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Original Research Article

ANALYSIS OF DRUG UTILIZATION PATTERNS AND PRESCRIBING PRACTICES AMONG OBSTETRICS AND GYNECOLOGY PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL OF ARUNACHAL PRADESH, INDIA

Binita Singha[1], Donik Peter[2], Swapan Majumder[3], Ajoy Borah[4]

[1]Associate Professor, Department of Pharmacology, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh, India
[2]Assistant Professor, Department of Pharmacology, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh, India
[3]Associate Professor, Department of Dermatology, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh, India
[4]Demonstrator, Department of Pharmacology, Jorhat Medical College and Hospital, Jorhat, Assam, India

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Corresponding Author:
Dr. Binita Singha,
Associate Professor, Department of Pharmacology, Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh, India.
Email: binitasingha2012@gmail.com

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ABSTRACT

Background: Rational prescribing is essential to ensure patient safety, minimize adverse drug reactions, and reduce healthcare costs. This study aimed to assess the prescription patterns in the Department of Obstetrics and Gynaecology, focusing on prescribing trends, drug utilization, and adherence to World Health Organization (WHO) guidelines.

Materials and Methods: This is an observational cross-sectional study conducted in the Department of Obstetrics and Gynaecology of Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh, India. A total of 198 prescriptions comprising 1014 drugs were retrospectively analyzed. Data on patient demographics, disease categories, polypharmacy, and prescribing indicators were collected and compared with WHO recommended standards.

Results: Among the study population, 73.74% were aged 20–39 years. Obstetric complications accounted for 40.91% of cases and Gynecological benign conditions constituted 39.39. Polypharmacy was noted in 61.11% of prescriptions. Antibiotics were the most prescribed drug class (29.49%), followed by proton pump inhibitors (20.41%). The average number of drugs per prescription was 5.12. 36.29% of drugs were prescribed by generic name, 57.58% of encounters included injections and 90.91% included antibiotics. Furthermore, 79.88% of drugs were from the National List of Essential Medicines and fixed-dose combinations accounted for 21.01% of prescriptions.

Conclusion: The study highlights considerable gaps in prescribing practices within the obstetrics and gynecology department, including polypharmacy, irrational antibiotic use, low generic prescribing, and excessive injection utilization.

Keywords: Prescription pattern, Obstetrics and gynecology, Polypharmacy, Rational drug use, WHO prescribing indicators.

INTRODUCTION

Drug utilization research, as defined by the World Health Organization (WHO), is "the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences".[1] It plays a crucial role in evaluating the rational use of medicines, identifying prescribing trends, and

detecting inappropriate or irrational prescribing patterns.

Obstetrics and Gynaecology (OB/GYN) encompasses a wide array of medical conditions and healthcare needs unique to women.[2] There are only few comprehensive community-based studies in India that quantify the burden of obstetric and gynecological disorders, hindering efforts to inform and guide health policy in this critical area.[3] Medicine like antibiotics, uterotonics, antihypertensives, analgesics, haematinics etc agents are routinely prescribed in Obstetrics and Gynaecology practice.[4] Irrational or inappropriate prescribing such as polypharmacy, antibiotics or injections overuse, or poor adherence to essential medicines lists can contribute to adverse drug reactions, antimicrobial resistance, unnecessary healthcare costs, and poor patient outcomes.[5] These prescriptions should be reviewed regularly to minimize adverse effects, optimize treatment efficacy, and give feedback to prescribers.[3] Globally, studies have reported that overuse of antibiotics and injectable formulations is common in Obstetrics and Gynaecology wards, with variable adherence to essential medicines lists.[6,7]

In India, multiple drug utilization studies have revealed issues such as polypharmacy, brand-name prescribing, and limited compliance with WHO/INRUD prescribing indicators.[8] However, very few studies have been conducted in the North-Eastern region of India, particularly in a tribal state like Arunachal Pradesh, where unique socio-demographic, cultural, and healthcare access factors may influence prescribing patterns. Given this background, an analysis of drug utilization patterns and prescribing practices among Obstetrics and Gynaecology patients is essential. Such an analysis will help evaluate the various conditions requiring treatment and identify the gaps in rational prescribing, promote adherence to essential medicine guidelines, and provide evidence for policy-making and training of healthcare providers.

