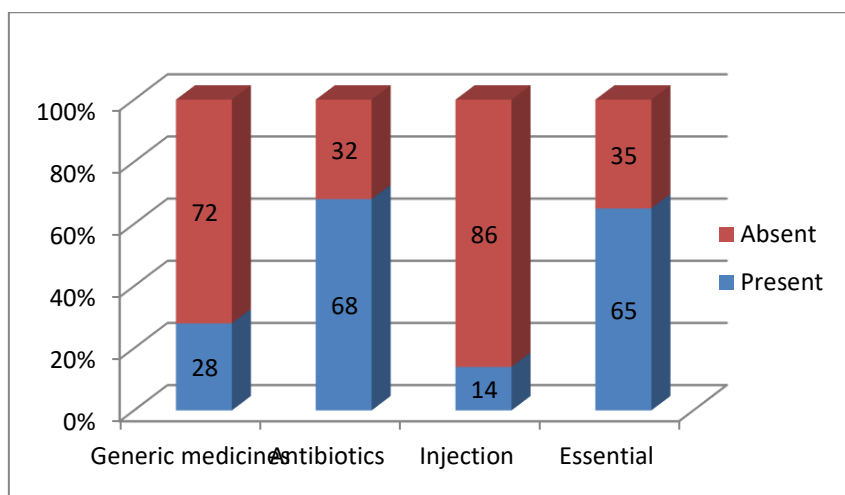
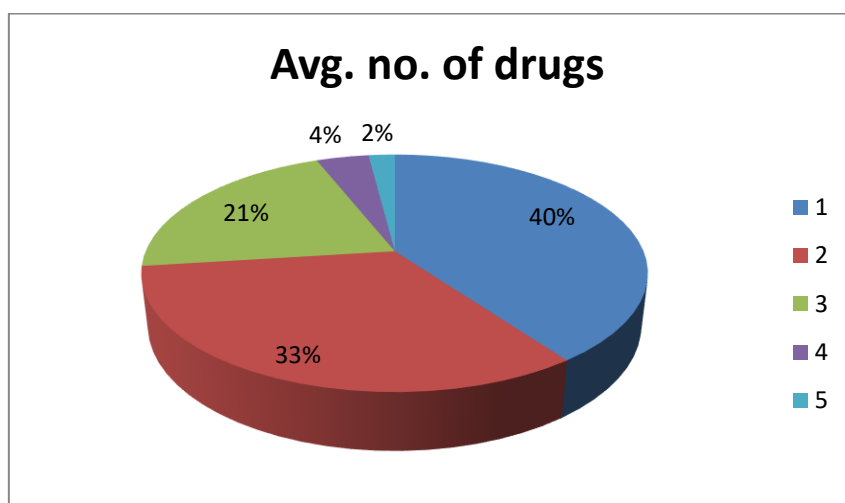


Table 1: Patient perception:

Variables	Number of subjects (50)	Percentage (%)
Awareness of the medicine		
Always	50	100
Giving clear instructions		
Always	34	68
Sometimes	16	32
Following the instructions		
Always	39	78
Sometimes	11	22
Informing about medical condition		
Always	40	80
Sometimes	10	20
Reporting of allergy or problem after taking medicine		
Always	32	64
Sometimes	13	26
Never	5	10
Self- medication		
Sometimes	18	36
Never	32	64
doctors give more medicine than needed		
Always	13	26
Sometimes	31	62
Never	6	12
Cost-effectiveness of medicine		
Always	22	44
Sometimes	28	56
Effectiveness of medicine		
Always	36	72
Sometimes	14	28
Discontinuation of medicine		
Sometimes	17	34
Never	33	66

Table 2: Pharmacist perception:

Variables	Number of subjects (50)	Percentage (%)
Giving medicine only with valid prescription		
Always	48	96
Sometimes	2	4
Maintaining record of visiting patients		
Always	23	46
Sometimes	22	44
Never	5	10
Prescribing of alternative medicine		
Sometimes	23	46
Never	27	54
Patients ask for reduction in cost		
Always	13	26
Sometimes	33	66
Never	4	8
Prescribing of generic medicine		
Sometimes	35	70
Never	15	30

Explaining the instructions		
Always	9	18
Sometimes	41	82
Prescriptions written are correct		
Always	15	30
Sometimes	35	70
Knowing the validity of prescription		
Always	50	100
All medicines purchased are purchased		
Always	10	20
Sometimes	35	70
Never	5	10
Role in safety of patients		
Always	50	100

DISCUSSION:

Prescription writing forms an integral part of the health care system. As treatment with medical interventions is most cost effective there is a need to maintain and do quality check on a routine basis.

