



Analysis of drug usage for common gynecological complications in Bangladesh as a developing country of South Asia

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ABSTRACT

The present study aimed at the determination of prescription pattern of medicines to justify the rational use of drugs in the gynecology department of the several hospitals in Bangladesh. The study described about the drugs prescribed in different complications associated with gynecological problems during 1st February, 2016 to 15th May, 2016. Total 240 prescriptions from four reputed hospitals in Bangladesh, namely Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital, Tangail General Hospital and Enam Medical College Hospital were analyzed. From each hospital a total of 60 prescriptions were collected from both indoor and outdoor and taken from those patients who visited their physicians for the first time. The analysis showed that total 1088 drugs in 240 prescriptions were prescribed in different complications. The order of therapeutic class according to their quantity in the total prescription was Antimicrobial drug (275) > Anti-ulcer drug (221) > Vitamin & mineral (219) > Analgesic drug (125) > Drugs acts on GIT motility (90) > Drugs acts on CNS > Antihypertensive drug > Hormonal drug > Anti-diabetic drug. The study revealed that more than four drugs were prescribed in each prescription. Prescription of fifty pregnant women contained 292 drugs in total where 77, 136, 68 belonged to the pregnancy category A, B and C respectively and rest of the 11 drugs were not categorized. The prescription pattern indicated that there was a chance of drug interaction, adverse drug reactions and other medication related problems. So, updated medication initiatives should be taken for good therapeutic outcomes.

INTRODUCTION

Gynecology is the primary branch of medical science concerned with women's health issues. The body physiology of a woman changes throughout the life span.[1] Women are particularly more vulnerable to infectious diseases and death than a man.[2] Women quickly mount substantial immune-system attack to clear infections and suffer the consequences of the inflammatory responses (Klein, 2010).[3] Few common diseases of women are amenorrhea, dysmenorrhea, infertility, vaginitis, urogenital fistula, Bartholin's Cyst etc. [4]

A study on the health status of the Bangladeshi women found that they have limited knowledge about the danger associated with the common female diseases.[5-6] Some risk factors related to common gynecological problems are malnutrition, early

marriage and child bearing, obesity, mental stress, spiritualism, lower economic status, illiteracy etc.[7] The maternal mortality rate is nearly 100-fold higher in developing countries than in developed countries.[8] The most risky patients are pregnant women in Bangladesh. But it is satisfactory that the country has made significant improvements in the health of women and children and has achieved its Millennium Development Goal (MDG) 4 (to reduce child mortality) and is on track to MDG 5a (to reduce maternal mortality).[9]

Selection of different treatment pattern is prerequisite for women from men due to the physiological and psychological variations.[10] The pharmaceutical industry is one of the most developed technology sectors in Bangladesh.[11] This sector provides 97% of the total medicinal requirement of the local market. The pharmaceutical market is sufficient to provide medicines for all common female diseases. This is alarming to

some extent while prescribing drug for a pregnant women. In such case, following safety margin index of the prescribed drug is a must. In 1979, The United States Food and Drug Administration (FDA) introduced a classification of fetal risks due to pharmaceuticals. Based on the clinical evidence on both human and animal, drugs of different therapeutic area were categorized as pregnancy category A, B, C, D, X upon the increasing risk levels.

MATERIALS AND METHODS

A cross sectional study was conducted from 1st February, 2016 to 15th May, 2016 in various Gynecology and Obstetrics departments of four reputed hospitals in Bangladesh.

A. Collection of prescription from patients

The study was conducted in gynecology & Obstetrics department and Patients were randomly selected from both indoor & outdoor in hospital (Table 1). Prescriptions were not collected from a few particular prescribers. Photos of prescriptions were captured by digital camera & some noted down from prescriptions.

B. Data processing

Then the generic name & the therapeutic classes of drugs were

sought out from prescribing guides of drugs such as MIMS (21st edition, 2009), QIMP (13th edition).

C. Statistical analysis:

Data were analyzed using SPSS version 12 and MS excel. The comparisons were made on different variables.

RESULTS

A total of 240 prescriptions containing 1088 drugs of different therapeutic regions were collected from outdoor and indoor patients. Analysis of prescribed drugs were listed in Table 1.

A. Usage of drugs according to therapeutic class

This large number of drugs gives an overall idea about the field of gynecology treatment. However, these four hospitals can be categorized as urban (BSMMU and DMCH), sub-urban (Enam Medical College Hospital) and rural (General Hospital, Tangail).

