



A STUDY ON PRESCRIBING PATTERN DURING PREGNANCY

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ABSTRACT

During pregnancy metabolic demands on the mother would be increased in order to support and nurture the developing foetus. Previous studies reported that the drug use during pregnancy is increasing, due to the development of new medical problems and or exacerbation of old ones during pregnancy.^[4] A prospective and observational study was conducted in a tertiary care teaching hospital for a period of 9 months. According to US FDA pregnancy category of drugs, most commonly prescribed category of drugs were category A followed by category B, category C, non-classified, category D and category X. The study provides an opportunity for the initiation of further studies in this area of pharmacy and pharmacist interventions for the betterment of female health care.

INTRODUCTION

During pregnancy metabolic demands on the mother would be increased in order to support and nurture the developing foetus. Although a woman's body undergoes physiological alterations and energy utilization during pregnancy, nutritional status should be evaluated and prescribed the micronutrient supplements if needed, to minimise complications during the pregnancy or at the time of delivery.^[1] By understanding the nutritional recommendations, pharmacists can play a crucial role in helping patient and prescribers to choose the best prenatal vitamin supplements. The administration of a drug to a pregnant woman presents a unique problem for the physicians. While prescribing a drug for pregnant women, one should consider not only maternal pharmacology and of foetus too, as a potential recipient of the drug.^[2,3] Previous studies reported that the drug use during pregnancy is increasing, due to the development of new medical problems and or exacerbation of old ones during pregnancy.^[4] Most common disorders during pregnancy are gestational diabetes, gestational hypertension, hypothyroidism and anaemia. Majority of the medicines administered to the pregnant women pass through the placenta and into the blood stream of the foetus. Since the body system of the foetus is not fully developed it cannot process the

medicine as the mothers' system do. Some medicines may affect the normal development of the foetus and may have negative effect (thalidomide disaster).^[2] Hence, benefit risk ratio to be carefully considered while prescribing drugs to pregnant women.

MATERIALS AND METHODS

This was a prospective and observational study conducted in a tertiary care teaching hospital for a period of 9 months. Patient data were collected from patient medical records, maintained in a data collection form and Micromedex version 2.0 was used for drug information and drug interventions. The investigator was participated in ward rounds daily along with the physicians and during post-ward round investigator intervene the patient after obtaining the consent for study. Statistical analysis was done by using Statistical Package Social Sciences version 20.

RESULTS

Among 344 patients enrolled patients, 127 (25.1%) were admitted in department and the rest were consulted on out-patient basis in OBG department with the mean age of 23.61 ± 3.06 years. Majority (96.6%) of the patients enrolled in the study belongs to adult age group. The distribution of age is mentioned in **table no 1**.

Table 1: Age of the patients.

Category of Patients	Age (years)	Total No. of Patients (%)
Pregnant Patients	10-18	3(0.59)
	19-28	320(63.24)
	29-38	20(3.95)
	39-48	1(0.19)
	Total	344(67.98)

The main occupations of most of the patients were housewives or homemakers (89.9%) followed by farmers (8.3%), teachers (1.2%) and daily wagers (0.6%). Among whole study population, Urinary tract infection (UTI) was the most common co-morbid condition followed by hypothyroidism, anemia, gestational diabetes, hypertension, fibroid uterus, abdominal pain and type 1 DM among pregnant patients. The mean hospital stay of admitted patients among study population was found to be 8.08 days.

Out of 344 patients, 118(23.3%) were prescribed with one or more antibiotics and the rest (76.7%) were not prescribed with any of antibiotics. Cefotaxime was the most commonly prescribed antibiotic in the whole study population followed by metronidazole, cefixime, fusidic acid, ceftriaxone and the rest constituted minor fractions of all prescriptions. Non steroidal anti-inflammatory drugs like diclofenac were the most commonly prescribed class of analgesics followed by combination of NSAIDs and opioid analgesics. Among the study population only nine patients prescribed with Paracetamol as antipyretic. Ranitidine was the most commonly prescribed antiulcer agent followed by combination of proton pump inhibitors and antihistamines. Most commonly used prescribed antiemetics were 5-HT₃ receptor antagonist (Ondansetron; 33) followed by dopamine-receptor antagonists (Metoclopramide; 32) among the whole study sample.