With respect to prescription indicators:

- Superscription: The results of the present study revealed that Opd. No. (79%), date (100%), name (81%), age (100%), gender (100%) and Rx were present in the prescriptions which was similar to findings of Ahsan et al¹² and Kumari et al¹³. The drug name and dose form was mentioned in all. The reason cited was computerized registration and printing system. Such data are important for medico-legal related issues. However, important parameters like address, weight were missing.
- Inscription: The Strength (89%), frequency (92%), route (100%) was present in our study. Studies showing similar result was found by S J kia et al¹⁴ 86% and Gomez olivan et al¹⁵ 91%. However, studies done by Medonca et al¹⁶ showed 33% and 65% of prescriptions had strength and frequency missing. Study done by Nezafati¹⁷ showed 30% of missing data. Availability of such information enables pharmacist to clearly explain the drug dosage which exist in more than one strength.
- Transcription: Refill (100%) was absent in our study and similar result was found in studies done by S J kia et al¹⁴ 99.9% and Ahsan M et al¹² 100%. Contradictory to studies by Gawande U et al¹⁸ 59% of prescription had refill instructions.
- Subscription: Sign (67 %) was present similar to findings of S J kia et al¹⁴ 87.7 % and Bandhopadhyay et al¹⁹ 97.87%. On the other hand, study done by Mishra S et al²⁰ only 7.6% of prescriptions had signature. Signature along with doctor's name, designation and registration number if possible should be mentioned.

WHO Core Indicators:

- The average of 1.95 drugs per prescription was present [WHO recommendation 1.6-1.8] which was lower than studies done by Pavani V [3.41], Jain S et al [3.7], Kumari R et al [3.1] and Mishra S et al [4.04]²¹. 60% of prescriptions had more than 2 drugs which increases the risk of drug interaction, low adherence to the treatment, dispensing errors and cost therapy. The rationality behind prescribing pattern is of utmost importance because bad prescribing habits including misuse, overuse and underuse of medicines can lead to unsafe treatment, exacerbation of the disease, health hazards, and economic burden on the patients and wastage of resources.
- The percentage of medicines dispensed by generic names was only 28% [WHO recommendation 100%]. Higher than studies done by Sarkar et al. (21%) and Salman et al. (4%), but lower than Babalola et al. (69.8%) Adebayo et al. (49.3%), Mendonca et al (66%)²². Increasing in generic prescribing would rationalize the use and reduce the cost of drugs
- Present study detected the prescription rate of antibiotics as 32% [WHO recommendation <30%] less than Sudarshan et al (39.4%) but higher than Mishra S et al (17.48%) and H Bhattacharya et al (15.05%)²³. Lower prescribing of antibiotics prevents emergence of antibiotic resistance.
- In this study, drug usage in the form of injection was found to be 14% [WHO recommendation <10%] higher than Patel et al (5.3%) but lower than Babola et al (72.7%) and Adebayo et al (24%)²⁴. As injection formulations are mainly used for emergencies and more over injection procedure is time consuming it was less prescribed.

- This study has found that 65% of the drugs were prescribed from the National Essential Drug List (NEDL), higher than Mishra S et al (53.25%) but lower than Sudarsan M et al (69.26%)²⁵. Indian market is flooded over 32,000 medicines whereas the essential drug list formulary has only 450 registered drugs. Prescribing from NEDL maximizes affordability, availability, reduces drug interactions and adverse drug reactions.

About the patients and pharmacist perceptions:

Patient perception

- Patients knowledge about the oral problems, drugs, following the instructions and reporting of allergy was found satisfactory. There is a strong relationship between education and patient knowledge about medicines. (Arul Prakasam K.C. et al) Though some of them felt over prescribing and high cost of the medicines. Emphasis should be more on prescribing generic medicines and to avoid polypharmacy.