The most prescribed drug belonged to the following classes such as Antimicrobial drug, Antiulcerant drug, Vitamin mineral, Analgesic-Anesthetic drug (Table 2) and these were almost 25%, 21%, 20%, 12% respectively. GIT and CNS active drug, Antihypertensive drug, Antidiabetic drug, Hormone are also prescribed in the prescription.

Table 1 : List of prescription's number collected from hospitals

Name of hospital	Indoor	Outdoor	Total
Bangabandhu Sheikh Mujib Medical University Hospital, Dhaka	30	30	60
Dhaka Medical College Hospital, Dhaka	30	30	60
General Hospital, Tangail	30	30	60
Enam Medical College Hospital, Savar	30	30	60
Total	120	120	240

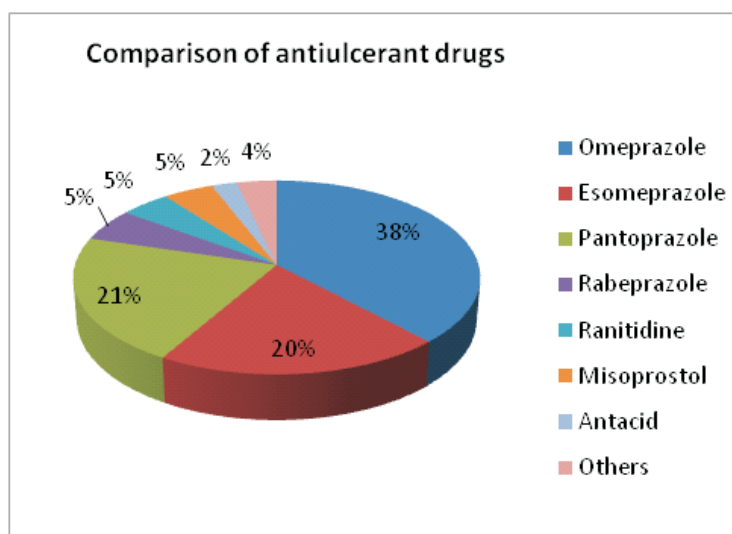


Fig 1 : Percentage usage of antiulcer drugs

Table 2 : List of drugs according to therapeutic class

Therapeutic class	Number of prescribed drugs
Antiulcer drug	221
Drug act on GI motility	90
Antimicrobial Drug	275
Analgesic-Anesthetic	125
Vitamin mineral	219
Antihypertensive	35
Drugs act on CNS	42
Hormonal drug	34
Antidiabetic drug	14
Antihistamine	10
Other Drugs	23
Total drugs	1088

B. Usage of antiulcerant drugs

These types of drugs were mainly used for lowering HCl content in stomach. About 84% drugs were proton pump inhibitor (PPI) of total antiulcerant drug. Only Omeprazole was 38% of total antiulcerant drugs, which was two times more than Esomeprazole and Pantoprazole. The use of antacid was very negligible (Figure 1).

Ranitidine, a H₂-receptor antagonist was used about 2%. Misoprostol, an ulcer healing drug was also used about 5%. Others drugs were about 5% of total antiulcerant drugs (Figure 1).

C. Usage of antimicrobial drugs

Antimicrobial drugs include antibacterial, antiviral,

antifungal, antiprotozoal and anthelmintic drugs. In these four departments antibiotic drugs were mostly used. There were almost all classes of antibacterial drugs of pharmaceutical market in Bangladesh.

Metronidazole, an antiprotozoal drug and used as combined drug with different antibacterial drugs. It was prescribed almost 38% that was two times greater than the second most prescribed antibiotic ciprofloxacin (14%) (Figure 2). There was more use of β -lactam antibiotic, cephalosporin than other classes of antibiotics. Ciprofloxacin, Ceftriaxone and Cefixime were 14%, 12% & 11% respectively (Figure 2).

Antifungal drugs of different classes were used about 6% of total antibiotic. Topical antifungal drugs were mostly used. Gentamycin, Azithromycin, Doxycycline, Clindamycin were about 7%, 3%, 6% & 6% respectively.

D. Usage of analgesic drugs

NSAID was mostly used as analgesic drug. Some drugs such as Hydrocortisone, Dexamethasone were used in very small percentage. The most prescribed analgesic drug was Diclofenac sodium and it was used about 38%. Paracetamol, Ketorolac and Ibuprofen were used about 27%, 16% and 6% respectively.

