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AN OBSERVATIONAL PROSPECTIVE STUDY OFPRESCRIBING AND OTC DRUGS DURING PREGNANCY IN TERTIARY CARE TEACHING HOSPITAL

***[1]Neha N. Rajpurohit, [2]Preeti Soni, [3]Kuldeep Pradhan, [4]B. Jayachandra Babu, [5]S. S. Sisodia**

Bhupal Nobles' College of Pharmacy, Udaipur, Ananta Institute of Medical Sciences and Research Centre, Rajsamand.

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***Corresponding Author**
Neha N. Rajpurohit
Bhupal Nobles' College of Pharmacy, Udaipur, Ananta Institute of Medical Sciences and Research Centre, Rajsamand.

INTRODUCTION

Pregnancy is defined as the delivery of at least one posterity, known as a fetus or incipient organism into a female's uterus. The time duration of pregnancy is forty weeks according to medical researchers. Three trimesters are used to divide the time span 0- 12 weeks of the first trimester and 13-28 weeks of the second trimester and 29-40weeks of the third trimester. The drug usage becomes a major concern for pregnant women, whether it is professionally prescribed antibiotics, over the counter drugs or home remedies (WHO, 1998).

Recent studies shows over 80 percent of pregnant women get resistance to these antibiotics which have become a major issue during pregnancy, due to possibility of causing harm to the fetus. The current study will provide a comprehensive overview of drug consumption and safety based on USFDA criteria as well as an assessment of prescription prescribing patterns, which would add the database of safe medication to take during pregnancy (WHO, 1998).

Pregnant women commonly use over-the-counter medications. Although most over- the-counter drugs have an excellent safety profile, some have unproven safety or are known to adversely affect the fetus. The safety profile of some medications may changeaccording to the gestational age of the fetus. Because an estimated 10 percent or more of birth defects result from maternal drug exposure, the U.S. Food and Drug Administration has assigned a risk category to each drug. Self-medication is defined bythe World Health Organization (WHO) as the "selection and use of medicines by individuals to treat self-recognized illness or

symptoms," including medicinal plants (MPs) and herbal products (WHO, 1998).

Pregnant women report a variety of symptoms throughout their pregnancy due to physiological and anatomical changes (Moya et al., 2014). Headache, nausea, vomiting, and edema are frequent symptoms during pregnancy and are commonly related to self-medication practice during this period (Bohio et al., 2016; Cabut et al., 2017; Botyar et /consume medicines that are not prescribed. Unwanted consequences like birth deformities could result from it. The findings of studies on the prevalence and predictors of non-prescribed drug use among pregnant women are extremely contradictory and diverse. Determining the combined prevalence of non-prescription drug use and its determinants among pregnant women was the aim of this analysis (Pangle, 2006).

Considering the easy access to medicines and the symptoms associated with pregnancy changes, this study aims to evaluate the self-medication prevalence among pregnant women, the associated factors, most common medications used, symptoms reported, and motivational factors related to this practice among pregnant women in an urban city (Pangle , 2006).

Self-medication is defined as the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms (Pangle, 2006). The practice of self-medicationis common in India and many other parts of the world (Nanavati, 1994; Porter et al., 2004). Medicines for self-medication are also called "over the counter medications" and are available without prescriptions (Sorensan and Philips, 2004). Although "over the counter medications" are meant for self-medication and are of proved efficacy and safety, their side effects and interactions have serious implications (Briggs, 2002; Lewes, 2000). The World Health Organization reports have cited self-medication as a common problem leading to the incorrect use of medicine (Porter et al., 2004). Ideally, drug use should involve procuring and using medications guided by a prescription obtained after consulting a registered medical practitioner. Pharmacists often sell medicines without verifying prescriptions. Drug-related problems (DRPs) are defined as an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes (Rubin et al., 1993). Although preventable, they constitutea frequent safety issue leading to patient harm and increased health care costs. The term DRP embraces medication errors, adverse drug events, and adverse drug reactions (Brocklebank et al., 1978). They are known to be a major problem associated with pharmacotherapy and are an important cause of morbidity and mortality and they interfere with the patient's experiencing an optimum outcome of medical care (Piper etal., 1987).

Earlier studies have also evaluated DRPs associated with medications. These publications have mostly focused on hospital admissions or discharge. Such studies might not fully reflect the magnitude of DRPs arising out of the inappropriate use of drugs by self-medication in a developing country. It has also been reported that drug use is influenced by the socioeconomic and demographic characteristics of drug consumers (Liew et al., 2017). The high cost of medicines, non-availability of doctors makes health care unaffordable and inaccessible. Consequently, in developing countries pharmaceutical outlets often serve as the first contact point of healthcare. Using the retail pharmacy outlet to enroll participants for the survey would give a betteridea of the self-medication practices and associated DRPs. To the best of our knowledge, there are no studies that have compared the occurrence of DRPs arising outof self-medication and use of medicines guided by a prescription (non-self-medication)by interviewing drug consumers at the private retail pharmacy. The unique feature of the survey was to enroll the study participants at the retail pharmacy outlet to avoid selection bias and make the sample more representative than hospital-based studies. Therefore, this survey was planned, with a patient-based approach at the private retail pharmacy, with the objective of providing a quantitative description of the nature of DRPs associated with self-medication and non-self-medication. The use of the term prescription medication was avoided in the study as it implies the sale of certain drugs (restrictive drugs) only on production and verification of a prescription (Bohio et al., 2016).

Table 1.1: FDA categorization of drugs for use in pregnancy [Pangle, 2006]

Category	Description
A	Adequate, well-controlled studies in pregnant women have not shown an increased risk of fetal abnormalities
B	Animal studies have revealed no evidence of harm to the fetus; however, there are no adequate and well controlled studies in pregnant women. Or Animal studies have shown an adverse effect,but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus.
C	Animal studies have shown an adverse effect and there are no adequate and well-controlled studies in pregnant women. Or No animal studies have been conducted and there are no adequate and well-controlled studies in pregnant women.
D	Studies, adequate well-controlled or observational, in pregnantwomen have demonstrated a risk to the fetus. However, the benefits of therapy may outweigh the potential risk.
X	Studies, adequate well-controlled or observational, in animals or pregnant women have demonstrated positive evidence of fetal abnormalities. The use of the product is contraindicated in women who are or may become pregnant.