Among the study population, the most commonly used antithyroid medication was thyroxine sodium (20) followed by levothyroxine (16). Of the entire study population 12 patients were having gestational DM, followed by three were having type 2 DM and two were having type 1 DM. Among gestational DM patients 4 were not on medication only on diet management as their blood sugar levels were on border line and the rest were on insulin therapy. Of all the type 2 DM patients, only one patient was on insulin therapy, rest was on diet management. All the type 1 DM patients were on regular insulin therapy. Among the study population, five patients had hypertension.

Supplements include iron, calcium and multivitamins especially vitamin B complex and vitamin C. Most commonly prescribed pregnancy category of drugs were category A (552), followed by category B (415), category C (292), non classified category (162), category D (91) and category X (4) drugs. Among the non pregnant patients pregnancy and lactation category of drugs used was considered as this categorization is not having any role in choosing the drugs. The mean (mean \pm SD) number of category A drugs prescribed was 2.13 ± 0.42 followed by category B, category C, non classified category, category D and category X drugs was 2.49 ± 1.5 , 1.10 ± 0.36 , 1 ± 0 , 1.05 ± 0.21 and 1 ± 0 respectively among the prescribed patient population.

Table 12: Prescribing pattern of most commonly prescribed drugs with their pregnancy category.

Pregnancy Category	Drug	No. of prescriptions	% among same category of drugs prescribed	% among total n.o of drugs prescribed among pregnant women
A	Iron	262	47.46	18.97
	Folic acid	252	45.65	18.24
	Thyroxine	38	6.9	2.75
B	Ranitidine	102	24.57	7.38
	Cefotaxime	94	22.65	6.80
C	Calcium	241	82.53	17.45
	Tramadol	35	11.98	2.53
D	Diclofenac	87	95.6	6.29
X	Misoprostol	3	75	0.21
	Clomifene	1	25	0.07
Non classified	Di sodium hydrogen citrate	59	36.41	4.27

DISCUSSION AND CONCLUSION

Drugs play an important role in improving human health and promoting well-being. However, to produce the desired effect, drugs should be used rationally in order to produce safe, efficacious and desired outcome. The rational drug use during pregnancy and lactation effects not only in the recovery of mother, but are also in the development of the fetus and the baby. By appropriate treatment of most common conditions during pregnancy like hypothyroidism, UTI, gestational diabetes, anemia, preterm births and abortions could be controlled.^[5] The study is mainly focused on the female health. There are very limited studies accessible about the female health

particularly during pregnancy. The average age group among pregnant women was found to be 23.61 ± 3.06 . The study conducted by Gawde S R *et al.*,^[6] showed that 25.39 ± 4.07 was the average age group in pregnant women. Schooling group were more when compared to the graduates, as the study was conducted in rural area. Homemakers followed by farmers, teachers and daily wagers were more in the study population. Most of the patients belong lower middle income group (INR 50, 000 – 1, 00,000) followed by middle income, higher income and lower income group.

The frequent co-morbidities during pregnancy were UTI, abdominal pain, weakness, headache or body ache, edema, vomiting, itching in vagina, cough, discharge per vagin, blurred vision, polyuria, convulsion, giddiness were the common co-morbidities found in the study conducted by Kamalesh Patel *et al.*^[7] Whereas our study showed UTI, hypothyroidism, anemia, hypertension, gestational diabetes, type 2 DM were major disorders followed by vomiting and abdominal pain accounted for minor fraction. The average number of hospitalization of pregnant women was 8.17 ± 6.83 , due to their related problems or pregnancy care.

