

Prescribing Pattern of Drugs in Department of Obstetrics and Gynecology at A Tertiary Care Teaching Hospital, Bangalore, India

FERESHTEH MAKIABADI*, RAJESWARI R., JAYASHREE AK

Doctors of Pharmacy, Department of pharmacy practice, Krupanidhi College of Pharmacy, Bengaluru, India

Email: m.fereshteh60@gmail.com

ABSTRACT

Objective: To assess the drug prescription pattern in the department of obstetrics and gynecology At A Tertiary Care Teaching Hospital, Bangalore, India.

Methodology: A prospective observational study on Drug Utilization pattern was done in the department of Obstetrics and Gynecology of a 950 bedded tertiary care teaching hospital in Bangalore for 6 months. All patients were admitted to the Department of Obstetrics and Gynecology. Patients satisfying Inclusion criteria were enrolled after obtaining Informed Consent. Patient data entered into Case Report Form (CRF). Medication orders were observed for Prescription patterns. WHO Prescription indicators will be used to study the number of drugs per encounter, percentage of drugs prescribed by generic name, percentage of encounters with an antibiotic, percentage of encounters with an injection, percentage of drugs prescribed.

Result: A total of 120 cases were collected. A total of 1004 drugs were prescribed which included 244 (24.30%) minerals and vitamin supplements, 219 (21.81%) Antibiotics, 146 (14.55%) Gastric acid Secretion Inhibitors, 108(10.75%) Analgesics, 35 (3.49%) Antihypertensive drugs, 22 (2.19%)Antifungal drugs, 32 (3.19%) Anti-diabetic drugs, 32 (3.19%) Anti-spasmodic, 41 (4.08%) Antiemetic drugs, 12 (1.19%) Corticosteroids, 16 (1.59%) Anticonvulsant drugs, 97 (9.66%) in the category of "Others": Anti sceptics, Topical agents, Oxytocic, Antihyperlipidemic drugs, Oral contraceptives, etc. Percentage of Drugs used in different categories were, In our study majority of drugs from Category A (45.405), Category B (35.63%), Category C (16.67%), Category D (2.30%). the average number of drugs per prescription in this study (8.36) is higher than the standard set by WHO (1.6-1.8), percentage of patients prescribed with Injectables is 39.70% this is also high when compared with the range of the standard set by WHO.

Conclusion: The results of our study highlight several areas that need improvement, most importantly there is Polypharmacy was practiced as the average number of drugs (8.36) per prescription when compared with a standard set by WHO. Another area that is Percentage of drugs prescribed by Generic name is also low which also need to improve. Iron, Calcium, and Folic acid were the most frequently prescribed drugs. Overall drug use pattern is rational with few exceptions which were mentioned above. The majority of the drugs were prescribed from the Essential Medicine List and the majority of drugs were prescribed as per FDA Category A the Safest Category during pregnancy.

Keywords: prescription pattern, Obstetrics, Gynecology

INTRODUCTION

Pregnancy can be characterized as the conveying of at least one posterity known as a fetus or incipient organism inside the uterus of a female. The pregnancy period comprises 40 weeks. Medical researcher isolates this period into three trimesters. The main trimesters comprise of 0-12 weeks, trailed constantly, which comprise of 13-28 week and the third for 29-40 weeks. [1] Pregnant ladies may have some ongoing neurotic conditions that require consistent or intruded on treatment (e.g., asthma, epilepsy, and hypertension). Additionally, during pregnancy new medical conditions can create and old ones can decline (for example headache, cerebral pain, hyperacidity, queasiness, and retching) which all require drug treatment. Along these lines, it turns into a significant worry for pregnant ladies to take medicine, regardless of whether professionally prescribed drugs, over-the-counter or home-grown prescription. [2] Recent examinations in regards to drug use during pregnancy propose that over 80% of pregnant ladies take in any event one kind of prescription during pregnancy. Generally devoured drugs during pregnancy incorporate nutrient and iron enhancements, analgesics/hostile to pyretic, against infective and antihistamines. [3] Pregnancy is a physiological state

