EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 9
Issue: 11
224-229
Year: 2022

EVALUATION OF DRUG UTILIZATION PATTERN IN THE MANAGEMENT OF PREGNANCY COMPLICATIONS IN A TERTIARY CARE HOSPITAL

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Article Received on 12/09/2022 **Article Revised on 02/10/2022** **Article Accepted on 23/10/2022**

ABSTRACT
The cross sectional study conducted to evaluate drug utilization pattern in the management of pregnancy complications and to categorize the drugs used based on FDA guidelines, to assess the risk of postpartum complications by type of delivery, to assess knowledge and to provide safety awareness on pregnancy complication among study population and to conduct a pharmacoeconomic study of cost analysis. Complications of pregnancy are health related problems that occurs during pregnancy which may affect the health of the mother, the baby or even both. For some women these health problems may arise during their pregnancy and some women have these type of health problems before they become pregnant which may lead to severe complications. Some serious complications that arise during third trimester period of pregnancy includes gestational hypertension, pre-eclampsia, eclampsia, GDM, PV bleeding, anemia hypothyroidism and UTI. These complications can be used as a predictor of maternal deaths and other pregnancy outcomes. It is therefore so important that women should receive proper health care before and during pregnancy to eliminate the risk associated with pregnancy.

KEYWORDS: Pregnancy complications, FDA categorisation, DUE.

Complications of pregnancy are health related problems that occurs during pregnancy which may affect the health of the mother, the baby or even both. For some women these health problems may arise during their pregnancy and some women have these type of health problems before they become pregnant which may lead to severe complications. Most common complications women experience during pregnancy includes high blood pressure, gestational diabetes, preeclampsia, preterm labor, miscarriage, anemia, infections, kidney problems, cancer and sexually transmitted diseases. These complications can be used as a predictor of maternal deaths and other pregnancy outcomes. It is therefore so important that women should receive proper health care before and during pregnancy to eliminate the risk associated with pregnancy.[1]

In 1979, the Food and Drug Administration developed a system determining the teratogenic risk of drugs by considering the quality of data from animal and human studies. It provides therapeutic guidance for the clinician. Category A is considered the safest category but some drugs from categories B, C and D are also used during pregnancy. Category X is the only rating that denotes a drug is absolutely contraindicated for use during pregnancy. Some of the drugs have been proved to be harmful to the fetus and so their use during pregnancy is contraindicated.[2] DUE is an ongoing, systematic process designed to maintain the appropriate and effective use of medications. It involves a comprehensive review of a patient's medication and health history before, during, and after dispensing in order to attempt to achieve appropriate therapeutic decision-making and positive patient outcomes. Pharmacists participating in DUR programs can directly improve the quality of care for patients, individually and as populations, by striving to prevent the use of unnecessary or inappropriate drug therapy, prevent adverse drug reactions and improve overall drug effectiveness.[3]

METHODOLOGY
A cross- sectional study was carried out in In-patient Department of Sapthagiri Institute of Medical Science and Research Centre, Bangalore. The study was conducted in all pregnant women with their 3rd trimester complications satisfying the inclusion criteria. The data was collected and reviewed from those patients on daily basis in a pre-designed format which included the

demographic details, past medication history, complication, therapeutic drugs including name, dose, duration, and frequency of drugs. The collected data was entered in Microsoft excel sheet for analysis of results later. The prescription was assessed for outcomes that appear contradictory to the proposed goals of therapy. The entire data was analysed using appropriate statistical methods.

RESULTS

1. DEMOGRAPHIC DETAILS

Majority of the patients in the study were from the age group 20-25 (n=103) which was followed by age group 26-30 (n=56), 31-35 (n=37) and 36-40 (n=4).

