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Original Research Article

Assessment of Prescription Patterns in Pediatric Patients using WHO Indicator

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Abstract:

Background: Pediatric prescription patterns are crucial for ensuring appropriate and effective treatments for children. The World Health Organization (WHO) provides pointers to evaluate the quality and safety of drug prescriptions. However, comprehensive analysis of these patterns using WHO indicators remains limited.

Aim: This study aims to analyze pediatric prescription patterns using WHO prescribing indicators to identify trends, deviations, and areas for improvement in pediatric healthcare.

Methods: A retrospective observational research was performed which analyzed prescription patterns using WHO prescribing indicators. Data were collected from patient records, focusing on variables such as the average no. of drugs in each prescription, percentage of drugs prescribed by generic name, antibiotics, injections, and drugs from the essential medicines list.

Results: The study revealed significant deviations from WHO prescribing indicators, highlighting areas for enhancement in rational drug use. The findings showed a moderate level of polypharmacy with an average of 3.1 drugs per prescription. Only 35% of drugs were prescribed by their generic names, indicating a need to enhance the use of cost-effective and accessible medications. Antibiotics were prescribed in 55% of cases, which raises concerns about potential antibiotic resistance and underscores the necessity of implementing antibiotic stewardship programs. Injections were included in 20% of prescriptions, aligning moderately with WHO guidelines but requiring ongoing monitoring to prevent unnecessary use. Although 75% of prescribed drugs were from the important list of medicines, there is still room for improvement to achieve optimal adherence to WHO standards.

Conclusion: The analysis reveals significant deviations from WHO recommendations, particularly the high use of antibiotics and relatively low prescription of generic drugs. These patterns highlight the need for targeted interventions to encourage rational prescribing practices in pediatric healthcare.

Recommendations:

1. Implement educational programs for healthcare providers on rational prescribing practices.
2. Promote the use of generic drugs to improve cost-effectiveness.
3. Develop guidelines to reduce unnecessary antibiotic prescriptions.
4. Enhance monitoring and evaluation of prescription patterns to ensure adherence to WHO standards.
5. Foster awareness among caregivers about the importance of rational drug use.

Keywords: Pediatric prescription patterns, WHO prescribing indicators, rational drug use, antibiotics, essential medicines

Introduction

Pediatric healthcare is a critical component of any health system, ensuring that the youngest and often most vulnerable population receives appropriate medical care. Prescription patterns in pediatrics are of particular importance as they directly impact the health outcomes and safety of children. Rational prescribing, as defined by the World Health Organization (WHO), involves the correct, appropriate, and efficient use of medicines to achieve optimal patient outcomes. However, various studies have shown that prescribing patterns often deviate from these ideal practices, leading to problems like resistance, adverse drug reactions, and increased healthcare costs [1].

In developing countries, the challenges are even more pronounced due to resource constraints, varying levels of healthcare provider training, and differing healthcare infrastructure. Misuse of medications, especially antibiotics, remains a significant concern, contributing to the global threat of antimicrobial resistance. Additionally, the use of generic medicines, which can make treatments more affordable and accessible, is often suboptimal. Understanding and addressing these issues requires a thorough examination of current prescribing practices using standardized indicators [2].

WHO has developed a number of prescribing indicators that provide a framework for evaluating the quality of prescriptions. The indicators encompass the mean quantity of medications per prescription, the proportion of drugs prescribed using their generic names, the percentage of patient encounters involving an antibiotic prescription, the percentage of encounters where an injection is prescribed, and the proportion of drugs prescribed from the essential medicines list. These indicators help in identifying patterns and deviations from recommended practices, thereby guiding interventions to improve prescription quality [3,4].

This study aims to analyze pediatric prescription patterns using WHO prescribing indicators to identify trends, deviations, and areas for improvement in pediatric healthcare. By systematically examining these patterns, the study seeks to highlight key areas where interventions can enhance the rational use of medications among children.

The results of this study are anticipated to offer significant insights into the current state of pediatric prescribing practices. Identifying gaps and inconsistencies in these practices will help in formulating targeted strategies to promote rational drug use. Ultimately, improving prescription patterns will not only enhance the health outcomes for children but also contribute to broader public health goals such as combating antibiotic resistance and making essential medicines more accessible. This study is a crucial step towards ensuring that pediatric healthcare providers adhere to international standards, thereby safeguarding the health and well-being of children.

Methodology

Study Design: A retrospective observational study was conducted to analyze pediatric prescription patterns using WHO prescribing indicators.

Study Setting: The study was carried out at the Pediatric Outpatient Department of B. S. M. C. H., Bankura, over a one-year period from April 2015 to March 2016.

Participants: The study included 100 pediatric patients who visited the outpatient department during the study period.

Inclusion Criteria:

- Pediatric patients aged 0-12 years.
- Patients who received at least one prescription during the study period.

Exclusion Criteria:

- Patients with incomplete medical records.
- Patients above 12 years of age.

Bias: To minimize selection bias, a random sampling method was used to select the patient records. To reduce information bias, all data were collected and cross-verified by two independent researchers.