wherein every prescription that the patient takes could introduce a test and a worry to the Health care group because of modified drug pharmacokinetics and drug crossing the placenta, which might make hurt the fetus.[2] The harm to the fetus could happen in several ways. It can directly act on the fetus, which may cause even permanent damage to the fetus or abnormal development of the fetus, which all could eventually lead to birth defect or death. [1],[4] The investigation of prescribing patterns is a piece of medical review and tries to screen, assess, and recommend adjustments if needs in prescribing practices to make medical consideration normal. Gynecological issues are among the most impressive sicknesses in the ladies ' populace which prompts a few different difficulties. Additional considerations ought to be taken particularly in pregnancy, for instance, pointless drugs are some of the time recommended like multivitamins in enormous amounts for patients without nourishing issues or anti-microbials, for patients without proof of bacterial ailment. Drugs may pass from the mother to the fetus putting the fetus in danger particularly during the first and early piece of the subsequent trimester. The fetus develops rapidly during the fifth week after origination when organogenesis happens. During this stage vulnerability to Outside impacts including prescriptions and their resulting destructive impacts

expands which may not be obvious following birth. Most of the gynecological problems and during delivery are treated with Antibiotics, So Antibiotics should prescribe appropriately because now a day's Antibiotic resistance is a worldwide problem. [5].

When it comes to patients in the department of OB-GYN more emphasis has to be given as a minor mistake can lead to congenital malformations in the fetus. Considering the vital role of prescribing practices in OB-GYN practice, the present study conducted to study prescribing pattern of drugs in OB-GYN inpatients [5]. Studies have also been done on the prescription pattern of various disease states during pregnancy. Very few studies have been done so far to assess the OB-GYN practice, the present study was conducted to study the prescription pattern of drugs in OB-GYN inpatients

METHODOLOGY

Prospective-Observational Study was conducted in inpatients who were admitted in the OBG of 950- bed multispecialty tertiary care teaching hospital located in Hoskote, Bangalore. All patients admitted to the OBG were observed. The study procedure included a daily visit by the study pharmacist to the OBG OPD to collect and analyze the prescriptions. Patient demographic information was entered in a specially designed data collection form. Prescription details including generic/brand name of the drug, number of drugs prescribed, dosage form, route of administration, dose prescribed were also recorded. The prescriptions were also assessed for pregnancy category and duration of therapy. The prescription was checked for correctness of drug use, benefits by referring to various resources. If any problems associated with drug use were observed, such as drug interaction, ADRs, Dose adjustments, or medication errors, interventions were done duly. The WHO core prescribing indicators were used in the study, which included an average number of drugs per prescription, the percentage of drugs prescribed by generic name, percentage of injections prescribed, percentage of drugs prescribed from essential drug list/formulary, percentage of injections prescribed.

RESULT AND DISCUSSION

A Prospective Observational study was conducted for 6 months in the department of Obstetrics and Gynecology (OB-GYN) of a tertiary care hospital. During the study, cases were observed and collected by going to the patient bedside and the cases collected mostly pregnancy with different trimesters, pregnancy-induced Hypertension, urinary tract infections, Gestational diabetes, abortion cases, pelvic inflammatory disease, ovarian cysts, Premature menopause, Mass per abdomen. As per age categorization, it was observed that the patients mainly enrolled were above 18 years of age and were admitted for their different gynecological problems. Out of 120 cases, 47 were pregnant and the remaining 73 were with different Gynecological problems.

Table 1 gives details about Disease prevalence in pregnant women, out 47, 11 patients came for safe confinement, 5 Urinary tract Infections, 3 pain with Vaginitis, 6 Anaemia, 2 Acute GE with UTI and Vaginitis, 3 Adnominal Pain, 3 fever with Hypothyroidism, 2 Gestational

Hypertension, 1 Hypertension with convulsions, 5 Hyper Emesis, 3 Vaginitis, 3 Gestational Diabetes.