E. Usage of hormonal drugs

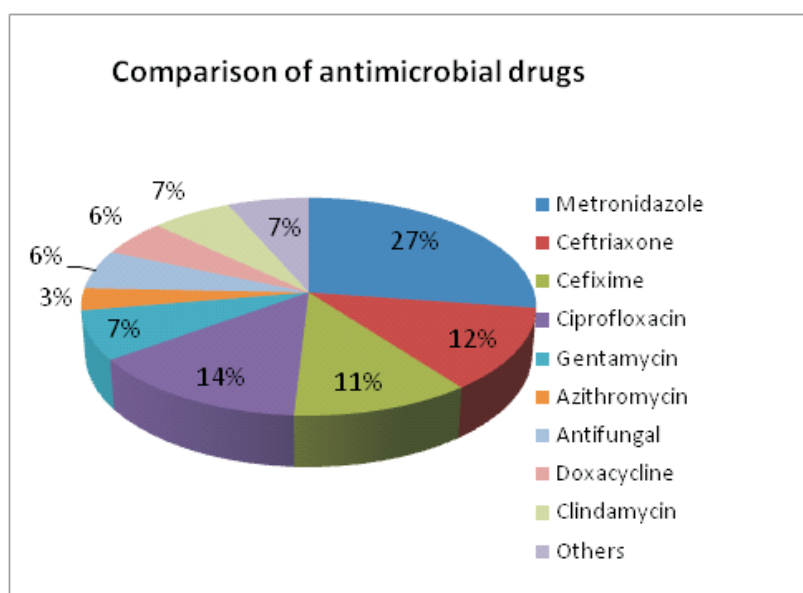
Hormonal drugs must be used in some clinical conditions. In most case Norethesterone (44%) was used. Another hormone derivative Allylestrenol was used about 20% (Figure 3).

F. Usage of Vitamins and minerals

Multivitamin was mostly used in four hospitals. The second mostly used agent in this class was Vitamin C. The order of agents according to their uses was Multivitamin (22%) > Vitamin C (20%) > Zinc supplement (19%) > Calcium+vit D (12%) > Iron supplement (12%) > Vit A (6%) > Vit-B (5%) > Vit-E (1%).

G. Determination of pregnancy category of drug

From 50 pregnant women, 50 prescriptions were collected who meet with doctors after 4-8 months of pregnancy. Total 204