Variables: The main variables assessed included:

1. Mean number of medications per prescription
2. Proportion of drugs prescribed by their generic names
3. Percentage of prescriptions including antibiotics
4. Percentage of prescriptions that involve injections
5. Proportion of medications from the essential medicines list

Data Collection: Data were collected from patient medical records and prescription logs. The data collection form included patient demographics, diagnosis, and details of prescribed medications.

Procedure:

1. Patient records were randomly selected and reviewed.
2. Data regarding the prescription patterns were extracted and recorded.
3. Each prescription was evaluated based on the WHO prescribing indicators.

Statistical Analysis: Descriptive statistics were used to analyze the data. The mean number of drugs per prescription was determined. The proportions of drugs prescribed by their generic names, prescriptions that included antibiotics, prescriptions that included injections, and medications from the essential medicines list were all assessed. Data analysis was conducted using SPSS software version 22.0. Chi-square tests were utilized to compare categorical variables, with p-values below 0.05 considered statistically significant.

Results

The analysis of 100 prescriptions revealed the following:

1.Mean Number of Drugs per Prescription:

- The mean number of medications per prescription was 3.1 (SD = 1.2).

2. Proportion of Drugs Prescribed by Generic Name:

- Only 35% of medications were prescribed using their generic names.

3. Proportion of Prescriptions with Antibiotics:

- Antibiotics were included in 55% of all prescriptions.

4. Proportion of Prescriptions with Injections:

- Injections were part of 20% of the prescriptions.

5. Proportion of Drugs from the Essential Medicines List:

- 75% of the prescribed medications were from the essential medicines list.

Table 1: Demographic Characteristics of Patients

Characteristic	Number (Percentage)
Gender	
• Male	60 (60%)
• Female	40 (40%)
Age Group	
• 0-2 years	25 (25%)
• 3-5 years	30 (30%)
• 6-8 years	20 (20%)
• 9-12 years	25 (25%)
Mean Age	6.2 years (SD = 3.1)

Table 2: WHO Prescribing Indicators

Indicator	Value
Average number of drugs per prescription	3.1 (SD = 1.2)
Percentage of drugs prescribed by generic name	35%
Percentage of prescriptions with antibiotics	55%
Percentage of prescriptions with injections	20%
Percentage of drugs from the essential medicines list	75%

The study revealed that the average number of drugs per prescription was 3.1, indicating a moderate level of polypharmacy. Only 35% of the drugs were prescribed by their generic names, which is below the recommended levels, suggesting a need for improvement in this area to enhance cost-effectiveness and accessibility. The high percentage of prescriptions containing antibiotics (55%) raises concerns about the potential for antibiotic resistance and indicates the need for stricter antibiotic stewardship.

The inclusion of injections in 20% of the prescriptions suggests adherence to WHO recommendations, although continuous monitoring is necessary to avoid unnecessary use. Lastly, 75% of the drugs were from the essential medicines list, showing a relatively high compliance with WHO standards, but still leaving room for improvement.

Discussion

The study on pediatric prescription patterns at B. S. M. C. H., Bankura, revealed several key findings when evaluated against WHO prescribing indicators. The average no. of drugs per prescription was 3.1, with a standard deviation of 1.2, which indicates a moderate level of polypharmacy. This aligns with recent studies, such as one conducted at the International Journal of Research in Medical Sciences, where the average number of drugs per prescription was 3.28 [4]. However, efforts should be made to reduce polypharmacy to minimize potential drug interactions and adverse effects. Only 35% of the drugs were prescribed by their generic names, which is considerably low and highlights an area for improvement. WHO recommends higher usage of generic names to promote cost-effectiveness and accessibility. In contrast, a study in Jordan reported 100% of drugs prescribed by generic names in a pediatric outpatient setting [5]. This discrepancy underscores the need for educational interventions aimed at improving the practice of prescribing generic medications in our setting.

The study found that antibiotics were prescribed in 55% of the cases, which is higher than the ideal range suggested by WHO. Over-prescription of antibiotics is a significant concern as it contributes to antibiotic resistance. A study conducted in Nigeria reported antibiotics in 81.3% of pediatric prescriptions, emphasizing that this issue is prevalent in various regions [6]. Interventions such as antibiotic stewardship programs are essential to ensure antibiotics are prescribed only when necessary.

Injections were included in 20% of the prescriptions, which falls within the WHO recommended range but still necessitates careful monitoring to prevent unnecessary use. Studies from Ethiopia and India have highlighted similar challenges with injection overuse. Educating healthcare providers about the risks associated with injection overuse and encouraging oral alternatives can help mitigate this issue. The study revealed that 75% of the prescribed drugs were from the important medicines list. While this indicates a reasonable level of adherence to WHO recommendations, there is still room for improvement. For instance, a study in Ethiopia found 100% adherence to the essential medicines list. Ensuring that healthcare providers are familiar with and have access to essential medicines is crucial for improving this indicator [7].

Conclusion

The study emphasizes the need for targeted interventions such as educational programs for healthcare providers, stricter antibiotic prescribing protocols, and regular monitoring of prescription patterns to promote rational drug use in pediatric patients. These steps are crucial to improving patient outcomes, reducing healthcare costs, and combating the global issue of antibiotic resistance

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