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Evaluation of prescribing indicators in prescriptions of private practitioners in Kolkata, India

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ABSTRACT

Background: To assess the prescribing indicators in prescriptions of private practitioners in Kolkata.

Methods: In the observational, retrospective, cross-sectional survey, 1830 prescriptions of private practitioners were collected over a 5 years period and assessed using core prescribing indicators as per the World Health Organization “How to investigate drug use in health facilities” tool.

Results: Overall the average number of drug per prescription was 3.05±0.91. No drug was prescribed by generic name. Prescriptions with an antibiotics and injections were 30% (549/1830) and 8.12% (149/1830), respectively. Drugs prescribed from essential drug list (EDL) were 29.38% (1640/5582).

Conclusion: Poly-pharmacy, lack of generic prescribing, low rate of prescriptions from EDL is the present prescribing scenario of private set-up based practitioners of Kolkata. Regulation and intervention is required to improve the irrational prescribing practices.

Keywords: Prescribing indicators, Prescription, Private practitioners

INTRODUCTION

The World Health Organization (WHO) defines rational use of drugs as “patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirement for an adequate period of time at the lowest cost to them and their community.”¹ The first model list of essential drug was published by WHO in 1977 and in 2002 WHO coined the term essential medicine as those medicines that satisfy the priority healthcare needs of the population² International Network for the Rational Use of Drugs

(INRUD) was formed in 1989 to promote more rational use of medicines. In India, the first list of the essential drug was published in 1993. To develop and propagate the concept of the rational use of medicine in India, All India Drug Action Network was formed in 1982. In Kolkata, West Bengal, Drug Action Forum - West Bengal (WB) and Rational Drug Campaign Committee were developed in 1984 and 1992, respectively, by some Nongovernmental Organizations and medical practitioners organization.³ Activities on rational use of medicine in Kolkata follow different national and international organizations activities.

As per the National Health Policy 2002, a Public Private Partnership model was accepted by the Government of India, as well as different state governments to improve the overall healthcare delivery system in India. World Health Report 2000 states that India has one of the highest levels of private financing (87%). Cost in health sector which is calculated as percentage of total income, in India, from government and private agencies, respectively, 1.2% and 2.9%.⁴ Private sector accounts for 82% of all outpatient department visits at the all India level. The figure for private hospital care is 45%.⁵ However, an activity in relation to use of essential medicine and rational use of medicine is not followed in the large private health care set-up. On the other hand irrational prescribing and use of useless, unscientific and at times hazardous drugs is rampant in the private health care set-up.⁶⁻⁸

The collaboration work by the members of the INRUD and the Drug Action Program - WHO developed the core drug use indicators: The most important tool for implementation of rational use of medicine.⁹ The components of core drug use indicators are: prescribing indicator, patient care indicator and facility indicator. For the present study, we took the prescribing indicators which are as follows:

1. Average number of drug per prescription
2. Percentage of drugs prescribed by generic names
3. Percentage of prescription with the antibiotic prescribed
4. Percentage of prescription with an injection prescribed
5. Percentage of drugs prescribed from essential drug list (EDL).

Studies in different countries evaluated the prescribing indicators in state-run hospitals or health centers. Few studies reported the prescribing patterns of private practitioners who deliver their services through private clinics, nursing homes, and hospitals.⁶⁻⁸ The present study is, therefore, aimed at evaluation of prescribing indicators in the prescriptions of private practitioners of a metropolitan city, Kolkata.

METHODS

Study setting

The study was conducted in Kolkata and included the prescriptions of private practitioners who practice using the set-up of private clinics, nursing homes and private hospitals of Kolkata and its adjacent areas.

Study design

A retrospective, quantitative, and cross-sectional survey designed to describe the current prescribing practices of private set-up prescribers at Kolkata.

Data collection and analysis

The sampling unit was the prescriptions of the prescribers who practice in the private clinics, nursing homes, and

private hospitals. The prescriptions which were included were generated out of each patient encounter taking place at the outpatient health facility of different departments of treating acute and chronic illnesses. The photocopied prescriptions were collected from patients and or their relatives; verbal as well as written consent was obtained from them to include their prescriptions for studies. According to the WHO document "How to investigate drug use in health facilities," at least 600 encounters should be included in a cross-sectional survey to describe the current prescribing practices, with a greater number, if possible.¹⁰ For this study, 1,830 prescriptions were collected, which were written during the period July 2007-June 2012. This indicator study is restricted to a sample of general illness encounters, representing a mix of health problems and patient ages. The specific types of data necessary to measure the prescribing indicators were recorded from each prescription and entered directly into a prescribing indicator data record form.