Therefore, the present study was undertaken with the aim of analysing the drug utilization patterns and prescribing practices among indoor patients in the Department of Obstetrics and Gynaecology of the only Medical College in Arunachal Pradesh, India.

Objective

To evaluate drug utilization patterns and prescribing practices among patients admitted in the Department of Obstetrics and Gynaecology of a Medical College in Arunachal Pradesh, India

MATERIALS AND METHODS

This is an observational cross-sectional study conducted in the Department of Obstetrics and Gynaecology of Tomo Riba Institute of Health and Medical Sciences, Naharlagun, Arunachal Pradesh, India for a period of 6 months. The study included all patients admitted to the Obstetrics and Gynaecology ward during the study period, except those who underwent Lower Segment Caesarean Section (LSCS). LSCS cases were excluded because they followed a uniform treatment approach, and their predominance in the patient population could have biased the study results. Data were collected from inpatient case records, drug charts and discharge summaries using a structured proforma.

Variables collected includes demographic details, disease pattern and drug details like Generic/brand name, route, duration, fixed-dose combinations, number of drugs per patient, antibiotic use, injections, essential medicines list (NLEM 2022) adherence etc. The outcome measures of the study included the WHO prescribing indicators, which comprised the average number of drugs per encounter, the percentage of drugs prescribed by generic name, the percentage of encounters with an antibiotic prescribed, the percentage of encounters with an injection prescribed, and the percentage of drugs prescribed from the National List of Essential Medicines (NLEM). Additionally, the study assessed the distribution of drug classes and the prevalence of polypharmacy, defined as prescriptions containing five or more drugs

Statistical Analysis: The data obtained were entered in Microsoft Excel and the results were analysed using SPSS (Statistical Package for the Social Sciences) 22.0, and R environment ver.3.2.2. Descriptive and inferential statistical analysis has been carried out in the present study. Data were presented in tables as frequencies and percentages.

RESULTS

A total of 198 prescriptions containing 1014 drugs were analysed.

Table 1: Age Distribution

Age Group (years)	Frequency (n)	Percentage (%)
10–19	10	5.05%
20–29	81	40.91%
30–39	65	32.83%
40–49	34	17.17%
50–59	5	2.53%
60–69	1	0.51%
70–79	2	1.01%
Total	198	100%

Out of 198 patients admitted in the Department of Obstetrics and Gynaecology (excluding LSCS), nearly three-fourths (73.74%) of the total study population belonged to the reproductive age group (20–39 years). Specifically, 40.91% were in the 20–29 years group, followed by 32.83% in the 30–39 years group. This indicates that most prescriptions were for young and middle-aged women, reflecting the reproductive and gynaecological nature of the study population. [Table 1]

Table 2: Clinical Diagnosis

Broad category	Diagnosis	Frequency (n)	Percentage (%)
Obstetric complications	Ectopic pregnancy	24	12.12
	MTP	25	12.63
	Incomplete abortion	11	5.56
	Pregnancy with Pain Abdomen	9	4.55
	Pregnancy with anaemia	4	2.02
	Spontaneous abortion	3	1.52
	Septic abortion	2	1.01
	Missed abortion, Molar pregnancy, Hyperemesis gravidarum, Pregnancy with chicken pox	4	2.02
Gynecological benign conditions	AUB	24	12.12
	Uterine fibroid	17	8.59
	Dermoid cyst of ovary	13	6.57
	Adenomyosis	9	4.55
	Ovarian cyst	6	3.03
	Endometriosis	2	1.01
	Hydrosalpinx	2	1.01
	Ovarian mass	2	1.01
	Cervical fibroid, Corpus luteal rupture, Endometrial hemorrhagic cyst	3	1.52
Malignant tumors	Uterine cancer, Cervical cancer, Ovarian cancer	4	2.02
Reproductive / Infertility	Infertility	8	4.04
Pelvic organ prolapse & repair	Cystocele, Urinary incontinence, Pelvic floor repair, Uterine prolapse	4	2.02
Others	Tubal recanalization, Lower abdominal pain, Spinal headache post LSCS, PIDetc	22	11.11