**Fig. 2 :** Percentage usage of antimicrobial drugs

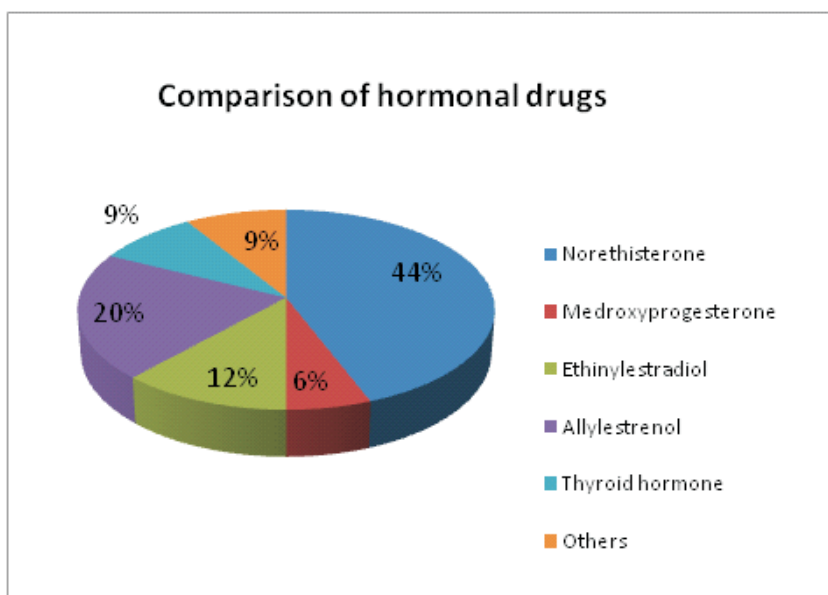


Fig. 3 : Percentage usage of hormonal drug

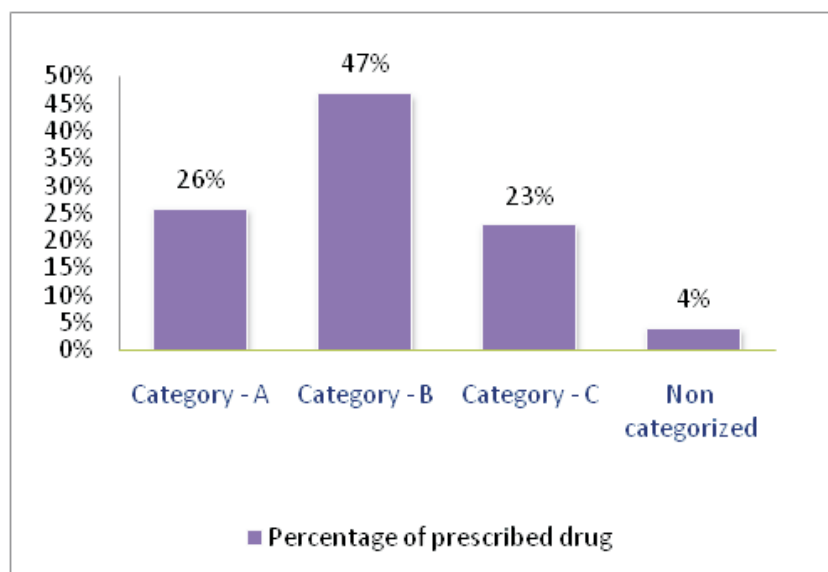


Fig. 4 : Percentage of different pregnancy category of drugs.

drugs were prescribed for the patients. Those drugs were analyzed to find an idea on safety of drug uses during pregnancy (Figure 4).

DISCUSSION

Our research revealed the present scenario of prescription pattern in treating common gynecological problems in Bangladesh. The average number of drugs in every prescription was found to be almost 4.5 for gynecological problems which slightly differ from the recommended average number of WHO that is 2.0 per prescription.[12] Interestingly our data showed similarity comparing with another study on prescribing drugs during pregnancy in developed countries where mean value was ranged widely from 1.7 to 13.6. [13] In our study, the prescribed drugs used according to the higher frequency was found to be in the following increasing order-

Antimicrobial drug > Antiulcerant drug > Vitamin mineral >

Analgesic-Anesthetic drug.

These findings highlight the present situation of drug intake by patients, use of drugs of varying therapeutic categories, and finally assess the risk benefit ratio of pregnant women in South Asian Regional Country, Bangladesh.

After analyzing each prescription and therapeutic categories of drug, a relatively higher utilization rate for antimicrobials drugs found in most prescriptions was filled for Metronidazole. The study also reported that more than 37% antibacterial drugs were of cephalosporin derivatives. In case of prescribing Antiulcerant, Omeprazole, a proton pump inhibitor got high preference by most of the physicians among other drugs available in this class. Reports from pregnant women were also collected to assess the treatment pattern with prescription drugs. During pregnancy period, administration of drugs needs to be monitored

strictly and fetal risk benefit ratio should also be considered during prescribing. In this case, USFDA approved pregnancy category index isto be followed by the physicians. However,there is an increasing need for vitamins, minerals and other hormonal drugs to meet the nutritional demand of pregnant women. Present report showed that women of Bangladesh with gynecological complications received 34 numbers of hormonal drugs among the total number of drugs investigated in which mostly used was Norethesterone (44%). Whereas another study on developed country like Germany revealed that there is a high rate of systemic hormone use (37% of women) among the pregnant women.[14] In developing Country like Bangladesh prescriptions for analgesic drug Paracetamol, filled up 27% of the total drugs in this category, where in Francethe ratio was found 63%.[15]Most of the drugs in our study prescribed for pregnant women were of pregnancy Category-A(26%); Category-B (47%); Category-C (23%). About 4% drugs were not categorized till nowwhereas slightly different pattern was found from the study which was conducted in USA that showed the pattern where 2.4% of drugs were category-A, 50.0% category-B and 37.8% category-C.[16]

CONCLUSION

More than four drugs of different classes in a prescription indicated practice of polypharmacy in the gynecology department in Bangladesh. Antimicrobial drug, anti-ulcer drug and vitamin minerals were mostly prescribed in those prescriptions. In case of pregnant patient, there was usage of category-C drugs about 23% along with non-categorized drugs.

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