Data in the prescribing indicator recording form were analyzed. In the statistical analysis, frequencies, averages/means, standard deviations (SD), and percentages were obtained.

Prescribing indicators

The WHO prescribing indicators were used in this study.

The indicators were tested in developing countries by researchers under action program on essential drugs, WHO and modification were made so that they could be used easily to provide accurate data.¹⁰ The final versions of the pretested indicators are described below. The prescribing indicators that were measured included:

1. The average number of drugs prescribed per encounter was calculated to measure the degree of poly-pharmacy. It was calculated by dividing the total number of different drug products prescribed by the number of encounters surveyed. Combinations of drugs prescribed for one health problem were counted as one.
2. Percentage of drugs prescribed by generic name is calculated to measure the tendency of prescribing by generic name. It was calculated by dividing the number of drugs prescribed by generic name by total number of drugs prescribed, multiplied by 100.
3. Percentage of encounters in which the antibiotic was prescribed was calculated to measure the overall use of commonly overused and costly forms of drug therapy. It was calculated by dividing the number of patient encounters in which the antibiotic was prescribed by the total number of encounters surveyed, multiplied by 100.
4. Percentage of encounters with an injection prescribed was calculated to measure the overall level use of commonly overused and costly forms of drug therapy. It was calculated by dividing the number of patient encounters in which an injection was prescribed by the total number of encounters surveyed, multiplied by 100.

5. Percentage of drugs prescribed from an EDL was calculated to measure the degree to which practices conform to a national drug policy as indicated in the national drug list of India.
6. Percentage is calculated by dividing number of products prescribed which are in EDL by the total number of drugs prescribed, multiplied by 100.

Operational definitions

Generic drugs

National List of essential Medicines of India (2011) is used to determine medicines prescribed either in generic or in brand name.

Antibiotics

Antimicrobial agents such as penicillins, streptomycin, azithromycin, anti-infective dermatological drugs, and anti-infective ophthalmological agents, antidiarrheal drugs like metronidazole are considered antibiotics when used in the context of antibiotics.

Combination of drugs

Two or more drugs that are prescribed for a given health condition. For example, triple therapy for helicobacter pylori-induced peptic ulcer is counted as one drug.

RESULTS

A sample of 1830 patient encounters was assessed retrospectively which were collected from the medical outpatient departments of private clinics, nursing homes and private hospitals of Kolkata & its adjacent areas from July 2007 to June 2012. A total of 5582 drug products were prescribed. Thus, the average number of drugs per prescription or mean was 3.05 (SD-0.91). No drug was prescribed by generic name. The antibiotic was prescribed in 549 patient encounters (30%), and the injection was prescribed in 149 encounters (8.12%). Only 29.38% drugs prescribed (n=1640) were on the EDL of India (Table 1). Of a total of 5582 drugs prescribed, 1675 (30%) were antibiotics. The most common prescribed antibiotics were amoxicillin 141 (8.4%), ampicillin 75 (4.5%), gentamicin 233 (13.9%), chloramphenicol 44 (2.6%), cloxacillin 107 (6.4%), crystalline penicillin 55 (3.3%), ciprofloxacin 263 (15.7%), levofloxacin 141 (8.4%), cefixime 172 (10.24%), azithromycin 197 (11.75%) ceftriaxone 183(10.9%), and doxycycline 65 (3.91).

DISCUSSION

In this study, the average number of drugs prescribed per prescription was 3.05. Studies from other states of India (Tamil Nadu, Madhya Pradesh, and Uttar Pradesh) reported

Table 1: Distribution of core prescribing indicators.

Prescribing indicators assessed	Number	Percentage	Standard derived or ideal
Average number of drugs per encounter	3.05	NA	1.6-1.8
Prescription with antibiotics (n=1830)	549	30	<30
Prescription with injection (n=1830)	149	8.12	<10
Drugs prescribed by generic (n=5582)	0	0	100
Drugs prescribed from EDL (n=5582)	1640	29.38	100

EDL: Essential drug list, NA: Not applicable

4.54, 2.8, and 3.1 drugs per prescription.^{6,11,12} Average number of drugs per prescription reported from China and Bangladesh was 2.04 and 1.44, respectively.^{13,14} As per WHO, the average number of drugs per prescription should be 1.6-1.8. Our study reveals poly-pharmacy which is the usual practice of private set-up clinics and hospitals.

