



# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## Prescribing Trends in Antenatal Care at a Tertiary Level Teaching Hospital of Vidarbha Region

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### ABSTRACT

Most of the drugs are contraindicated during pregnancy to prevent teratogenic effects. Some drugs are used with precaution followed by antenatal visits at regular interval. Prescription trend studies can help in minimizing the risk of drug use in pregnancy, by establishing the safety profile and outcome domain of drug consumption. To study the patterns of drug prescription during pregnancy and provide feedback and recommendations for health care provider in the tertiary care hospitals of Vidarbha Region. A Retrospective, Cross-Sectional study carried out at a teaching hospital Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra. Data were collected from 891 prescriptions related to antenatal care were analysed. 300(31.54%), 376(39.53%) and 215(28.91%) women were in the first, second and third trimester of pregnancy, respectively. A total of 2472 drugs were prescribed with an average of 2.77 drugs per prescription. Monotherapy was seen only in 5% of the patients whereas 95% of the patients received Polytherapy. There is need of training of health care providers to prescribe drugs by generic names to reduce the cost incurred by the patients. Awareness of low cost prescribing practices should be initiated among prescribers because most of the patients visiting this hospital are from poor socio-economic background.

**Keywords:** Prescribing Trend, Antenatal Care, Vidarbha Region

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## INTRODUCTION

Careful consideration of the benefit to the mother and the risk to the foetus is required while prescribing drugs during pregnancy. Reducing medication errors and improving patient safety are the important areas of discussion. [1]The use of drugs during pregnancy calls for special attention because in this case in addition to the mother, the health and life of her unborn child is also at stake. The drugs given to pregnant mothers for therapeutic purposes may cause serious structural and functional adverse effects in the developing child. [2] Since it is very difficult to determine the effects on the fetus before marketing new drugs due to obvious ethical reasons, most drugs are not recommended to be used during pregnancy. [3]

Medications may pass from the mother to the fetus putting the fetus at risk particularly during the first trimester and first part of the second trimester. The most critical time appears to be around the fifth week after conception, during organogenesis, a time of considerable development. During these crucial weeks of organ formation, the fetus matures very quickly with increased susceptibility to outside influences which includes medications and their consequent harmful effects which may not be evident immediately after birth. [4] Since there are numerous gaps in knowledge about deleterious consequences for the fetus, prescription drug use by pregnant women should be viewed as a public health issue. [5]

Pregnant patients seek relief for minor problems like headache, musculoskeletal pain and various gastrointestinal complaints, such as heartburn, nausea, vomiting, dyspepsia and constipation. [6]Further, the safety and efficacy of a given medicine often changes during the course of a normal pregnancy. Though 60% of patients in the USA are estimated to consult a healthcare professional when selecting an OTC product,[7] this projection may not be applicable to other countries.

The studies conducted in developed countries where drug-prescribing practices are considered to be superior, have identified need for interventional measures aimed at rational prescription during the prenatal period.[8,9]Hence the aim of this study was to examine the patterns of drug prescription during pregnancy in the tertiary care hospitals of Maharashtra. With this information, Drug utilisation studies can help in minimizing the inherent risk of drug use in pregnancy, by establishing a profile of the safety and efficacy of drug consumption.

## MATERIALS AND METHODS

This was a Cross-Sectional study conducted at Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe) Wardha, Maharashtra. The present study was conducted over a period of three months in the Outdoor Patient Department (OPD) of Obstetrics and Gynaecology. Copies of outpatient drug prescriptions given to pregnant patients attending the antenatal clinics were collected by the data collectors from January 1 to April 30, 2012. A verbal consent was obtained from the women whom prescriptions were issued. The prescriptions were also assessed for Dose strength, Dosage schedule, Duration of therapy and Use of any banned drug formulations.

The format of prescription was analyzed for patient identification parameters (name, age, gender, address of patient), superscription (Rx), inscription (drug name, dose and dosage frequency), subscription (directions to pharmacist about instructions & use of drugs), signature (instructions to patient about drug use), prescriber's identity (name, registration, address of prescriber) and date of prescription.[10] All the prescriptions were pooled together. The copying and analysis was done by an independent observer (DT). The data is presented in mean and percentages.