Table 1.2: Commonly Used Drugs In Pregnancy And Their Categories [Nanavati, 1994]

Drugs	Category
Analgesics and Antipyretics	B and C
Acetaminophen	B
Phenacetin	B
Aspirin	C
Antiemetics	B and C
Doxylamine	B
Meclizine	B
Cyclizine	B
Dimenhydrinate	B
Antibiotics	B, C and D
Penicillin, Ampicillin, Amoxycillin,	B
Cloxacillin Cephalosporins	B
Erythromycin	B
Gentamicin	C
Amikacin	C/D
Streptomycin	D
Sulphonamides	B/D
Tetracyclines	D
Amoebicides	B
Metronidazole	
Anthelmentics	B
Piperazine	
Mebendazole	
Antimalarials	C
Antifungals	C
Anti TB Drugs	B and C
Ethambutol	B
INH	C
Rifampicin	C
Pyrazinamide	C
PAS	C
Vitamins	
B,C,D,E,folic acid	A
Hormones	
Thyroxin	A
Androgens	X
Estrogens	X
Progestogens-	
Hydroxyprogestrone	D
Medroxyprogestrone	D
Norethindrone	X
Norgestrel	X
Bronchodilators	C

Table 1.3: Medications contraindicated in pregnancy [Pangle, 2006]

Drug	Comments
Vitamin A and its derivatives includingisotretinein, accutane and etretinate.	Significant risk of spontaneous abortion and risk ofmany significant anomalies
ACE inhibitors	May cause kidney damage in the fetus when used in II and III trimester, decrease in the amount of amniotic fluid and deformities of face, limbs and lungs
Anticoagulants- warfarin	Use during I trimester produces defects like nasal hypoplasia and a depressed nasal bridge; termed as Fetal warfarin Syndrome. Use during II and III trimesters is associated with increased risk of fetal malformations.
Heparin	Safe but if taken for long time osteoporosis anddecrease in number of platelets in pregnant women occurs.
Estrogen and Androgens	Genital tract malformations.
Thyroid preparations-	
Methimazole	Overactive and enlarged Thyroid gland
Carbimazole	Overactive and enlarged Thyroid gland
Radioactive iodine	Underactive Thyroid gland in fetus
Propylthiouracil	Safe.
Anticonvulsants-	
Carbamazepine	Risk of birth defects
Phenytoin, Phenobarbitone	Bleeding problem in the newborn which can be prevented if pregnant woman takes Vit. K by mouth every day for a month before delivery or if the newborn baby is given an injection of Vit. K soon after birth.
	Risk of birth defects.
Trimethadione	Increased risk of miscarriage in the women
Sodium valproate	Increased risk of birth defects in fetus; including acleft palate and abnormalities of the heart, face, skull, hands or abdominal organs.
Antidepressants- Lithium	Birth defects (mainly of the heart), lethargy, decreased muscle tone, underactivity of Thyroid gland and nephrogenic diabetes insipidus in the new born. Ebstein's anomaly (tricuspid valve malformation) has been reported in a number of foetuses exposed to this drug.
NSAIDs	
Aspirin and other Salicylates	Delay in start of labor, premature closing of ductus arteriosus, jaundice, brain damage in the fetus and bleedingproblems in the woman during and after delivery and in the newborn.
Antibiotics- Tetracycline	Slowed bone growth, permanent yellowing of the teeth and increased susceptibility to cavities in thebody.
Chloramphenicol	Gray Baby Syndrome.
Ciprofloxacin	Possibility of joint abnormalities (seen in animals)
Kanamycin and	Damage to fetus's ear resulting in deafness (risk of

Streptomycin	ototoxicity)
Sulfonamides	Jaundice and brain damage in newborn
Antineoplastic agents-	
Busulfan	Birth defects such as less than expected growth beforebirth, underdevelopment of lower jaw, cleft palate, abnormal development of skull bones, spinal defects, ear defects and club foot.
Chlorambucil	
Cyclophosphamide	
Methotrexate	
Oral Hypoglycemic drugs	A very low level of sugar in the blood of newborn. Inadequate control of diabetes in the pregnant woman
Chlorpropamide	
Tolbutamide	

VARIOUS SELF MEDICATION TAKEN IN VARIOUS CONDITIONS

Type of Remedy: **Diarrhea**

Safe Medications to Take During Pregnancy

- Loperamide ([Imodium®] after 1st trimester, for 24 hours only)

Type of Remedy: **Constipation**

Safe Medications to Take During Pregnancy

- Methylcellulose fiber (Citrucel®)
- Docusate (Colace®)
- psyllium (Fiberall®, Metamucil®)
- polycarbophil (FiberCon®)
- polyethylene glycol (MiraLAX®)*

*Occasional use only

Type of Remedy: **First Aid Ointment**

Safe Medications to Take During Pregnancy

- Bacitracin
- Neomycin/polymyxin B/bacitracin (Neosporin®)

Type of Remedy: **Headache**

Safe Medications to Take During Pregnancy

- Acetaminophen (Tylenol)

Type of Remedy: **Heartburn**

Safe Medications to Take During Pregnancy

- Aluminum hydroxide/magnesium carbonate (Gaviscon®)*
- Famotidine (Pepcid AC®)
- Aluminum hydroxide/magnesium hydroxide (Maalox®)
- Calcium carbonate/magnesium carbonate (Mylanta®)
- Calcium carbonate (Titralac®, Tums®)
- Ranitidine (Zantac®)

*Occasional use only

Type of Remedy: **Hemorrhoids**

Safe Medications to Take During Pregnancy

- Phenylephrine/mineral oil/petrolatum (Preparation H®)
- Witch hazel (Tucks® pads or ointment)

Type of Remedy: **Insect repellant**

Safe Medications to Take During Pregnancy

- N,N-diethyl-meta-toluamide (DEET®)

Type of Remedy: **Nausea and Vomiting**

Safe Medications to Take During Pregnancy

- Diphenhydramine (Benadryl)
- Vitamin B6

Type of Remedy: **Rashes**

Safe Medications to Take During Pregnancy

- Diphenhydramine cream (Benadryl)
- Hydrocortisone cream or ointment
- Oatmeal bath (Aveeno®)

Type of Remedy: **Sleep**

Safe Medications to Take During Pregnancy

- Diphenhydramine (Unisom SleepGels®, Benadryl)

Type of Remedy: **Yeast Infection**

Safe Medications to Take During Pregnancy

- Miconazole (Monistat®)

AIM

The principle aim of the present study is to "Examine the prescribing and over-the-counter drugs during pregnancy in tertiary care teaching hospital".

OBJECTIVES

- To study and assess the usage of drugs during pregnancy at a tertiary care teaching hospital.
- To reduce the medication error and to improve the patient safety.
- To reduce teratogenic drugs.
- To carry out the drug prescribing pattern and category of safe drugs.
- To identify commonly prescribed drugs in pregnancy.

MATERIALS AND METHODS

This prospective questionnaire based observational study was conducted over a period of six months at the obstetrics gynecology ward in a tertiary care teaching hospital (Ananta Hospital). Patients other than pregnant women were excluded from the study. Only pregnant ladies with first, second, third trimesters were included. All relevant and necessary data were collected from the patient's case notes, reports, prescription, patient and professional healthcare interviews. All the patients were provided with a questionnaire having questions regarding to their update and knowledge about the drug and its effects. Questionnaire provided to patients attested along with the concern form.

STUDY SITE

This observational study aimed to assess the prescribed and OTC drugs in tertiary care teaching hospital and sought medical advice at the Ananta medical hospital, department of obs/gyn ward, between December 2021 to June 2022.

STUDY TYPE

The study was Observational Prospective Study.

STUDY DURATION

The duration of the study was six months.

STUDY POPULATION

The target population of the study was patient with pregnancy having first, second, third trimester.

SAMPLE SIZE

170 patients were taken under study.

