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Original Research Article

Implementing WHO Indicators to Evaluate Prescription Patterns in Paediatric Patients

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Abstract:

Introduction: Antimicrobials are a class of medication that is more prone to cause the emergence of natural resistance. As a result, they need to be prescribed, given out, and used with more prudence. Antibiotics are separated into the three categories of Aware: Access, Watch, and Reserve to emphasise the need of their proper usage. current data on drug use, prescription behaviour, and Decision-makers would benefit from knowing the factors affecting antibiotic prescribing and their use % from Aware classification to create rules that will allow for more judicious usage of medications.

Method: For six months, a prospective, observational study was conducted in the Department of Community Medicine, BMIMS, Pawapuri. The prescriptions were assessed using the WHO prescribing indicators, and the optimal WHO range was taken into account as a deciding factor for rational prescription.

Result: They were predominantly female (53%). Antiemetics and antiulcer medications (26% and 13%), and antipuretics and analgesics (10%) were the most frequently prescribed medications. There were 6.54 medications on average each contact. Antibiotic prescriptions made up 16% of the total, while injectables made up 48% percent.

Conclusion: The results of this study show that the drug use patterns were not optimal in comparison to the recommended values of the WHO prescribing patterns. Although the use of antibiotics complied with WHO recommendations, there is a need to enhance prescription patterns by using medications from the Essential Drug List and generic names.

Keyword: Prescription pattern, WHO indicators, Antibiotics, Pediatrics, Rational prescribing.

Introduction

The World Health Organisation (WHO) defines rational medication usage as giving the right medication to the right patient at the right dose for the right amount of time at the least feasible cost to the community [1,2]. Irrational drug usage is the use of a medication in a manner that is contrary to rational drug use. It is commonly defined in terms of polypharmacy, improper use of antibiotics, excessive use of injectables, noncompliance with professional prescription guidelines, and improper self-medication, frequently including prescription-only medications [3,4]. Medicines significantly contribute to human health and well-being and play a critical role in both the prevention and treatment of disease [5]. The cost of medications is expected to reach $1.5 trillion globally by 2023 [6].

When it comes to providing quality medical care and treating significant medical diseases, the quality of drug prescriptions is a key aspect. India has 40% of its population as children. The primary component of managing paediatric health care is thought to be drug therapy. Due to variations in pharmacodynamic and pharmacokinetic profiles, infants and children are particularly susceptible to contact diseases and the negative effects of medications. Compared to adult medicine, there is less study on medication use in children, and there are fewer licenced drugs available in dose forms that are appropriate. [7]

For a variety of reasons, knowledge of drug administration is less advanced in newborns and children than in adults. These include the ability to conduct research, regulatory requirements and restrictions, ethical and financial considerations, and developmental changes that alter the pharmacodynamic and pharmacokinetic profiles of the medications. [8] It has been reported that paediatricians frequently utilise incorrect antibiotics. According to a study done on children in the US and Canada, 50% and 85%, respectively, of antibiotics are used inappropriately. [9] Compared to adults,

children and newborns are more likely to make drug errors. [8] Children's research findings have indicated a high mean number of medications of 5.5. [10]

The key issues with modern medicine are over- or under-medication, excessive drug costs, increased use of injectables and antibiotics, polypharmacy, disregard for accepted treatment protocols, and preference for brand names over generic ones. These have negative repercussions on patients' health, such as inadequate therapy, antibiotic resistance, and financial burden. The factors influencing prescribing behaviours include the influence of mentors, pharmaceutical sales agents, and patient characteristics. [11]

In order to emphasise the significance of antibiotics' proper usage, the WHO expert committee on the selection and use of essential medicines proposed a new classification of antibiotics in 2017. As a tool to improve antibiotic stewardship actions at the local, national, and international levels, the classification, known as Aware, divides antibiotics into three categories: Access, Watch, and Reserve [12,13].

These classifications account for how different drugs and antibiotic classes affect the development of microbial resistance [14]. This classification divides antibiotics into three categories based on whether they should be used frequently, under close supervision, or only in certain circumstances [15]. The WHO recommendations include a country-level target of employing Access group antibiotics for at least 60% of all antibiotic usage [14]. The current investigation made use of the new 2021 category.

Our study will give baseline data about physician prescribing behaviours and contribute to clinical education and economic goals. Currently, there is a lack of local data on prescribing trends in the paediatric population.

Materials and Methods

For six months, the study was carried out at Department of Community Medicine, BMIMS, Pawapuri. The study included 100 paediatric patients who had been admitted. Patients older than 12 were not included.

The WHO prescribing indicators, which were computed using the formulas below, were used to evaluate the prescribing pattern. [15]

1. The average number of prescriptions per contact is equal to the sampled encounters/total prescriptions. (Drugs prescribed in combination for a single health issue were counted as one).
2. The percentage of pharmaceuticals prescribed by generic name is calculated as follows: (pharmaceuticals prescribed by generic name/Drugs prescribed overall) / 100.
3. The proportion of encounters where an antibiotic was provided is calculated as follows: (Number of patient contacts with an antibiotic/Total encounter sampled) / 100.
4. The percentage of encounters with a prescribed injection is calculated as follows: (Number of patient encounters with a prescribed injection/Total encounter sampled) / 100.
5. (Number of pharmaceuticals prescribed from essential drugs list/Total number of prescribed drugs) / 100 is the percentage of drugs prescribed from the list of essential drugs.