Among the pregnant women, according to WHO classification based on blood haemoglobin level 39.5% were anemic patients which is more or less similar (33.81%) to a study conducted by Gawde S R *et al.*^[6] But only in 18 patients diagnosed to have anemic even after measuring the blood hemoglobin level but peripheral smear was not done to find differential diagnosis in our study.

According to US FDA pregnancy category of drugs, most commonly prescribed category of drugs were category A followed by category B, category C, non-classified, category D and category X. The mean number of category A, B, C, non-classified, D and X drugs prescribed were 2.13 ± 0.42 , 2.49 ± 1.5 , 1.10 ± 0.36 , 1 ± 0 , 1.05 ± 0.21 and 1 ± 0 , respectively. Similar result was found in the previous study conducted by Rashmi Sharma *et al.*^[8] showed that pregnancy category A drugs were prescribed more followed by category B and category D. Whereas study conducted by Lacroix I *et al.*^[9], showed that category B drugs were prescribed more in pregnant women than category A drugs. Only one pregnant patient was on herbal medications and none of the pregnant women in our study were on OTC medications as most of them are having pre-university level of education to university level and aware of drug usage and their side effects on both mother and the foetus. Supplements were the frequently prescribed medications in both pregnant and non pregnant women. Iron, folic acid, multivitamins (vitamin B complex, vitamin C and minerals), vitamin D and calcium were the most commonly prescribed supplements followed by antibiotics, antiulcer, analgesics, and antiemetics which is similar to study conducted by in north India^[8] and Ethiopia.^[10]

Among antibiotics, cephalosporins were the most commonly prescribed class of antibiotic followed by nitroimidazole and enoic acid derivatives. Whereas the study conducted by Stephansson^[11] O *et al.* showed that β -lactam antibiotics and penicillins were the most part of prescribed class and another study conducted by Eze I U *et al.*^[12] showed that penicillins were the majorly used class of antibiotics during pregnancy. Of all the pregnant patients (113) prescribed with antibiotics, 27(23.9%) patients were prescribed for the treatment of pregnancy associated UTI and majorly prescribed drugs were

cefotaxime as parenteral therapy and cefixime as oral therapy. Out of 12 gestational diabetes patients in the study population two third of patients treated with insulin therapy rest were on diet management as their blood sugar levels were on border-line. Whereas in the studies conducted by Kamalesh Patel P *et al.*^[7] and Gawde S R *et al.*^[6] all gestational diabetes patients were treated with insulin. Gestational hypertension patients (2) were treated with only nifedipine. Whereas studies conducted by Rathod AM *et al.*^[9] and Inamdar I F *et al.*^[5] showed that nifedipine followed by methyl dopa were frequently prescribed which is in contrary to the study conducted by Gadisa *et al.*^[13] reported the hypertensive patients were treated commonly with hydralazine and methyl dopa. Thyroxine was the most commonly used drug to treat hypothyroidism among pregnant women which is similar to the study conducted by Gawde S R *et al.*^[6] but it (0.8%) was found to be 13 times less than in our study (10.46%) even though sample size is nearly half (344) of Gawde S R *et al.*^[6] study sample (760) and even the same results found in Rathod A M *et al.*^[9] study. Antihistamines (H2 receptor antagonists; Ranitidine) were the most commonly prescribed anti-ulcer agent which is similar to the study conducted by Pereira LMP *et al.*^[14] and in contrary to the study conducted by Rathod A M *et al.*^[6], reported that proton pump inhibitors (Pantoprazole) were the most frequently prescribed antiulcer agents than antihistamines(Ranitidine). NSAIDs (diclofenac) were the most commonly prescribed class of analgesics followed by the combination of NSAIDs and opioid analgesics (tramadol) in our study which is comparable to the results found in the studies conducted by Inamdar I F *et al.*^[5] and Gadisa *et al.*^[13] Previous studies reported that use of diclofenac in late pregnancy or in third trimester can cause an increased risk of vaginal bleeding in the mother, low birth weight and postpartum hemorrhage. Hence there is an extensive need to find an alternative to alleviate pain during pregnancy. Anti-emetics like ondansetron followed by metoclopramide (8.43%) was most commonly used among pregnant women, whereas in other study conducted by Gawde S R *et al.*^[6] in pregnant population reported that most commonly prescribed anti-emetics were doxylamine (3.02%) followed by ondansetron (9.59% vs 1.13%).