In the present study, no drug was prescribed in generic name, although WHO recommends 100% generic prescribing (Figure 1). Studies from some other parts (Tamil Nadu, Madhya Pradesh, Uttar Pradesh, New Delhi, Karnataka) of India reported 62%, 48.5%, 27.1%, 8%, and 16% of prescriptions where generic name was used.^{6,11,12,15,16} Studies from China, Nigeria reported 69.2% and 42.7% generic prescribing.^{13,17}

The percentage of prescriptions with the antibiotic, in this study was 30%. Studies from other states (Tamil Nadu, Madhya Pradesh, New Delhi, Uttar Pradesh) of India reported 55%, 60.9%, 29.9%, 39.9% of prescriptions where antibiotics were prescribed.^{6,11,12,15} In Pakistan, Nigeria the use of antibiotics was very high 78%, 75%; but in China it was 38.15%.^{13,17,18} The present study result follows the WHO recommendation of antibiotic prescription which is <30% (Figure 1). The most common prescribed antibiotics were of penicillin and cephalosporin group of antibiotics. This finding is similar to other studies in India where antibiotics of penicillin and cephalosporin group were the most frequently prescribed antibiotics.^{6,19}

In this study, the percentage of prescriptions with injection was 8.12%. Studies from other parts of India reported 5.2%, 13.6% and even 81% of prescriptions where injections were used.^{6,11,15} Researchers from the countries such as Pakistan, China, Nigeria reported 73%, 22.63%, 4% of prescriptions where injections were used.^{13,17,18} The present study result follows the WHO recommendation of <10% prescriptions with an injection (Figure 1).

The overall percentages of drugs prescribed from EDL, in the present study was 29.38%. Studies from Tamil Nadu

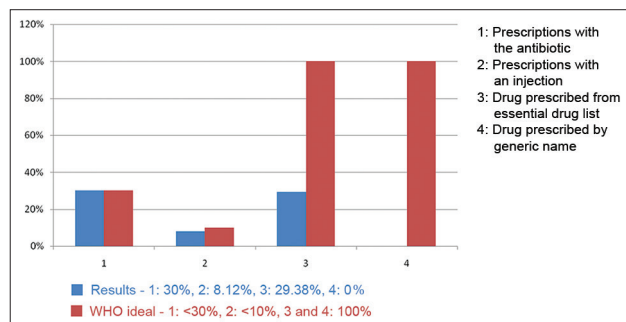


Figure 1 Comparison of individual indicators between study group and World Health Organization - ideal.

and Madhya Pradesh, India reported 37.3% and 66.9% of EDL prescribing.^{6,11} Studies from neighbor-hood countries of India such as Bangladesh, Pakistan reported that 85% and 70% of drugs were prescribed from EDL.^{14,18} A study in Nigeria reported 94% EDL prescribing.¹⁷ So, EDL prescribing of this study is very low compared to national and international study results (Figure 1).

So, it is evident from the study that poly-pharmacy, lack of generic prescribing, low EDL prescribing is the usual practice of private set-up prescribers in the metropolitan city, Kolkata. The study result regarding use of antibiotics and injections appear near to WHO goal. The irrational and injudicious prescribing habits which creates poly-pharmacy, lack of generic prescribing and low EDL prescribing increases the cost of therapy and possess unnecessary burden on patients. The lacunae in prescribing may be filled up by educating the prescribers through continuous medical education programs which is currently lacking in our country.

CONCLUSION

Since the inception of the concept of essential drug and rational use of drug, India and a state of India, West Bengal has the history of pioneering role in preparing the EDL and following the principle of rational use of drugs. At the state level, Government of West Bengal is trying to ensure 100% generic prescribing in all its health facilities by strengthening the administrative rules and regulations. However, the huge private sector in all over West Bengal, as well as in India is unregulated. The present study reveals that poly-pharmacy is usual, EDL is not followed and drugs are not prescribed in the generic name in the private set-ups. It is encouraging that the pattern of prescribing injection and antibiotics appears appropriate when compared with WHO goal. It has become evident from the present study that WHO prescribing indicators may be applied to assess the prescription patterns of different tiers and types of health facilities. We must conclude that in countries like India where private sectors play important role in delivering health care services, they must be included and must have to be involved to achieve any tangible benefit through programs which covers the essential medicines and rational use of medicines.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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