The collected data was entered and analysed using statistical software SPSS. One way ANOVA was used to compare the number of drugs prescribed in each sampling unit.

### RESULTS

The findings pertaining to prescription format are shown in [Table-1] which shows that all the prescriptions carried the date; name, age, gender and address of the patients as they are already printed on the hospital OPD cards. The superscription Rx was written in 81.36% prescriptions while dosage form and name was mentioned for all the drugs. None of the prescriptions carried instructions to the pharmacist while special instructions to the patient were mentioned in 16% prescriptions and the rest of the patients were mostly given verbal instructions. Prescriber's identity was legible in only 75.9% prescriptions but none had the registration number of the prescriber because it is a hospital OPD and not an private clinic, so writing the registration number is not mandatory.

**Table-1: Prescription Format**

Contents of Prescription	Number of Prescriptions (%)
Date of prescription	891 (100%)
Name of patient	891 (100%)
Age of patient	891 (100%)
Gender of patient	891(100%)
Address of patient	891 (100%)
Rx	725 (81.36%)
Dosage form and name	800 (89.78%)
Duration of the Therapy	753 (84.5%)
Instructions to the pharmacist	0
Special instructions to the patient	143(16%)
<b>Prescriber identity</b>	
Signature of the prescriber	757 (85.3%)
Registration number and address of the prescriber	0

Table-2: Demographic Characteristics

Parameters	No. of Patients
Age in years	Change the value
First < 20yrs	6.17% (25)
Second 20-35	59.26% (240)
Third >35	22.22% (90)

A total of 891 (586 primigravida and 305 multigravida) pregnant women were analysed, (31.54%) 300, (39.53%) 376 and (28.91%) 215 women were in the first, second and third trimester of pregnancy, respectively [Fig-1]. (6.17%) 25, (59.26%) 240 and (22.22%) 90 women were of less than 20 years, between 20 to 35 years and more than 35 years of age, respectively. The first antenatal check-up was conducted during the first, second and third trimester of pregnancy in (49.38%) 200, (44.44%) 180 and (6.17%) 25 of women, respectively [Fig-1]. These patients were prescribed 2472 drugs in the all three trimester. Out of all only 19.3% drugs were prescribed under their respective generic names while proprietary names were used for 80.7% drugs. (Fig-2). A total of 700, 1086 and 686 number of drugs, with an average of 2.33, 2.89 and 3.19 drugs per pregnant women, were used during first, second and third trimester of pregnancy, respectively. The pharmacological classes of drugs prescribe to pregnant women were analysed.