DATA COLLECTION TOOL

The study data will be designed as a questionnaire, which will be used to collect and record data. Multiple choices will be provided in the questionnaire to collect appropriatedata. The data of prescribed drugs, copies of out-patient and in-patient medical prescriptions of patients and medication history will be gathered. The collected data will be classified according to the pharmacological class, teratogenic potential and trimester breakup of patients who are attending antenatal clinic.

DATA OBSERVATION

Prospective observational study is a longitudinal study where the researchers, follow and observe a group of subjects over a period of time to gather information and record the development of outcomes. To observe the knowledge and medication adherence and intake of drug by patients which has been prescribed.

Sample questions provided to the patients

Questionnaire provided to patients

1. Have you given your prescription to someone who has similar symptoms inpregnancy?

YES/NO

2. Do you take drugs for self-medication for long period without any medical advice?

YES/NO

3. Do you take antibiotics/analgesics as a self-medicated drug?

YES/NO

4. Do you have knowledge of possible side effect?

YES/NO

5. Do you use any specific remedy like ayurvedic/homeopathy?

YES/NO

6. Do you change the prescribed drug in order of cost-effectiveness?

YES/NO

7. Do you know about self-medication without doctor’s consultation?

YES/NO

8. Other than the prescribed drug, do you find the self-medication/OTC drugbeneficiary for you and the foetus?

YES/NO

9. Do you feel any comfort/discomfort after consuming self-medication drugs?

YES/NO

10. Have you added any self-medicated drug to your prescription?

YES/NO

EXCLUSION CRITERIA

Other than pregnant women attending gynecology department will be excluded.

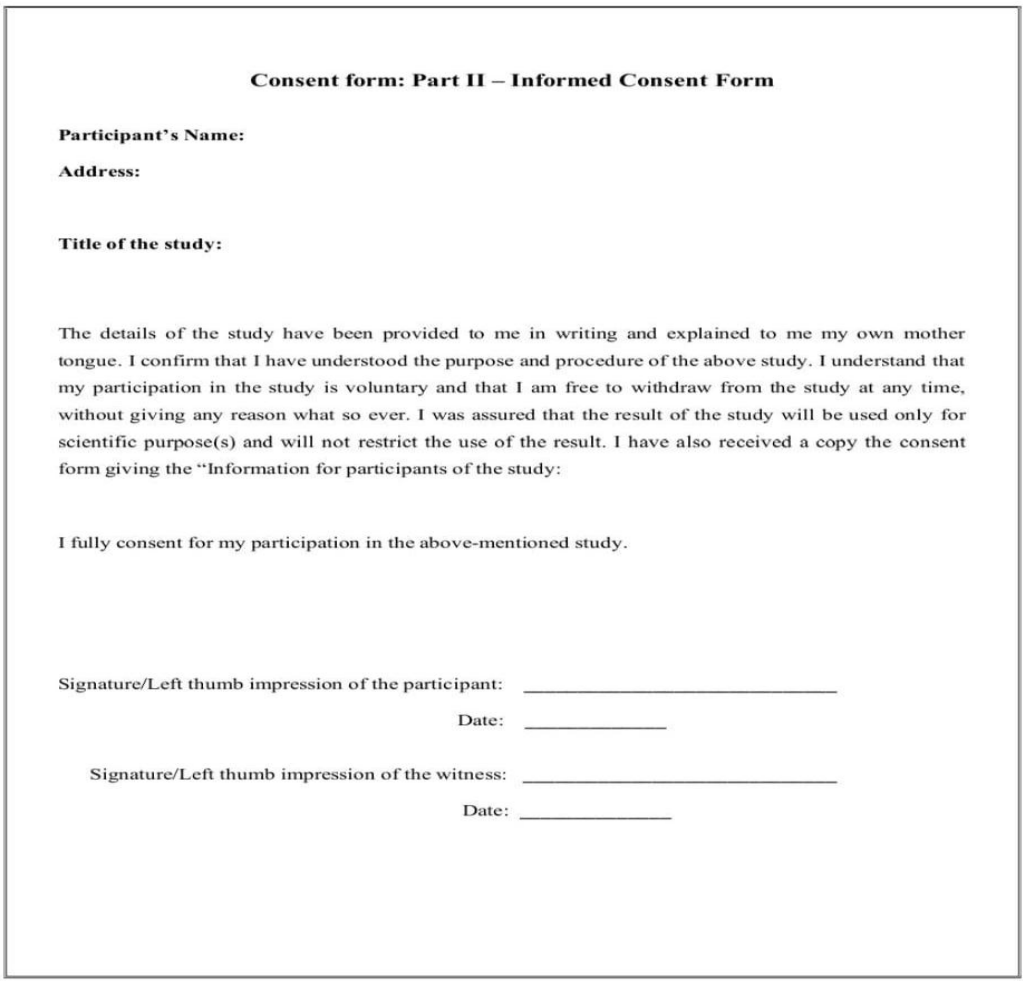
INCLUSION CRITERIA

All pregnant women attending in-patient and out-patient department of gynecology will be included.

IMPLICATIONS OF THE STUDY

Safety of the pregnant women.

Informed consent form provided to patients



Consent form: Part II – Informed Consent Form

Participant's Name:

Address:

Title of the study:

The details of the study have been provided to me in writing and explained to me my own mother tongue. I confirm that I have understood the purpose and procedure of the above study. I understand that my participation in the study is voluntary and that I am free to withdraw from the study at any time, without giving any reason what so ever. I was assured that the result of the study will be used only for scientific purpose(s) and will not restrict the use of the result. I have also received a copy the consent form giving the "Information for participants of the study:

I fully consent for my participation in the above-mentioned study.

Signature/Left thumb impression of the participant: _____

Date: _____

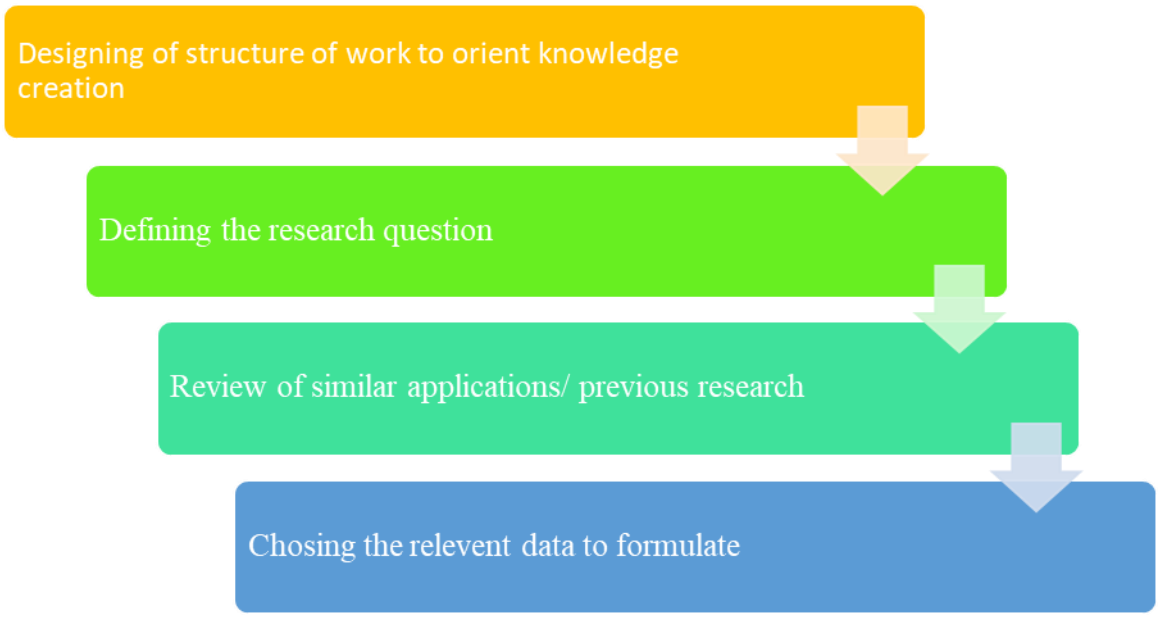
Signature/Left thumb impression of the witness: _____

Date: _____

PLAN OF WORK

Entire course of work has been split into 3 phases for total duration of 6months, as illustrated below.