Table 1: Prevalence of Diseases in Obstetrics and Gynecology

PREVALENCE OF DISEASES IN OBSTETRICS (N=47)		
Disease	No of cases	Percentage (%)
Safe confinement	11	23.4
Anemia	6	12.76
Urinary Tract Infection	5	10.64
Pain with Vaginitis	3	6.38
Acute GE with UTI and Vaginitis	2	4.26
Abdominal Pain	3	6.38
Fever with Hypothyroidism	3	6.38
Gestational HTN	2	4.26
HTN with Convulsions	1	2.13
Hyper Emesis	5	10.64
Vaginitis	3	6.38
Gestational Diabetes	3	6.38
PREVALENCE OF DISEASES IN GYNAECOLOGY (N=73)		
Anemia	15	20.54
Mass per Abdomen	5	6.85
UTI	15	20.54
PID	8	10.96
Cervical Polyp	3	4.11
Premature Menopause	4	5.47
Hypertension	18	24.65
Abdominal Pain	6	8.22
Post-menopausal Bleeding	2	2.73
Epilepsy	5	6.85
Diabetes	2	2.73
Others	9	12.32

Table 2: prescription Pattern according to a number of cases and Drugs

PRESCRIPTION PATTERN (No of cases =120)		
Prescription pattern	No of cases	Percentage (%)
Minerals/Vitamins	102	85
Antibiotics	100	83.33
Analgesics	83	69.16
Gastric acid secretion inhibitors	107	89.16
Anti-Hypertensive	28	23.33
Antifungals	18	15
Anti-emetics	34	28.33
Anti-diabetics	19	15.83
Antispasmodics	28	23.33
Anticonvulsant	10	8.33
Corticosteroids	12	10
Others	72	60
PRESCRIPTION PATTERN (No of Drugs =1004)		
Prescription pattern	No of Drugs	Percentage (%)
Minerals/Vitamins	244	24.3
Antibiotics	219	21.81
Analgesics	108	10.75
Gastric acid secretion inhibitors	146	14.55
Anti-Hypertensive	35	3.49
Antifungals	22	2.19
Anti-emetics	41	4.08
Anti-diabetics	32	3.19
Antispasmodics	32	3.19
Anticonvulsants	16	1.59
Corticosteroids	12	1.19
Others	97	9.66

Table 1 also provides the details about the prevalence of Diseases in the Nonpregnant population in which out of 73, 15 were Anaemic, 5 with Mass per Abdomen, 15 patients with Urinary Tract Infection, 8 are PID, 3 with Cervical polyp, 4 were premature Menopause, 18 were Hypertensive patients, 6 with Abdominal pain, 2 were with post-menopausal bleeding, 5 were Epileptic patients, 2 were Diabetic, 9 were with other diseases like Hemorrhagic cyst, Post-menopausal Bleeding with Vaginitis, Cervical polyp with Anaemia, Abdominal pain with Convulsions, UTI with Convulsion, Incomplete Abortion.

Table 2 shows the utilization pattern for 120 cases of which Gastric acid Secretion Inhibitors were found in 107 prescriptions (89.16%) followed by Minerals and Vitamin supplements in 102 prescriptions (85%). Antibiotics in 100 (83.33%) prescriptions, Analgesics in 83 (69.16%) prescriptions, Antiemetics in 34 (28.33%), Anti-hypertensive and Antispasmodic drugs in 28 (23.33%) prescriptions, Anti-fungal drugs in 18 (15%) prescriptions, Corticosteroids in 12 (10%) prescriptions and others (Topical agents, Oxytocic, Oral contraceptive, and Anti septic, etc. found in 72 prescriptions about 60%. Table 2 also gives details of prescription patterns of which Minerals/Vitamin supplements 244 (24.30%) are the

highest prescribed followed by Antibiotics 219 (21.81%), Gastric acid Secretion Inhibitors 146 (14.55%), Analgesics 108 (10.75%). The group others comprising of Anti septics, Topical agents, Oral contraceptives, Oxytocic, etc. about 72 (60%).