Results

Table 1. Demographic profile

Patient characteristics	Frequency	%
Age (years)		
≥ 65	13	13%
19–64	50	50%
≤ 18	37	37%
Gender		
Female	53	53%
Male	47	47%

A total of 100 patients with a median age of 28 years and 9 months and an interquartile range (IQR) of 42 years were included in the study. Of them, 53% were female and 47% were male. The age classification was based on the level of children and adults, utilising ages ≥ 65, 19–64, and ≤18 were 13%, 50% and 37% respectively.

Table 2: Commonly prescribed class of drugs

Drug class	No. of drugs	%
Antibiotics	16	16%
Steroids	5	5%
Antipyretics and analgesics	10	10%
Antiepileptics	6	6%
Expectorants and bronchodilators	4	4%
Antiemetic	26	26%
Antihistamines	3	3%
Antiulcer	13	13%
Others	17	17%

Medications totalling 100 were prescribed. Among these, antibiotics (16%), antiulcer (13%), and antiemetics (26%), antiepileptics (6%), steroids (5%) were frequently prescribed medications.

Table 3: Dosage forms of prescribed drugs

Dosage forms	No. of drugs	%
Nebulisers	13	13%
Injectables	48	48%
Syrups	26	26%
Tablets	5	5%
Capsules	8	8%

Out of 100 prescriptions for medications were for nebuliser (13%), injectables (48%), syrups (26%), tablets (5%), capsules (8%).

Discussion

Our study's overall patient percentage of men (71%) was higher than that of women (29%), which was similar to the research done by B. Vinoly Jeevan et al. in 2017. [16] The peak incidence was found to be in the age groups of 0 to 3 years (71%) as reported by Venkateswaramurthy N. et al. in 2017. [17] This may be caused by a younger age-related increase in infection susceptibility.

Antibiotics were the most often recommended medication (22.7%), followed by antiulcer, antiemetics (15.3% each), and NSAIDs (14.5%). Venkateswaramurthy N. et al. made comparable observations. [17] 2017 In the current study, we found that Cephalosporin antibiotics are most frequently provided, followed by Penicillin antibiotics, which was consistent with the findings of B. Vinoly Jeevan et al. from the year 2107. [16] Analysis of drug administration methods showed that 478 medicines were administered via injection (73.88%), followed by syrups (154%), which is comparable to the 2014 study by Vishwanath et al. [18] According to disease data, gastrointestinal tract diseases (39%) and LRTI (17%) were the two most prevalent conditions. The load in India is already considerable and is likely to get worse, which could be caused by a number of things like high pollution levels, the use of indoor fuels, inadequate ventilation, overcrowding, and infections.

In our research, we found that the typical amount of medications per contact was 6.54, which is quite similar to the findings of a prior study by Palikhe et al. [19] The higher prevalence of co-morbid conditions may be the cause of this.

The average number of medications administered every patient encounter is 1.6–1.8, according to the WHO. Rates above this benchmark point to polypharmacy, which raises the possibility of harmful drug interactions and non-adherence. The proportion of times antibiotics were used was 22.7%, which was within the recommended range of 20–26%. Similar results were achieved by Thiruthopu et al. in their studies.

In our country, brand names are typically used when prescribing the majority of medications. In contrast to the findings of Sharma and Shweta (2015) [7] and B. Vinoly Jeevan et al. (2017), in our analysis only 8.56 percent of medications were prescribed by generic name. [16]

This could be as a result of worries about generic product quality, safety, and the impact of pharmaceutical corporations' marketing campaigns. Essential medication provides a cost-effective answer to numerous health issues in a developing nation. They ought to be chosen with consideration for the prevalence of the diseases, be accessible, of assured quality, and come in the right dosage forms. In our analysis, 77.5% of medications were prescribed that were on the WHO's list of essential medications, which is comparable to the finding by Sharma and Shweta from 2015.[7] Less than the required ideal of 100%, the percentage of medications prescribed by generic name and from EML was lower.

The use of inject tables for therapy has a number of drawbacks, such as infection at injection, increased risk of tissue damage from local irritation, cost, and challenges in error correction. Thus, according to WHO recommendations, a prescription should contain one or more injectable tables in the range of 13.4% to 24.1%, but the percentage seen in the current study—73.8%—was found to be higher than recommended. A study by B. Vinoly Jeevan et al. [16] shown greater use of parental controls. This may be attributed to the high prevalence of diseases among children under the age of three, the nature of the disease conditions that call for parenteral therapies, and the desire to experience immediate disease relief.

Conclusion

In our investigation, we discovered that prescribing practise was unsatisfactory since drug utilisation patterns were shown to be subpar compared to the recommended values of WHO prescribing patterns. The extent of polypharmacy was found to be significantly higher than the advised values. It is generally known that choosing the proper medications is not sufficient to achieve the goal of rational medication usage; instead, they must also be used in the most appropriate way. Although the use

of antibiotics complies with WHO recommendations, prescription patterns for medications from the EDL and generic names need to be improved. There is plenty of room to improve prescribing patterns by using the minimum number of medications in their generic names and from the list of essential drugs. These actions have been proven to significantly lower the price of medications for patients. It is necessary to periodically evaluate the prescribing patterns in order to enable the prescription of appropriate medications that will increase therapeutic benefits and minimise side effects. In order to raise awareness regarding the sensible use, this study will provide as feedback to the prescribers.

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