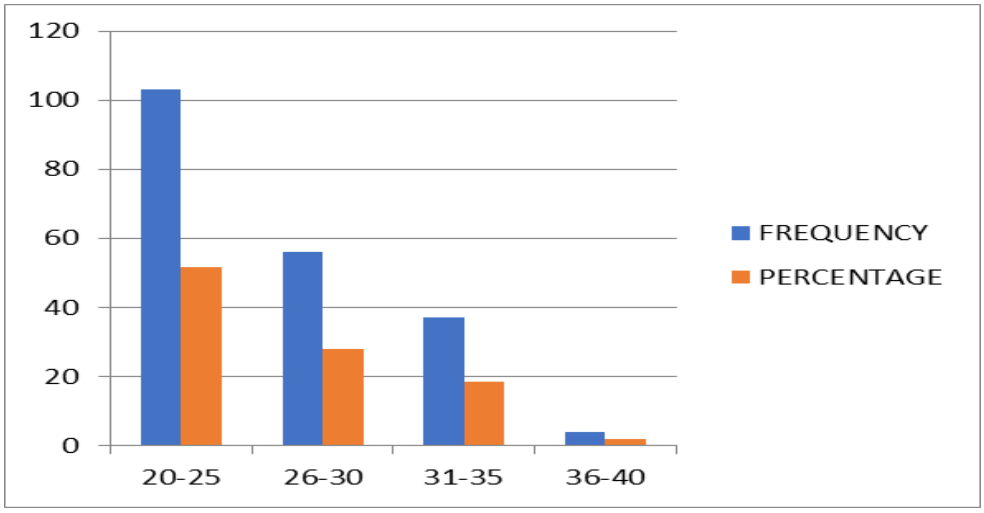

Fig: 1.

2. COMPLICATIONS OBSERVED

A total of 206 complications were observed which is presented in the table given below.

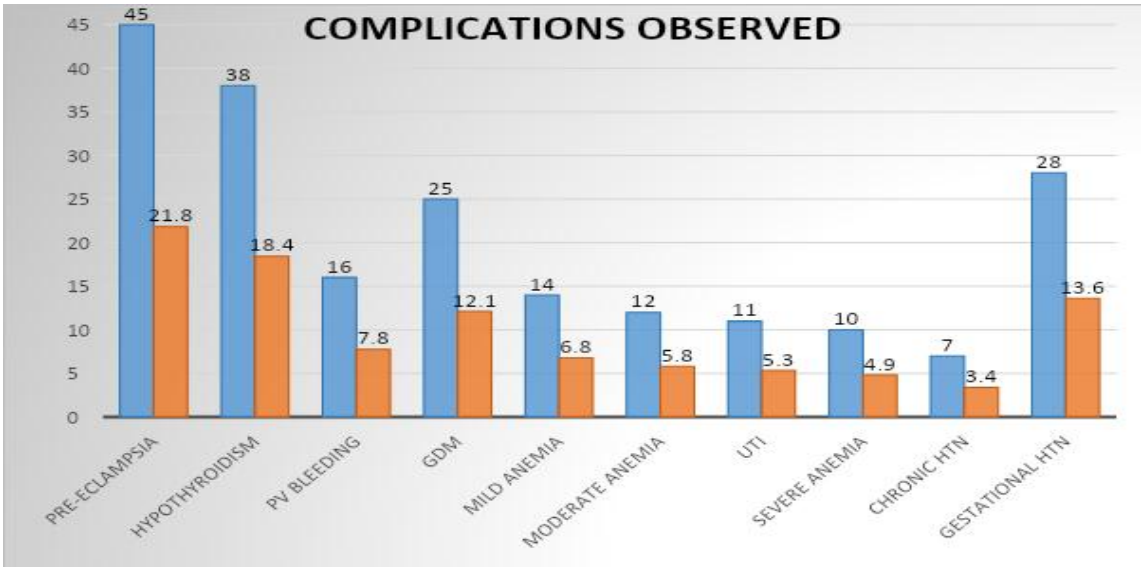

Fig: 2.

The frequency distribution of the complications revealed that 45 pregnant women (21.8%) suffering from pre-eclampsia, 38 suffered from hypothyroidism (18.4%), 24 from gestational diabetes mellitus (12.1%), 16 from PV bleeding (7.8%), 14 from mild anemia (6.8%), 12 from moderate anemia (5.8%), 11 from urinary tract infection (5.3%), 10 from severe anemia (4.9%), 7 from chronic hypertension (3.4%) and 28 from gestational hypertension (13.6%).

3. MANAGEMENT OF COMPLICATIONS

Of the total 80 patients who suffered from various cardiovascular complications, 61 received Labetalol (19.8%), 34 received Amlodipine (11.0%), 15 received Nifedipine (4.9%), 4 received MgSO4(1.3%), 2 received

Sodium nitroprusside (0.6%). For the management of hypothyroidism Levothyroxine was mostly prescribed (n=38,12.3%). Likewise Insulin (n=22,7.1%) and Metformin (n=20,6.5%) for the management of GDM, Pause (n=13,4.2%), Misoprostol (n=4), Povidone iodine+ Metronidazole (n=6,1.9%) , Amoxicillin(n=8,2.6%)for PV bleeding. For mild to severe anaemia Ferric pyrophosphate+ folic acid +glycine was mostly prescribed(n=21,6.8%) followed by multivitamin tablets(n=19,6.2%),vitamin B complex(n=9,2.9%),vitamin c tablets(n=6,1.9%) and Blood transfusions(n=4, 1.3%). Most prescribed drug for UTI was Nitrofurantoin(n=6,1.9%) and ceftriaxone(n=5,1.6%). For the management of pain associated with complications Diclofenac+ serratiopeptidase (n=5,1.6%)and Hyoscine butyl bromide(n=5.1.6%)was mostly prescribed followed by Drotaverin (n=1,0.3%).