PHASE 1



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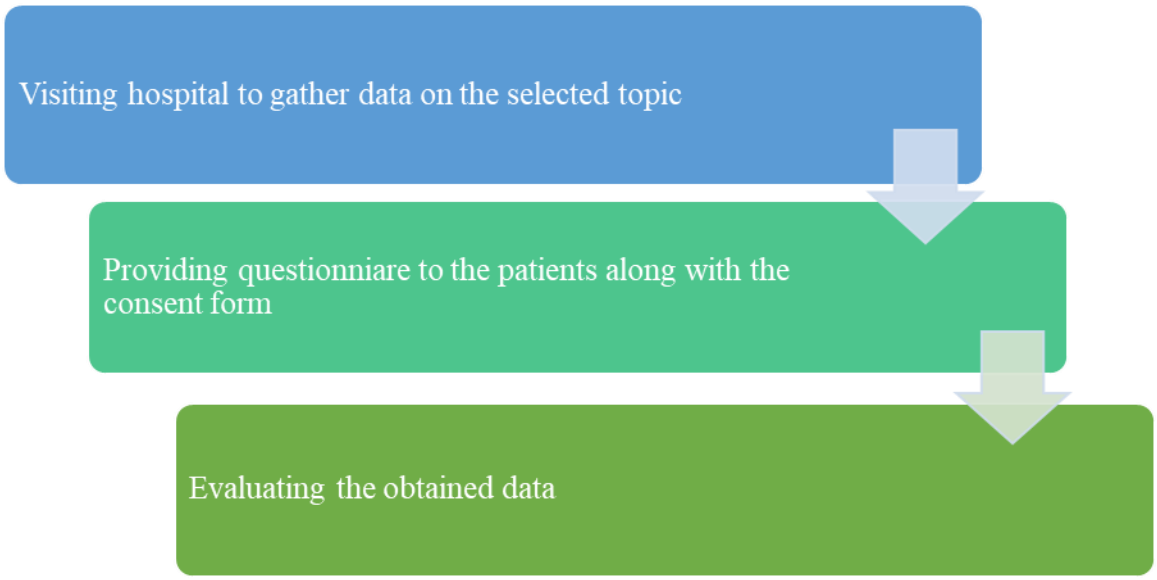
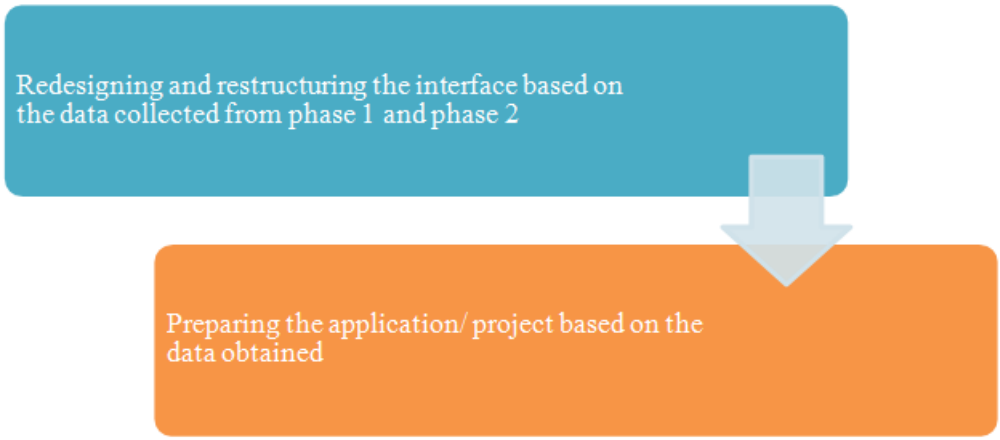
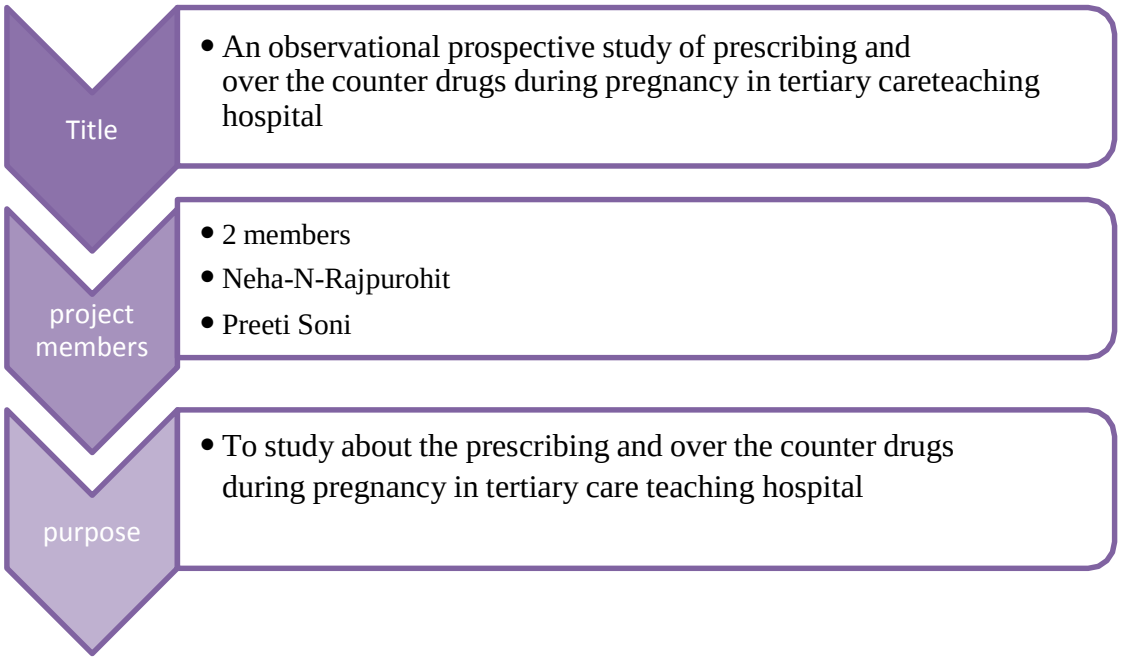


PHASE 3



PHASE 4

Plan outline



RESULTS

List of drug category which has been prescribed to pregnant women in each trimester based on their pharmacological classes