The study provides an opportunity for the initiation of further studies in this area of pharmacy and pharmacist interventions for the betterment of female health care. The study also revealed a careful prescribing behaviour of physicians to pregnant women for antenatal care.

REFERENCES

1. Ladipo O A. Nutrition in pregnancy: mineral and vitamin supplements. *Am J Clin Nutr.*, 2000; 72(1): 280-290.
2. Gerald G B, Roger K F, Sumner J Y. *Drugs in Pregnancy and Lactation*. Lippincott Williams & Wilkins. 6th edition, 2001; 1-4.

3. Harsh J, Sejal P, Kamlesh P, Varsha P. Drug Use Pattern during Pregnancy: A Prospective Study at Tertiary Care Teaching Hospital. *NHL Journal of Medical Sciences*, 2012; 1(1): 14-17.
4. Schirm E, Schwagermann MP, Tobi H, De Jong-van den Berg LTW. Drug use during breastfeeding. A survey from the Netherlands. *EJCN*, 2004; 58: 386–390.
5. Inamdar F, Aswar N. R, Sonkar V. K, Doibale M. K. Drug Utilization Pattern during Pregnancy. *Indian Medical Gazette*, 2012; 305-312.
6. Gawde S. R, Bhide S. S, Patel T. C, Chauhan A. R, Mayadeo N. M, Sawardekar S. B. Drug prescription pattern in pregnant women attending antenatal outpatient department of a tertiary care hospital. *BJPR*, 2013; 3(1): 1-12.
7. Patel K P, Joshi H M, Patel V J. A study of morbidity and drug utilization pattern in indoor patients of high risk pregnancy at tertiary care hospital. *IJRCOG*, Sep, 2013; 2(3): 372-378.
8. Sharma R, Kapoor B, Verma U. Drug utilization pattern during pregnancy in north India. *Indian J Med Sci.*, 2006; 60(7): 277-287.
9. Rathod AM, Rathod RM, Jha RK, Gupta VK, Ahmed Tabish, Santra Diptendu. Prescribing Trends in Antenatal Care at a Tertiary Level Teaching Hospital of Vidarbha Region. *RJPBCS*, 2012; 3(3): 865-872.
10. Negasa M, Tigabu B M. Drug prescribing pattern among pregnant mothers attending obstetrics and gynecology department in Hiwot Fana Specialized Teaching Hospital, Ethiopia. *Arc of Ph. Practice*, 2014; 5(2).
11. Stephansson O, Granath F, Svensson T, Haglund B, Ekbom A, Kieler H. Drug use during pregnancy in Sweden – assessed by the Prescribed Drug Register and the Medical Birth Register. *Clinical Epidemiology*, 2011; 3: 43–50.
12. Uchenna I. Eze, Adegbo E. Eferakeya, Azuka C O, Enato E F. Assessment of prescription profile of pregnant women visiting antenatal clinics. *Pharmacy Practice*, 2007; 5(3): 135-139.
13. Gadisa D A, Guyo AW. Drug prescribing pattern and its potential fetal harm among pregnant women in bishoftu general Hospital, oromia regional state, Ethiopia. *EJPMR*, 2014; 1(1): 13-34.
14. Pinto Pereira LM, Nayak BS, Abdul-Lateef H, Matmungal V, Mendes K, Persad S et al. Drug Utilization Patterns in Pregnant Women. *West Indian Med J.*, 2010; 59(5): 561-566.