In this study, about drugs prescribed for pregnant women, out of 348, 151 were minerals and vitamins, 51 were antibiotics (most prescribed were Cefixime and Metronidazole and less commonly prescribed is Amoxicillin). 36 were analgesics, Paracetamol and Diclofenac are most widely prescribed drugs and less commonly Tramadol. 31 were gastric acid secretion inhibitors (Ranitidine is most frequently prescribed gastric acid secretion inhibitor and less commonly is pantoprazole). 3 were anti-hypertensive drugs Nefidipine-2 and labetalol-1. Anti-fungal drugs that are Clotrimazole prescribed in 9 cases. 23 were anti-emetic drugs, Ondansetron is highly prescribed followed by Doxylamine and Metoclopramide. 2 were anti-diabetic drugs that is Insulin. 12 were anti-spasmodic which is Hyoscine butyl bromide. One medication prescribed was Lorazepam (anticonvulsant). 2 were corticosteroids that is Hydrocortisone.

Table No 3: Classification of prescription

CLASSES OF ANTIBIOTIC (N=219)		
Class	Number	Percentage (%)
Cephalosporins (cefixime, ceftriaxone)	111	50.68
Penicillin's (Amoxicillin)	12	5.48
Amino glycoside (Nitrofurantoin, Gentamycin)	12	5.48
Fluroquinolones (Ofloxacin)	14	6.39
Nitroimidazoles (Metronidazole)	68	31.05
Fixed dose combi: Cotrimoxazole (Sulphamethoxazole + Trimethoprim)	2	0.91
CLASS OF GASTRIC ACID SECRETION INHIBITORS		
Histamine 2Receptor Antagonist(H2RA) (Ranitidine)	124	84.93
Proton pump inhibitors (Pantoprazole)	18	12.33
Antacid (Aluminum Hydroxide)	4	2.74
CLASSES OF ANTIHYPERTENSIVES		
Beta + Alpha-adrenergic Blockers (Labetalol, Carvedilol)	10	28.57
Calcium Channel Blockers (nifedipine, Amlodipine)	20	57.14
Diuretics (Furosemide)	3	8.57
ACE Inhibitors (Ramipril)	2	5.72
CLASSES OF ANALGESICS (N=108)		
Aryl Acetic Acid Derivatives+ Para aminophenol Derivatives (Diclofenac+ Paracetamol)	44	40.74
Aryl Acetic Acid Derivatives (Diclofenac, Aceclofenac)	26	24.07
Para Aminophenol Derivatives (Paracetamol)	20	18.52
Synthetic Opioids (Tramadol)	8	7.4
Anthranilic acid Derivative (Mefenamic acid)	8	7.4
Indole derivative (Indomethacin)	2	1.86
CLASSES OF ANTIEMETICS (N=41)		
5HT3 Antagonists (Ondansetron)	32	78.05
H1 Antihistaminic (Doxylamine)	6	14.63
Prokinetic Drugs (Metoclopramide)	3	7.31
CLASSES OF ANTISPASMODICS (N=32)		
Semi-synthetic Derivatives (Hyoscine Butyl Bromide)	26	81.25
Vasoselective (Flavoxate)	4	12.5
Novel Antispasmodics (Drotaverine)	2	6.25
CLASSES OF INSULIN PREPARATIONS (N=32)		
Fast Acting Insulin (Mixtard, Actraoid)	24	75
Short-Acting Insulin (Insugen)	8	25
CLASSES OF CORTICOSTEROIDS (N=12)		
Short-Acting Glucocorticoids (Hydrocortisone)	8	66.66
Intermediate Acting Glucocorticoids (Prednisolone)	4	33.33
CLASS OF ANTICONVULSANTS (N=16)		
Benzodiazepines (Lorazepam, Clonazepam)	12	75
Hydantoinds (Phenytoin)	4	25