Pharmacological class	Trimester First	Trimester second	Trimester Third
Antianemic/VitaminSupplement			
Iron Folic acid	26	58	67
Ferrous sulphate			
ferralet			
Erythropoietin			
Ferrous gluconate			
Vitamin supplement	2	12	7
Drisdrol			
Calcium	18	56	64
Choleocalciferol andergocalciferol			
Analgesic(including opoid)			
Tramadol			
Oxycodone			
Buprenorphine			
Methadone			
Dextromethorphan		1	
Antiplatelets andanticoagulants			
Aspirin			3
Clopidogrel			
Ticlopidine			
Dipyridamol			
Anticoagulants			
Warfarin			
Rivaroxaban			

Estrogen and Antiestrogen			
Estradiol patch			
Yuvafem			
Premarin			
Antiestrogen drugs			
Tamoxifen			
Clomifene			
Raloxifene			
Progesterone	3	1	
Naxplanon			
Levonorgesterol			
Implanon			
Corticosteroids			
Predinisone			
Medrol			
Dexmethasone			
Antacids			
Aluminium hydroxide gel			
Calcium carbonate			
Pepto bismaol		1	
Pantop D	1	1	1
Rantac	1	2	3
Antiematics			
Dimenhydrinate			
Prochlorparazine			
Promethazine			
Sodium citrate			
Dextrose			
Ondem	1		1
Antibacterial			
Amoxicilline			
Doxylamine succinate	9	1	1
Clindamycine			
Metronidazole			
Azithromycin			
Nitrofurantoin			
Fosfomycin			
Ceftaroline			
Antifungal			
Clotrimazole		1	
Econazole			

Fluconazole			
Ketoconazole			
Antiasthamatic			
Deriphyllus			1
Budesonide			
Antiepileptics			
Carbamazepine			
Clobezam			
Levetiracetam			
Vigabatrin			
Zonisamide			
Antithyroid drugs			
Thyroxin	2	1	1
Lactobacillus		1	
Drotavarin		1	2
Diclofenec gel		1	1
Lebetelol		1	3
Hepatobiliary Disorder	.		
Anti D Injection			2

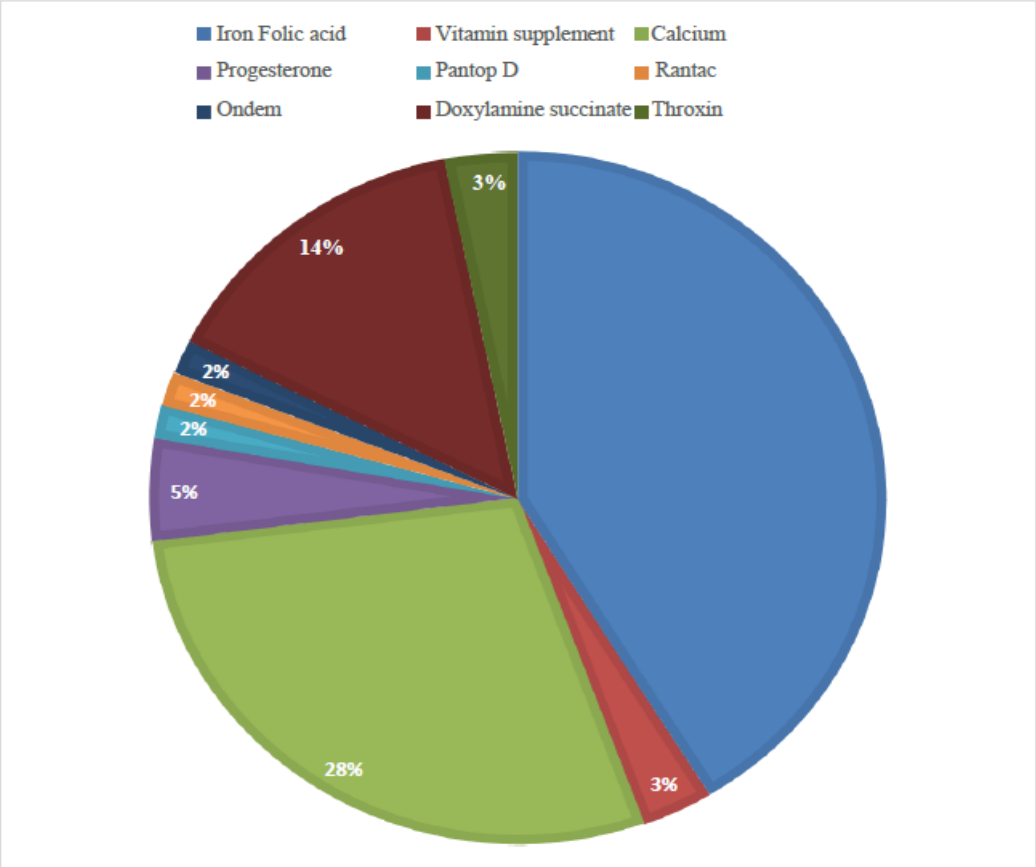


Figure no. 5.1: Drugs prescribed during first trimester.

It was found that 41% of iron folic acid was prescribed to patients which was comparatively high during first trimester.

1. The second highest drug was 28% which was calcium.
2. The third highest drug was 14% which was doxylamine succinate.
3. Rest was least prescribed.