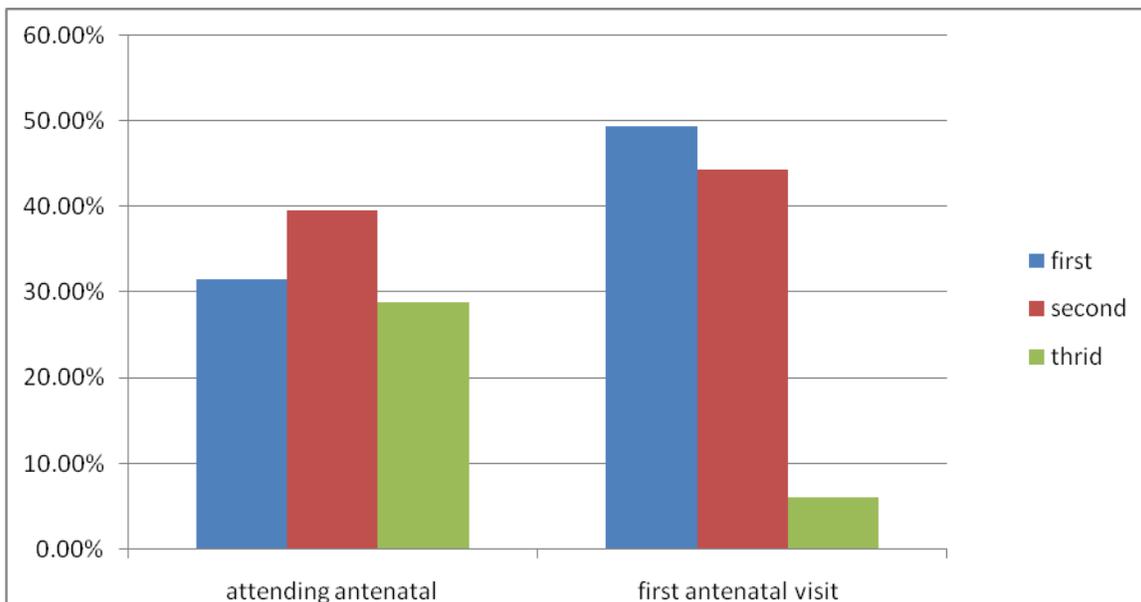
Iron, Folic acid, Vitamins and Calcium were the most frequently used drugs, during all the three trimesters of the pregnancy. During the first trimester anti-emetics, phenobarbitone, progesterone and paracetamol, during the second trimester-antacids, protein supplements, antimicrobials and NSAIDs (nonsteroidal anti-inflammatory drugs) and during the third trimester-phenobarbitone, antibiotics, NSAIDs, anti-emetics, proton pump inhibitors/ H2 blockers and antihypertensive drugs (nifedipine, methyldopa) were the other commonly used drugs [Fig-3].

## DISCUSSION

Rational drug use in pregnancy requires the balancing of benefits and potential risks associated with the use of the drug. The benefits of rational drug use during pregnancy are not only restricted to the recovery of maternal health, but are also helpful in the development of the fetus. By appropriate treatment of conditions like diabetes mellitus and infectious diseases of genital organs, embryopathies, preterm births and abortions could be prevented.[11-12] In our study, iron, folic-acid, calcium and vitamins were the most frequently used drugs in pregnancy, with an average of 1.93 to 2.89 drugs per pregnant women. In a report from North India, pregnant women also regularly used iron/folic acid, calcium and vitamins.[13] Phenobarbitone, isoxsuprine, progesterone, paracetamol, NSAIDs, antibiotics, anti-emetics, proton pump inhibitors/H2 blockers, antacids and antihypertensive drugs (nifedipine, methyldopa) were the other commonly used drugs. Periconceptional folic-acid supplementation can prevent most neural-tube defects and other congenital abnormalities of the cardiovascular system, urinary tract and limb deficiencies. [14-17] Moreover, folic-acid supplementation in pregnancy is associated with the decreased incidence of habitual

spontaneous abortion and pregnancy complications (e.g., placental abruption and preeclampsia). [18-19] However, folic-acid was taken by less than 50% of women (145, 160 and 75 women in the first, second and third trimester, respectively) in the present study.