Table 3 is the classes of Antibiotics prescribed in 120 prescriptions, among which Cephalosporins (50.68%) 111 drugs is the highest, followed by Nitroimidazole's (31.05%), Fluoroquinolones (6.39%) 14, Aminoglycoside's (5.48) 12, Penicillin's (5.48) 12 drugs were prescribed. About the number of Antibiotics per prescription, of which single Antibiotic found in 36 prescriptions (30%), 2 Antibiotics found in 24 prescriptions (20%), three Antibiotics found in 24 prescriptions (20), more than three Antibiotics found in 10 prescriptions (8.34%). Table 3 shows classes of Gastric acid Secretion Inhibitors, where Histamine 2 Receptor Antagonist the highest prescribed-84.93%, followed by proton pump Inhibitors (12.33%) and the least prescribed were Antacid (2.74%). Table 3 shows classes of Antihypertensive drugs, where Calcium channel blockers 20 (57.14%) is the highest, followed by Beta-Adrenergic Blockers 10 (28.57%), and the least prescribed were Diuretics 3 (8.57%), ACE inhibitors 2 (5.72%). Table 3 gives the details about the classes of Analgesics where the highest prescribed were a combination of Aryl acetic acid Derivatives+ Para aminophenol Derivatives-40.74% followed by Aryl acetic acid Derivatives-24.07%, Para aminophenol Derivatives-18.52%, NSAID's-9.26% and least prescribed were Synthetic opioids-7.40%. Table 3 shows the details of classes of Antiemetic drugs where the highest prescribed were 5HT3 Antagonists-78.05% followed by H1 antihistaminics-14.63% and Prokinetic Drugs-7.31%.

Table 3 shows the classes of Antispasmodic drugs where the highest prescribed were Semi-synthetic Derivatives-81.25% (26), followed by Vasicoselective-12.5% (4), Novel Antispasmodic drugs-6.25% (2). Table 3 gives the details about classes of Insulin preparations, where the highest prescribed were fast-acting Insulin-24 (75%) and Short acting Insulin-8 (25%). Table 3 also shows classes of Corticosteroids prescribed, where the highest prescribed were short-acting Glucocorticoids-8 (66.66%) and Intermediate-acting Glucocorticoids-4 (33.33%). Table 3 also gives the details about Anticonvulsants prescribed, where Benzodiazepine 12 (62.5%), Hydrations- 4 (12.5%). Utilization patterns were reviewed and analyzed for the patients enrolled in the Inclusion Criteria. Antibiotics Minerals and vitamin supplements are the highest class prescribed among which combination of Iron+ Folic acid, Calcium+VitaminD3, Folic acid, Vitamin C and Vitamin B complex was widely found almost similar to Agarwal.M et al[6] were in the most frequently prescribed Minerals and Vitamins were Folic acid and Iron combination followed by Calcium and Vitamin D3. In another study, the most commonly prescribed dietary supplements at admission were Folic acid, Iron, and Vitamin B complex. Around 102

patients were seen to be prescribed dietary supplements depending on their reasons for admission

The second highest class prescribed were Antibiotics among which Cephalosporins (cefixime), Nitroimidazoles (Metronidazole), Penicillin (Amoxicillin), Fluoroquinolones were widely found almost similar to the results by Agarwal.M et al [6]. Around 100 patients were seen to be prescribed antibiotics empirically with or without a change in the selection of agent depending on the causative organism or individual therapeutic reason. A survey on Antibiotic prescribing patterns in OB-GYN by J. Jayasheela et al in the Jazan region, KSA revealed that 19.86%24. [5] reported that 28.83%. Agarwal.M et al reported that 98% of received Antibiotics [6]. in our study most of the patients (30%, 36 patients out of 120) received a single antibiotic. Gastric acid Secretion Inhibitors were prescribed among 107 patients, the most commonly prescribed Drug is Histamine 2 Receptor Antagonist (Ranitidine). Ranitidine is a Category B indicated to use in Pregnancy. Analgesics were prescribed to about 83 patients and commonly prescribed were Diclofenac/Paracetamol combination, paracetamol, Diclofenac, Tramadol in a smaller number of cases. Overall Analgesics prescribed was about 10.75% which is similar to the results found by Agarwal.M et al [6]. Out of 120 cases, 19 were Diabetic patients including 6 were Gestational Diabetics. Commonly prescribed Insulin preparations are Short-acting Insulin i.e. Insugen-R and Fast-acting Insulin i.e. Mixtard and Actrapid. Antihypertensive used commonly were calcium Channel Blockers (Nifedipine), Beta + Alpha Blockers (Labetalol), Diuretics (Furosemide), and ACE inhibitors (Ramipril) Drugs prescribed for the pregnant population were, out of 348, 151 were Minerals and Vitamins, 51 were Antibiotics (Most prescribed were Cefixime and Metronidazole and less commonly prescribed is Amoxicillin). 36 were Analgesics, Paracetamol, and Diclofenac is the most widely prescribed Drugs and less commonly Tramadol. 31 were Gastric Acid Secretion Inhibitors (Ranitidine is most frequently prescribed Gastric acid secretion Inhibitor and less commonly is pantoprazole). 3 were Anti-Hypertensive drugs Nefidipine-2 and labetalol-1. Anti-Fungal Drugs that is clotrimazole prescribed in 9 cases. 23 were Anti Emetic Drugs, Ondansetron is highly prescribed followed by Doxylamine and Metoclopramide. 2 were Anti Diabetic Drugs that is Insulin. 12 were Anti Spasmodic that is Hyoscine Butyl Bromide. One medication prescribed was Lorazepam (Anticonvulsant). 2 were corticosteroids that is Hydrocortisone. And 27 were in another category which are protein powder-6, Cetirizine-4, Lidocaine-6, IVF-9, thrombophob Ointment-2. This is similar to the results found by Dileep and Nirmal et al [11]