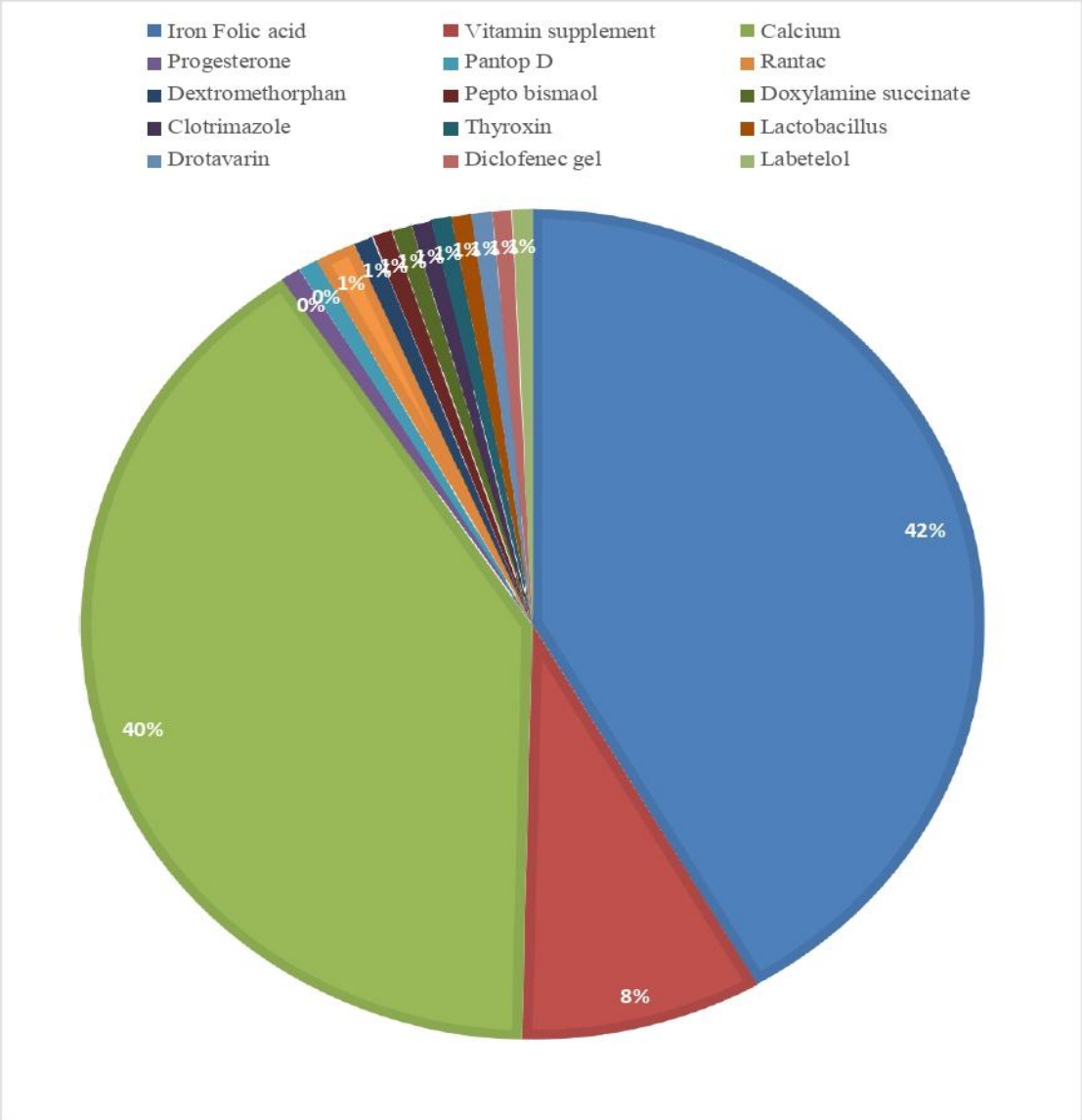


Figure no. 5.2: Drugs prescribed during second trimester.

4. It was found that 42% of iron folic acid was prescribed to patients which was comparatively high during first trimester.
5. The second highest drug was 40% which was calcium.
6. The third highest drug was 8% which was vitamin supplements.
7. It was found that some drugs were anti-thyroid, which states to be an exceptionalcase.

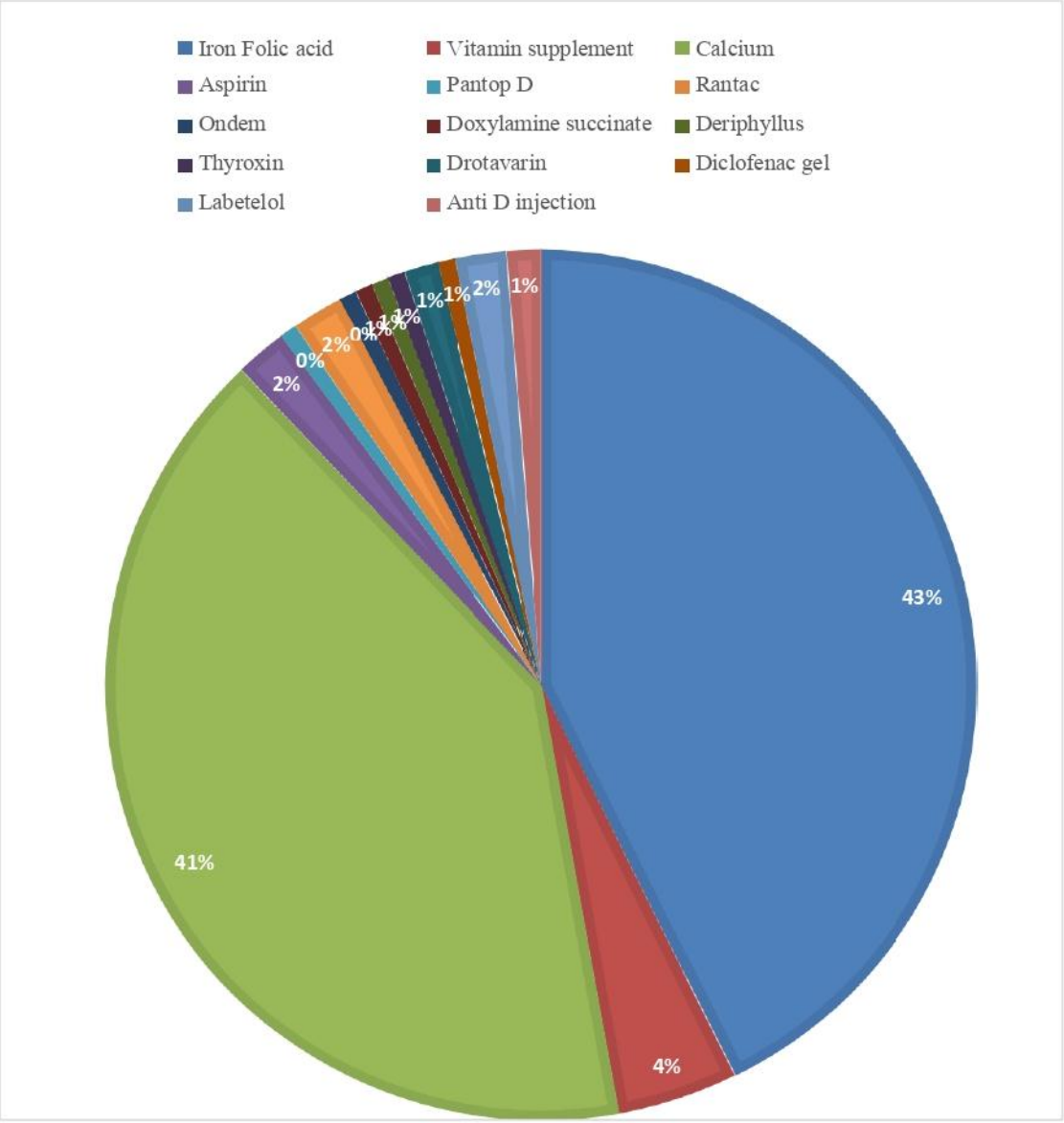


Figure no. 5.3: Drugs prescribed during third trimester.

8. It was found that 43% of iron folic acid was prescribed to patients which was comparatively high during first trimester.
9. The second highest drug was 41% which was calcium.
10. The third highest drug was 4% which was vitamin supplements.
11. It was found that some drugs were anti-thyroid, which states to be an exceptional case.
12. Also Anti D injection was given before 72hrs of giving birth to prevent infections. It prevents antibodies from forming after a person with Rh-negative blood receives a transfusion with Rh-positive blood, or during pregnancy when a mother has Rh-negative blood and the baby is Rh-positive.