**Fig-1: Showing attending Antenatal and First Antenatal Check-up according to different Trimesters of Pregnancy**



**Fig-2 : Pattern of Drug Distribution**

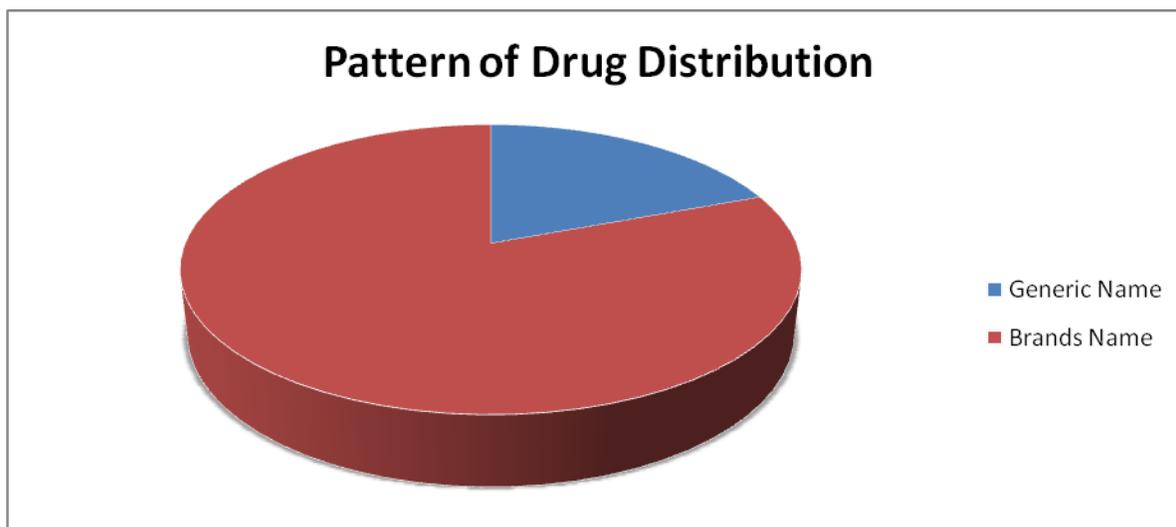
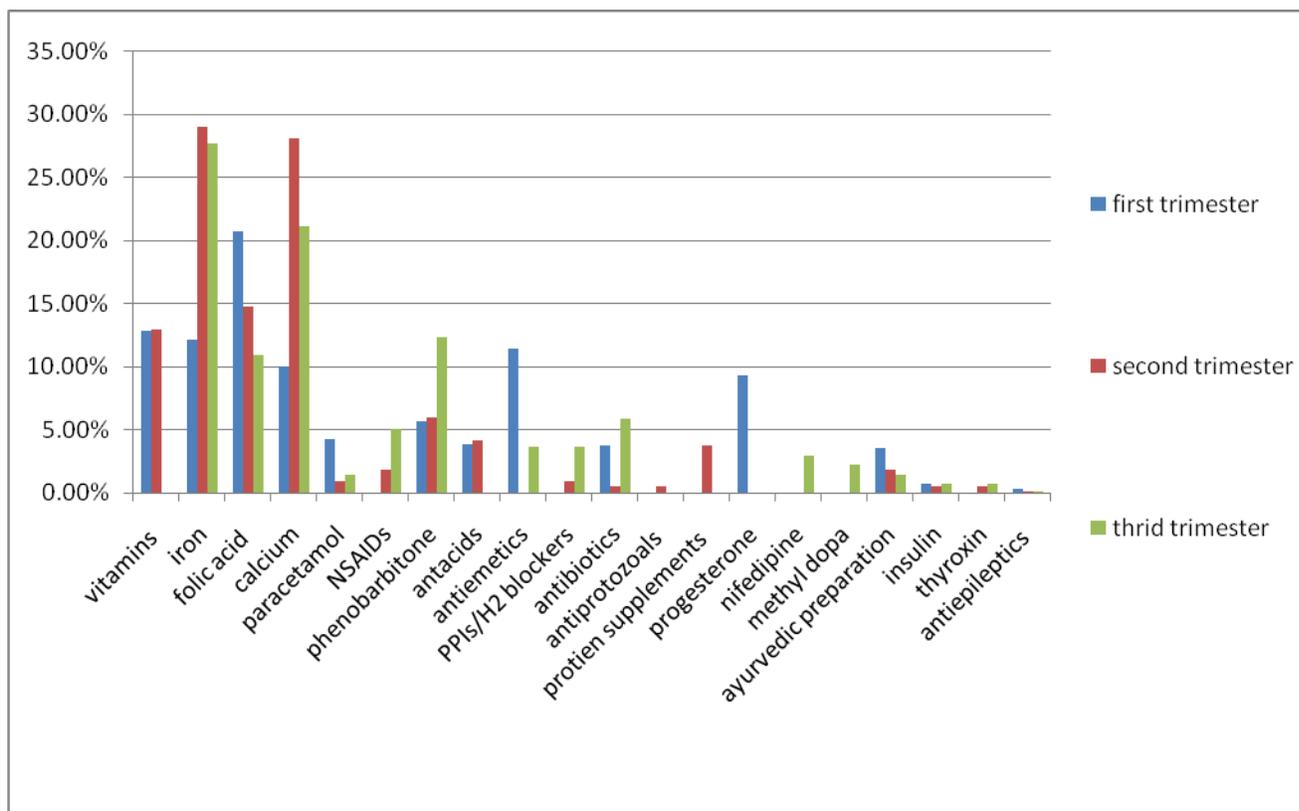