Table 4: Comparison with WHO Indicators

Prescribing Indicators	No of Drugs	Result	Standard Derived
Average No of Drugs per Encounter	1004	8.36	1.6-1.8
Drugs Prescribed by Generic Name	171	17.03%	100%
Antibiotics Prescribed per Encounter	219	21.81%	20.0-26.8%
No of Injections per Encounter Prescribed	399	39.74%	13.4-24.1%
No of Drugs from Essential Medicine List	794	79.08%	100%

Table 4 gives details about the Comparison of the study with Standard WHO Indicators were, Average No. Of Drugs per Encounter-8.36, Drugs prescribed by Generic name per Encounter-17.03%, Antibiotics per prescription-21.81%, No of Injections per Encounter- 39.74%, No. Of Drugs From EML-79.08%. The results of our study highlight several areas that need improvement, most importantly there is Polypharmacy was practiced as the average number of drugs (8.36) per prescription when compared with a standard set by WHO.

Percentage of Drugs used in different categories were, In our study majority of drugs from Category A (45.405), Category B (35.63%), Category C (16.67%), Category D (2.30%) Similar pattern of category distribution was reported from similar studies conducted in India... and other countries like Netherland[9], Finland[8], Bratislava and Nitra[7]. The average number of drugs per prescription in this study (8.36) is higher than the standard set by WHO (1.6-1.8), percentage of patients prescribed with Injectables is 39.70% this is also high when compared with the range of the standard set by WHO. The percentage of drugs prescribed from the Essential Drug List is 79.08% showing almost adequate drug dispensed from the EML. [10,12]

Table 5: Pregnancy Categories (N=348)

Pregnancy Category	No of Cases	Percentage of Drugs
Category A	158	45.40%
Category B	126	36.20%
Category C	61	17.53%
Category D	3	0.86%
Category X	0	0.00%

Table 5 gives results of Categories of Drugs prescribed in pregnant population among which, Category A (45.40%) Highly prescribed were Minerals and Vitamins supplements. Category B (36.20%) Ranitidine, Cefixime, Metronidazole, Ondansetron less commonly Pantoprazole. Category C (17.53%), Diclofenac, hyoscine butyl bromide, Nifedipine, Labetalol, and less commonly Tramadol. Category D (0.86%) was Lorazepam, Thrombophob Ointment.

CONCLUSION

The results of our study highlight several areas that need improvement, most importantly there is Polypharmacy was practiced as the average number of drugs (8.36) per prescription when compared with a standard set by WHO. Another area that is Percentage of drugs prescribed by Generic name is also low which also need to improve. Iron, Calcium, and Folic acid were the most frequently prescribed drugs. Overall drug use pattern is rational with few exceptions which were mentioned above. The majority of the drugs were prescribed from the Essential Medicine List and the majority of drugs were prescribed as per FDA

Category A the Safest Category during pregnancy. This type of study can help in evaluating the existing drug use pattern and in planning appropriate interventions to ensure rational drug therapy.

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