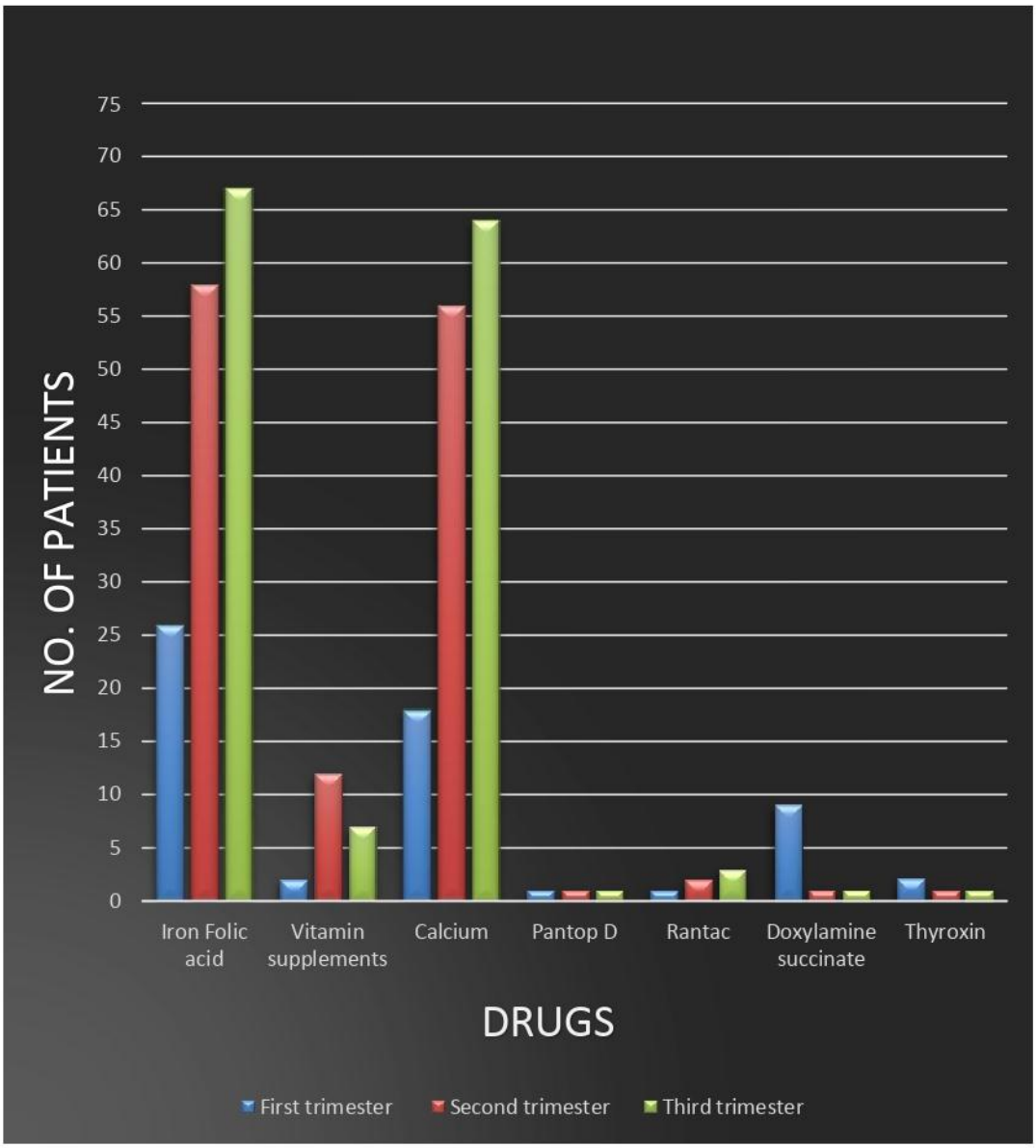


Figure no. 5.3: Common drugs prescribed during all the three trimesters.

- Drugs commonly found in almost every prescription was Iron Folic acid, Vitamin supplements and Calcium.
- Iron Folic acid was prescribed to more no. of patients during the third trimester, whereas Vitamin supplements were highly prescribed during second trimester and calcium during third trimester.

Some alternative medication system /remedies used by patients other than allopathic drugs.

- Fenugreek
- Garlic

- Ginger
- Peppermint
- Saffron
- Thyme

Fenugreek (Trigonella foenum-graecum)

To increase milk production.

Garlic (Allium sativa)

Used to enhance immune system.

Ginger (Zingiber officinale)

Used as anti-emetic.

Peppermint (Mentha piperita)

Used to relieve irritable bowel syndrome.

Saffron (Crocus sativus)

To make baby's skin lighter.

Thyme (Thymus vulgaris)

Used to manage stomach aches.

DISCUSSIONS

This is an observational prospective questionnaire based study which was provided to the pregnant women during the various trimesters to find out or evaluate their knowledge regarding prescribing drugs, OTC drugs and all about self-medication taken by them during pregnancy period at a tertiary care centre (Ananta hospital) in Rajsamand among 170 pregnant women.

We report that majority of the patient were in taking the prescribed drugs which was from the doctor. Patients were reported with common administration of drugs during their trimester like folic acid, calcium and vitamin supplement mainly.

Fewer patients were also having the disorder of thyroid and hormonal imbalance. Due to lack of data and the prescription among patients data of the exception weren't collected. The main drugs administered were the general medications which were above mentioned has been

prescribed for the regular health maintenance during the period ofpregnancy.

Most of the patients were from rural area and hence they weren't much aware about theOTC drugs or self-medication.

Incorrect drug prescribing errors are a known challenge in any healthcare setting. The current study found that matching the drug with the indication included in the prescription, reviewing the patient's medication history, and patient counseling helped the pharmacist identify incorrect drug errors and correct them before reaching the patient.

Incorrect drug errors can happen for several reasons, one of which is medication namesthat look alike or sound alike (LASA). The top ten reported medication errors had clear LASA issues, which could have led to selecting the incorrect medication during prescribing. Several preventive measures are recommended to minimize errors with LASA medication names such as utilizing the Tallman letter system in writing medication names (mixed-case or enlarged letters to emphasize the differing part of similar medication names, e.g. "predniSONE" and "prednisoLONE"). Research has shown that this approach can effectively help health care practitioners to differentiate medication names and minimize confusion and errors (Filik et al., 2004, Hoffman andParoulx, 2003). This approach is currently implemented to a selected list of medicationnames as per the approved medication names policy.

Some studies have concluded that including the indication for prescribing in each prescription might help the pharmacist detect medication prescribing errors (William, 2011). In addition, including the indication would improve pharmacist communication with the patient, and consequently improve patient adherence to the prescribed medication (Teichman and Caffee, 2002). Different studies have suggested some modifications to their current medication prescription form that includes extra fields, such as a special field for the physician to write the medication indication for the prescription upon prescribing, in addition to several other modifications with the aim of reducing medication non adherence (Kennedey et al., 2011). Therefore, the American Society of Health System Pharmacist (ASHP) has recommended that the desired therapeutic outcome for each drug should be expressed when the drug is prescribed in order to prevent medication errors (Best Practices, ASHP). The Institute for Safe Medication Practices (ISMP) has recommended that prescription orders shouldinclude a brief notation on the purpose or medication use indication (e.g. for cough) unless it is considered inappropriate by the prescriber. A medication use indication can further help to

assure that the correct medication is prescribed, which is considered an extra safety check point in the medication use process (ISMP).