Pharmacist perception

- Giving of alternative medicines was prevalent as there was an inadequate supply of medicines. Dispensing of generic medicine was low due to pressure from the pharmaceutical companies. Low recording of patient data as the patients are in a hurry or in an emergency need. Purchasing of all medicines by patients was not done always as the already had an alternative medicine at home and also to reduce the cost.

LIMITATIONS:

1. A major limitation for the study was only one college was considered.
2. The signing doctor didn't specify whether it was an undergraduate or post-graduate or dental faculty.
3. There was repetition of medicines for which additional prescription was not written.
4. A potential short coming for the study was the short duration i.e. 10 days.
5. A smaller sample size for the data collected (questionnaire and prescriptions).
6. Patients who were in emergency need or could not respond lead to prevalence bias.
7. There were limited pharmacist and most of them were medical shopkeepers who didn't have adequate knowledge about the dispensed drugs. (information bias)
8. There was non-response from the participants.

CONCLUSION:

The prescriptions had errors related to the different parameters and had one or the other data missing. Polypharmacy was seen which increases the risk of

drug interaction, low adherence to the treatment, dispensing errors and cost therapy. Increasing in generic prescribing would rationalize the use and reduce the cost of drugs. Generic prescribing is also an indicator of prescribing quality and the cost of prescribed medication can determine the level of compliance. There is an overuse of antibiotics leading to the emergence of antibiotic resistance due to their indiscriminate use in developing countries, and the absence of a comprehensive strategy for containment of antibiotic resistance in developed and a developing country has been a matter of serious concern. Injections should be prescribed only in emergency cases. However, it can lead to severe consequences if erroneously prescribed or administered. Potential consequences such as anaphylactic shock, tissue necrosis, or infections due to poor asepsis must be carefully considered. The Indian market is flooded over 20,000 formulations so medicines from Essential Drug List and rational prescribing should be given importance. The patient knowledge about the medicines was adequate though many were not aware of the brand names of the medicines. Pharmacist and medical shopkeeper's role in the correct dispensing of medicines was satisfactory however maintaining of proper record was missing.

RECOMMENDATION:

- ✓ Prescription is an important mode of communication between the doctor, patients and pharmacist.
- ✓ Medicines should be prescribed as per WHO prescribing indicators to avoid irrational use of drug.
- ✓ More emphasis should be on generic to reduce burden of poly pharmacy.
- ✓ Future studies and monitoring and evaluation of health worker adherence to guidelines regarding use of antibiotics.
- ✓ Patients should be informed about the health problem and guided regarding the use and correct dose of medicine.
- ✓ Pharmacist have a vital role and should not dispense medicine in case of any doubt, suspicion of misuse or written by an unqualified person.
- ✓ There should be more emphasis on rational prescribing & prescription writing in the curriculum plan and continuing education programs for dentistry training can reduce the medication errors.
- ✓ Patient knowledge about the drug and disease is very low. It can be improved by adherence to national standard treatment protocols and

essential drug list based on treatments of choice, interaction between health care system, providing health and drugs information to consumers.

- ✓ Information should be provided clearly, in everyday language and the patients should be asked to repeat some of the “core information.”

REFERENCES:

1. Oberoi S. S., Dhingra C., Sharma G., and Sardana, D. Antibiotics in dental practice: how justified are we. *International Dental Journal* 2014 65(1), 4–10.
2. Arul Prakasam. K. C. et al. Assessment of Prescribing Trends and Rationality of Drug Prescribing Using WHO Indicators in Malappuram District, India. *Journal of Pharmacy Research* 2012,5(6),3189-319.
3. Dr Kaur Balbir and Dr Walia Rani. Prescription audit for evaluation of prescribing pattern of the doctors for rational drug therapy in a tertiary care hospital. *Journal of Drug Delivery & Therapeutics* 2013, 3(5), 77-80.
4. Seyed Javad Kia, Mahnam Behraves, and Ali Khalighi Sigaroudi. Evaluation of Drug Prescription Pattern among General Dental Practitioners in Rasht, Iran. *Journal of Dentomaxillofacial Radiology, Pathology and Surgery* 2012-2013;1(2), 18-23
5. Srishyla MV, Mahesh K, Nagarani MA, Mary CS, Andrade C, Venkataraman BV. Prescription audit in an Indian hospital setting using the DDD (Defined Daily Dose) concept. *Indian J Pharmacol* 1994;26(1):23.
6. World Health Organization. How to investigate drug use in health facilities: selected drug use indicators, 1993.
7. Ahsan M, Shaifali I, Mallick AK, Singh HK, Verma S, Shekhar A. Prescription auditing based on World Health Organization (WHO) prescribing indicators in a teaching hospital in North India. *Int J Med Res Rev* 2016;4(10):1847-52.
8. Kumari S, Haider S, Kashyap V, Singh SB. A study on pattern of prescription writing practices at Rajendra Institute of Medical Sciences, Ranchi. *Indian J Prev Soc Med* 2014;45(1):24-8.
9. Gómez-Oliván LM, Márquez Rodríguez S, Pontigo Loyola P, et al. The prescription of drugs in a dental clinic of a Mexica university hospital. *Farm Hosp* 2007;1(3):169-172.
10. Mendonca J MD, et al. Analysis and detection of dental prescribing errors at primary health care units in Brazil. *Pharm World Sci* 2010; 32: 30-35.
11. Nezafati S, Maleki N, Golikhani R. Quality assessment of health services insurance prescription among the dentists of Tabriz City in 2005-2006. *Medical journal of Tabriz University of medical Science* 2009; 31(2):101-104.
12. Gawande U, Deshmukh S, Kadam S, Potdar G, Salvitthal H. Prescription audit of patient's attendees in public health facilities in Maharashtra, India with special reference to rational use of antibiotics. *Int J Res Med Sci.* 2015; 3:3655-64.
13. Bandyopadhyay D, Banerjee CN, Chattopadhyay S, Singha P. A study of prescription auditing in a tertiary care teaching hospital of Eastern India. *J Drug Delivery Therapeutics* 2014;4(1):140-9.
14. Mishra S, Sharma P. Prescription audit and drug utilization pattern in a tertiary care teaching hospital in Bhopal. *Int J Basic Clin Pharmacol* 2016; 5:1845-49.
15. Pavani V. Study of Prescribing Pattern for Evaluation of Rational Drug Therapy in Warangal. *Ind J Pharm Pract* 2011;4(4):77-9.
16. Jain S, Khan ZY, Upadhyaya P, Kumar A. Assessment of prescription pattern in a private teaching hospital in India. *Inter J Pharma Sci.* 2013;3(3):219-22.
17. Sarkar C, Das, Baral P. An audit of prescribing practices of dentists. *Indian J Dent Res* 2004; 15(2): 58-61.
18. Salman MT, Khan FA, Rahman SZ, Makhdoom M. Drug prescribing pattern in dental teaching hospital. *JK SCIENCE* 2009; 11 (2): 107-111.
19. Babalola CP, Awolaye SA, Akinyemi JO, Kotila OA. Evaluation of prescription pattern in Osun State (Southwest) Nigeria. *J Public Health Epidemiol* 2011; 3(3): 94-98.
20. Adebayo ET, Hussain NA. Pattern of prescription drug use in Nigerian army hospitals. *Ann Afr Med* 2010;9(3): 152-8.
21. Babalola CP, Awolaye SA, Akinyemi JO, Kotila OA. Evaluation of prescription pattern in Osun State (Southwest) Nigeria. *J Public Health Epidemiol* 2011; 3(3): 94-98.
22. Adebayo ET, Hussain NA. Pattern of prescription drug use in Nigerian army hospitals. *Ann Afr Med* 2010;9(3): 152-8.
23. Sudarsan M, Sitikantha B, Aparajita D. Audit and Quality Assessment of Prescriptions in an Urban Health Centre of Kolkata. *J Med Pub Heal* 2016;6(3):136-9.
24. Patel V, Vaidya R, Naik D, Borker P. Irrational drug use in India: A prescription survey from Goa. *J Postgrad Med* 2009; 15(1): 9-12.