The most common category was obstetric complications (40.91%), which included ectopic pregnancy (12.12%) and medical termination of pregnancy (12.63%). Gynecological benign conditions (39.39%) such as abnormal uterine bleeding (12.12%) and uterine fibroid (8.59%) were also frequently observed. Malignancies were rare, with uterine cancer (1.01%), cervical cancer (0.51%), and ovarian cancer (0.51%) being reported. [Table 2]

Table 3: Polypharmacy

Polypharmacy	Frequency (n)	Percentage (%)
Total Prescriptions with Polypharmacy (≥5 drugs)	121	61.11
5	31	15.66
6	43	21.72
7	24	12.12
8	15	7.58
9	8	4.04

Out of 198 prescriptions, 121 (61.11%) were identified with polypharmacy, defined as the use of five or more drugs per prescription. Among these 198 prescriptions, only 3.03% of prescriptions contained a single drug, while 4.04% contained nine drugs. [Table 3]

Table 4: Dosage forms

Dosage form	Frequency (n)	Percentage (%)
Injections	192	18.93
Oral	760	74.95
Others	62	6.11
Total	1014	

Oral formulations were the most prescribed (74.95%), followed by injections (18.93%), and other formulations (6.11%). [Table 4]

Table 5. Therapeutic Class of Drugs

Drug class	Frequency (n)	Percentage (%)
Antibiotics	299	29.49
Proton Pump Inhibitors (PPI)	207	20.41

Analgesics / Antipyretics	154	15.19
Hematinics / Nutritional Supplements	147	14.50
Laxatives	60	5.92
Enzymes / Anti-inflammatory Enzyme Preparations	38	3.75
Abortificants	23	2.27
Antiemetics	22	2.17
Antiseptics	18	1.78
Hemostatics / Antifibrinolytics	15	1.48
Antispasmodics	11	1.08
Antioxidants / Bioflavonoids	5	0.49
Antihypertensives	3	0.30
Others / Miscellaneous	12	1.18

Antibiotics were the most frequently prescribed drug class, accounting for 29.49% of prescriptions, followed by proton pump inhibitors at 20.41%. Analgesics and antipyretics, such as paracetamol and aceclofenac, were prescribed to 15.19% of the study population, while hematinics and nutritional supplements—including iron, folic acid, and calcium—were prescribed to 14.50% of the patients. [Table 5]

Table 6: WHO core drug prescribing indicators

Parameters	Frequency (n)	Percentage (%)
Total Prescriptions Analysed	198	
Total Drugs Prescribed	1014	
Average Number of Drugs per Prescription	5.12	
Percentage of drugs prescribed by generic name	368	36.29
Percentage of encounters with an injection prescribed	114	57.58
Percentage of encounters with an antibiotic prescribed	180	90.91
Average duration of antibiotic	5.66	
Percentage of drugs prescribed from essential drug list	810	79.88
Percentage of drugs prescribed by Brand name	646	63.71
Total FDCs Prescribed	213	21.01

The analysis of prescribing practices reveals significant deviations from the WHO recommended standards. The average number of drugs per prescription was 5.12, which is considerably higher than the recommended limit of two, indicating polypharmacy and potential risks of drug interactions and increased treatment costs. Only 36.29% of the drugs were prescribed by their generic names, far below the ideal target of 100%, suggesting a preference for branded medicines that may increase healthcare expenses. The percentage of encounters where an injection was prescribed was 57.58%, exceeding the recommended maximum of 20%, which raises concerns about unnecessary use and associated risks. Similarly, antibiotics were prescribed in 90.91% of encounters, much higher than the recommended threshold of 30%, indicating overuse that could contribute to antimicrobial resistance. 79.88% of the drugs were prescribed from the National List of Essential Medicines (NLEM), though this falls short of the ideal 100%, showing room for improvement in ensuring access to essential treatments. Additionally, 63.71% of drugs were prescribed by brand name and fixed-dose combinations accounted for 21.01% of prescriptions, further highlighting areas where rational prescribing practices could be strengthened. [Table 6]