The use of technology throughout the medication use process is known to be helpful in preventing medication prescribing errors in several ways (Agrawal, 2009), since having an accurate patient medication list will help prescribers and pharmacists review the patient medication history and consequently alert the pharmacist to communicate with the prescriber in the case of any unexplained change in the prescribed medication.

In addition, our study, similar to previous studies (Cohen, 2007), indicated that patient counseling by the pharmacist during the medication dispensing process helped the pharmacist to identify and prevent several incorrect drug prescribing errors, through discussing the prescribed medication with the patient and educating them on the properuse of this medication, including the indication for use, the dose and the frequency. This discussion gives the pharmacist the opportunity to identify any unintended changes in the patient medication treatment plan and confirm the change with the prescriber, and could serve as an extra safety check point in the medication use process to avoid errors and improve patient engagement in the treatment plan.

Drugs play an important role in improving human health and promoting well being however to produce the desired effect they have to be safe, efficacious and have to be used rationally. The benefit of rational drug use also help in development of the fetus. During pregnancy the indication for a drug treatment needs the utmost caution for example, the first trimester of pregnancy is the critical period during organogenesis when the fetus is most susceptible to teratogenic effect of medication.

CONCLUSION

Although the prevalence of self medication during pregnancy was less, yet it seems necessary to provide public training for all women of reproductive age and train them about the dangers and side effects of self medication.

The effective intervention is required to reduce and prevent self medication and OTC medication among this group. Providing required information and raising awareness about complications resulting from self medication, OTC drugs and dietary supplements should be taken in account.

We conclude that iron, calcium and vitamin supplement were the most frequent prescribed drugs in our study during pregnancy and complete avoidance of drugs which were found to be teratogenic or produce interactions were avoided in the prescription.

Prescribing drugs during pregnancy presents a challenge to the physicians. Most drugs taken by the pregnant women can cross placenta and expose the developing embryo and foetus to their pharmacological and teratogenic effects. It is still ambiguous and poorly understood how the different drugs cause its teratogenic effects. Pregnant women very commonly use OTC drugs. Although most OTC drugs have an excellent safety profile, some have unproven safety or are known to adversely affect the foetus.

The medical community's approach to the use of medication during pregnancy has changed dramatically since 1970s largely because of the problems with Thalidomide and Diethylstilbestrol. Therefore, extensive testing is required before a drug can be labelled for use during pregnancy. Drugs should be used conservatively used during lactation and physicians must know which drugs are potentially dangerous to nursing infants. Therefore frequent awareness programme to physician is an important aspect for the safe use of drugs.

SUMMARY

- The principle aim of the present study is to "Examine the prescribing and over- the-count.er drugs during pregnancy in tertiary care teaching hospital".
- This study was performed in order to illuminate potential patterns of self- medication in pregnant women in a rural population.
- A number of limitations, however exist for this survey, First, convenience sampling was used so that results might be less representative of pregnant women overall. Second, data collection was conducted with face-to-face interviews, which are subject to reporting bias. Finally, all participants were from rural area.
- We discussed to the pregnant women regarding few parameters listed below:

❖ If the prescription is being shared with any of the other pregnant women,
❖ Any drugs taken for a longer period without consultation to the doctor,
❖ Any self medicated drug taken in-case of any other symptoms causeddue to pregnancy,
❖ If aware about the possible side effects,
❖ Any home remedies/ other medication system being included,
❖ If any prescribed drugs being changed in-order to minimize the drug cost

- ❖ Any alternative remedies being taken for the well being of the fetus,
- ❖ Any kind of discomfort being observed upon intaking self medicateddrugs,
- ❖ As data being collected mainly from rural patients, most of them weren't aware about the effects of drug.

- In this study we assessed Self-medication in pregnancy and its implications forachieving Safe motherhood.
- A key motivation for self-medication in pregnancy in the study area is the widely accessibility of medications coupled with high numbers of pregnant women who reported no side effect.
- In this study, there was no significant association between ANC visit and self- medication in pregnancy. Respondents who regularly visit Antenatal clinics have been noted to routinely use pain relief medications prior to visiting a hospital. Although untreated persistent pain can have adverse effects on a pregnant woman and the fetus, self-medication in pregnancy with pain relievers/killers including non-steroidal anti-inflammatory drugs in the third trimester are usually not medically recommended.
- Herbal medicines and dietary supplements were the most medicine groups arbitrarily consumed by pregnant women.
- During pregnancy, the need to iron for pregnant women's body significantly increases. During pregnancy, the blood gradually increases up to 50 percent of the normal level. Additional iron is needed to produce enough hemoglobin for this blood volume. During this period, extra iron is required for the fetus and placenta. Therefore iron supplements are mostly found in almost every prescriptions.
- Given that the majority of diseases and discomforts of pregnancy such as nausea and vomiting are usually repeated periodically, and also some diseases and conditions are experienced during first pregnancies, women often prefer to deal with these similar situations and conditions using previous prescribed medicines.
- The limitation of this study was the fact that we had no access to some databases.
- Better maternal education and facing health problems during pregnancies werepositively associated with self-medication practices while ANC follow up was found to have a protective factor for self-medication uses.
- Strengthen existing maternal health services contribute a lot to decrease practices mentioned.
- Health institutions have to give health education about the risks associated with self-

administered drugs to all pregnant women attending ANC services regardless of gestational age and types of health problems; reinforce drug retailoutlet's not to dispense drugs without rational prescriptions, even OTC medication, for pregnant women without considering the risk.

- This might be due to the variations in socioeconomic status of the countries.
- The reason might be women have different activities at home and outside. Theyperceived that the operation to take the medicine from health institutions is too long. They also assumed their sickness is related with only pregnancy and theyusually used the medicine without consulting health professionals.
- In the multi-variable analysis, the odds of self-medication use were about nine times higher among women who were unable to read and write, five times among those able to read and write.
- This study also found that pregnant women who experienced health problems during pregnancies at the moment were six times more likely to use self- medication compared to their counterparts. This indicates that women who haveany types of health problem during pregnancy may prefer self-medication to save time and other related factors.
- However, sufficient evidence was not found about the association between gestational age and self-medication.

List of Abbreviations

ADHD- Attention- Deficit/ Hyperactivity Disorder

ANC- Antenatal Care

ASD- Autism Spectrum Disorders

ASHP- American Society of Health System Pharmacist

AT- Adipose Tissue

BDS- Birth Defect Study

CAD- Complementary and Alternative Drugs

CDC- Centers for Disease Control and Prevention

DA- Ductus Arteriosus

DNBC- Danish National Birth Cohort

DRP- Drug Related Problem

EGWG- Excessive Gestational Weight Gain

ET- Endothelin

ETB- Endothelin Receptor

GWG- Gestational Weight Gain

GYN- Gynaecology

ISMP- Institute for Safe Medication Practices

IVF- In Vitro Fertilization

LASA- Look Alike or Sounds Alike

MP- Medicinal Plants

NBDPS- National Birth Defects Prevention Study

NSAIDs- Non Steriodal Anti-Inflammatory Drugs

OBS- Obstetrics

OTC - Over The Counter

POM- Prescription Only Medicines

SDG- Sustainable Development Goal

SM- Self Medication

UAE- United Arab Emirates

USFDA- United States Food and Drug Administration

WHO- World Health Organization

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