Fig 3. Drug Prescription Pattern in Each Trimester of Pregnancy



A similar trend with drug use in pregnancy, was reported from other parts of the world. In a prospective survey in Southwestern Finland, iron and vitamin supplementation were the most frequently used drugs, followed by analgesics, tocolytic agents and drugs for chronic conditions and common pregnancy symptoms.[20] In another study from Australia, folate (70%), iron (38%) and multivitamins (27%) were the most frequently taken drugs by pregnant women; along with herbal drugs like, ginger (20%) and raspberry leaf (9%).[21] In the present study, ayurvedic / homeopathic drugs constituted 3.571%, 1.84% and 1.45% of total drugs used during the first, second and third trimester of pregnancy, respectively. A similar trend for use of herbal drugs like cannabis, ginger, raspberry leaf etc. during pregnancy, was reported from other countries. [21-22] Although a number of similar studies have been conducted in the western countries, this is the study conducted in Vidarbha Region which has determined the prescribing attitudes of antenatal care providers in tertiary care hospitals. Furthermore, this study has determined the extent of prescription of drugs which are considered teratogenic for the fetus. The strength of the present study is that the determination of exposure of drugs was based on physical prescriptions rather than on recall, which may lead to bias or underascertainment.[23]



Based on limited reported effects in humans and more extensive studies with animals, different classification systems have been made. Swedish system was the first to be implemented in 1978. [24] Later on, US Food and Drug Administration (FDA) classified the drugs into categories based on the risk of induction of fetal toxicity. Many previous studies have used these risk classification systems as the tools to evaluate the prescribing behaviours of the physicians to pregnant women.[25-28] However, there are some studies which have questioned the validity of these classification systems. [2,29]There is a need to educate and council women of child-bearing age regarding advantages and disadvantages of drug use during pregnancies, with a special reference to alternative therapies and self-medication. Even the doctors need to be trained to give rational treatment to the pregnant women, by including community pharmacology studies in their academic curriculum. Earlier, a study from Canada had demonstrated significant improvement in preventive care, continuity of care and, indicators of diagnostic performance in doctors, after transition from a traditional curriculum to a community- oriented problem- based learning curriculum.[30]

Very few of the women interviewed used herbal remedies. These preparations are not regulated and have the potential to interact with other medications. Herbal drug use in Norwegian women was associated with prior use, high knowledge of herbal drugs, age between 26 to 35 years, and was generally confined to Echinacea, iron rich herbs, ginger, chamomile and cranberry. [31]

It is emphasized that the results of the present study can reasonably be considered as the prescribing trends prevalent in the tertiary care hospital in Vidarbha Region. The present study has included in tertiary care hospital; however, conditions could be worst in the remote and rural areas of India. Hence, such periodic studies are further required in diverse environmental, social, educational and cultural conditions, so that the therapeutic guidelines could be revised accordingly, to give rational care to the community.

## CONCLUSION

This study revealed a rather careful prescribing behaviour of the physicians to pregnant women under antenatal care. Vitamins, minerals and nutritional supplements were the highest group prescribed followed by antibacterial drugs and antacids. However, the habit of prescription of drugs by generic names should be inculcated among the prescribers.

A large proportion of women in this region have Anaemia in pregnancy and this was responsible for admission in all the three trimesters. Hence, efforts should be taken to improve the nutrition of women in child bearing age as a primordial prevention. Detection of anaemia at an early stage can avoid the risks associated with blood transfusion during pregnancy. However, the habit of prescription of drugs by generic names should be inculcated among the prescribers. A large percentage of patients visiting this hospital are from poor socio-economic background. If generic drugs are prescribed the cost of the patients treatment may be reduced. A further cost analysis study should be undertaken to determine if the cost per day is affordable to patients.

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