DISCUSSION

The primary objective of drug utilization studies (DUS) is to support the rational and appropriate use of medications within populations. In our study the predominance of cases in the 20–39 years age group (73.74%) reflects the high healthcare utilization of women in their reproductive years. This finding is consistent with previous studies in gynecology and obstetrics, where most conditions such as abnormal uterine bleeding, fibroids, infertility, and obstetric complications are concentrated in this age range.[9,10] The 20–29 years group (40.91%) being the largest cohort is likely related to increased obstetric events (pregnancy, abortions, ectopic pregnancy), which are most common during peak reproductive age.[11] In studies carried out by Kaur et. al. the mean age of women attending Gynecology OPD was 29.80±6.293 years.[12] Similarly, Shalini et al reported 70% patients were between 20-29 years.[13] Gynecological benign conditions such as uterine fibroids and adenomyosis tend to rise in the late 20s to 30s, explaining the second peak in the 30–39 years group (32.83%).[14] Overall, this distribution highlights that the majority of gynecological and obstetric morbidities occur in women of reproductive age, underlining the need for targeted preventive and curative healthcare services for this group.

The high proportion of obstetric complications such as ectopic pregnancy, abortion-related cases, and MTP reflects the maternal health burden in developing regions. Gynecological benign conditions such as AUB and fibroids also contributed significantly, aligning with findings from other tertiary care studies.[15] Malignant tumors were rare, which may be due to referral bias or early presentation of cases at specialized centres.

The average number of drugs per prescription (5.12) was much higher than the WHO ideal range (1.6–1.8), suggesting polypharmacy. Similar findings have

been reported in other studies done by Shankar et al,[16] Khan et al reported even much higher rates of polypharmacy with an average of 9.35 drugs per encounter.[17] Similar higher rates were also reported by Pradeep Sharma et al and Gyawali S et al.[18,19] Polypharmacy may increase risks of drug interactions, adverse drug reactions, and treatment costs.

The preference for oral dosage forms (74.95%) indicates rationality, as oral administration is safe and cost-effective. However, in the present study, injections were prescribed in 57.58% of patient encounters. According to the WHO prescribing indicators, the ideal percentage of encounters with an injection prescribed should be ≤ 20%.[20] Overprescription of injections can lead to increased treatment costs, patient discomfort, and unnecessary risks such as infections, allergic reactions, and the transmission of blood-borne diseases.

The frequent use of PPIs (20.41%) and analgesics (15.19%) indicates their role in supportive care. However, overuse of PPIs without clear indications has been documented in literature.[21] The considerable use of hematinics (14.50%) reflects the high prevalence of anemia in women of reproductive age in India.[22] National surveys have reported that nearly 50% of women suffer from anemia, necessitating iron and folic acid supplementation to manage and prevent its complications.[23]

The high use of antibiotics (90.91%) raises concern, as it exceeds the WHO optimal range (20–26.8%) and may contribute to antimicrobial resistance.[24] Ramesh et al. reported antibiotic prescribing rates of 65–75% in outpatient gynecology departments, citing factors such as fear of infection, lack of diagnostic support, and patient expectations.[25] The average duration of antibiotic use of 5.66 days is appropriate but highlights the need for antibiotic stewardship programs. Only 36.29% of drugs were prescribed by generic name, which is far below the WHO-recommended 100% and also falls short compared to other studies. For instance, a study by Kumar et al. reported generic prescribing rates of 45–55% in district hospitals.[26] Brand prescribing (63.71%) may be influenced by pharmaceutical marketing and prescriber preferences, increasing costs for patients. The proportion of drugs prescribed from the NLEM (79.88%) is encouraging but still below the WHO ideal. Similar studies have shown variability, with NLEM adherence ranging from 50–85%.[27] Ensuring strict adherence to NLEM can improve cost-effectiveness and rational use.

The relatively high FDC prescribing (21.01%) also requires caution, as irrational FDCs may contribute to adverse events and antimicrobial resistance.

CONCLUSION

This study underscores partial adherence to WHO prescribing indicators. Strengths included a high proportion of NLEM-based prescribing and rational use of oral dosage forms. However, gaps such as low generic prescribing, high antibiotic use, and polypharmacy remain major challenges. Encouraging generic prescribing practices, strengthening antibiotic stewardship programs, conducting regular prescription audits and prescriber education may reduce the treatment costs and emerging antimicrobial resistance. Overall, the findings call for targeted interventions to optimize prescribing practices, reduce irrational polypharmacy, and improve the quality of patient care in reproductive health.

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