Table: 1.

SPREAD OF DRUGS PRESCRIBED			
		Frequency	**Percent**
1	LABETALOL	61	19.8
2	LEVOTHYROXINE	38	12.3
3	AMLODIPINE	34	11.0
4	INSULIN	22	7.1
5	MULTIVITAMIN	19	6.2
6	TAB.METFORMIN	20	6.5
7	NIFEDIPINE	15	4.9
8	TRANEXAMIC ACID	13	4.2
9	VITAMIN B COMPLEX	9	2.9
10	AMOXICILLIN	8	2.6
11	FERRIC PYROPHOSPHATE+FOLIC ACID+GLYCINE	21	6.8
12	VITAMIN C	6	1.9
13	NITROFURANTOIN	6	1.9
14	CEFTRIAXONE	5	1.6
15	DICLOFENAC+SERRATIOPEPTIDASE	5	1.6
16	HYOSCINE BUTYLBROMIDE	5	1.6
17	MISOPROSTOL	4	1.3
18	MGSO4	4	1.3
19	SODIUM NITROPRUSSIDE	2	0.6
20	DROTAVERINE	1	0.3
21	POVIDONE IODINE+METRONIDAZOLE	6	1.9
22	BLOOD TRANSFUSION	4	1.3
	Total	308	100.0

4. FDA CATEGORIZATION

Majority of the medicines prescribed were from FDA pregnancy category C (n=117,38.5%) and category A (n=97,31.9%) and drugs prescribed from category B (n=80,26.3%), category N (n=6,2%) and category X (n=4,1.3%) were found to be teratogenic.

The FDA pregnancy category of drugs has been presented in the given figure.

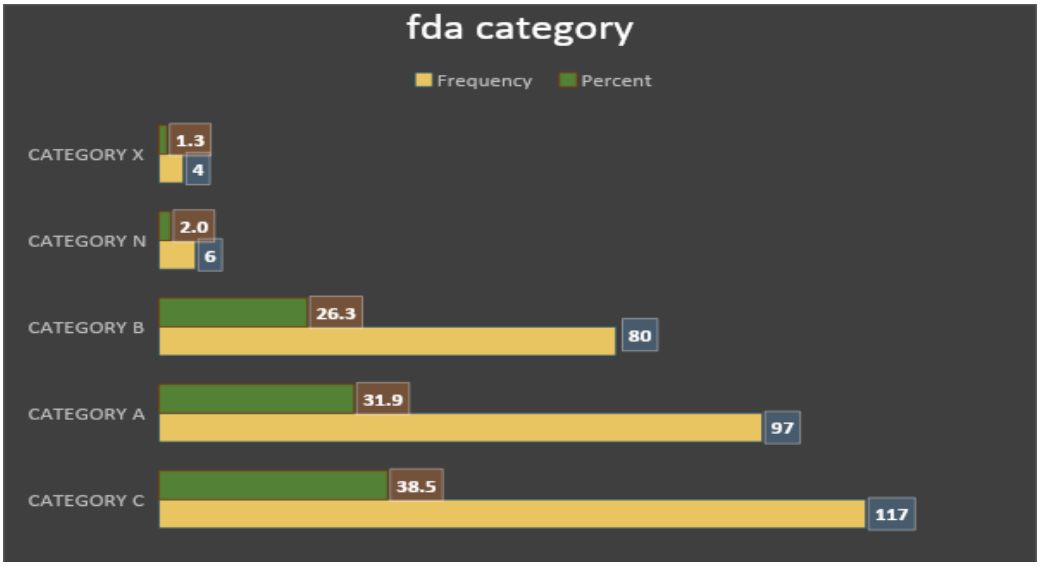

Fig: 3

5. KNOWLEDGE ASSESSMENT

Table (2.0) demonstrates assessment of overall domains the pregnant women's knowledge concerning risk of knowledge (n=130) (65%).

Table: 2.

SL.NO.	LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE
1.	Low	20	10%
2.	Moderate	130	65%
3.	High	50	25%
Total		200	100%

6. TYPE OF DELIVERY

The results indicate that the incidence of puerperal sepsis (n=9), postpartum haemorrhage (n=7), depression (n=6), bladder injury (n=3), gaseous distension (n=3), infection (n=2) was higher among women undergone c- section as compared to those with normal vaginal delivery in which complications like depression was (n=3), gaseous distension (n=2), PPH (n=2), retained placenta (n=1), puerperal pyrexia (n=1) and puerperal sepsis (n=1).

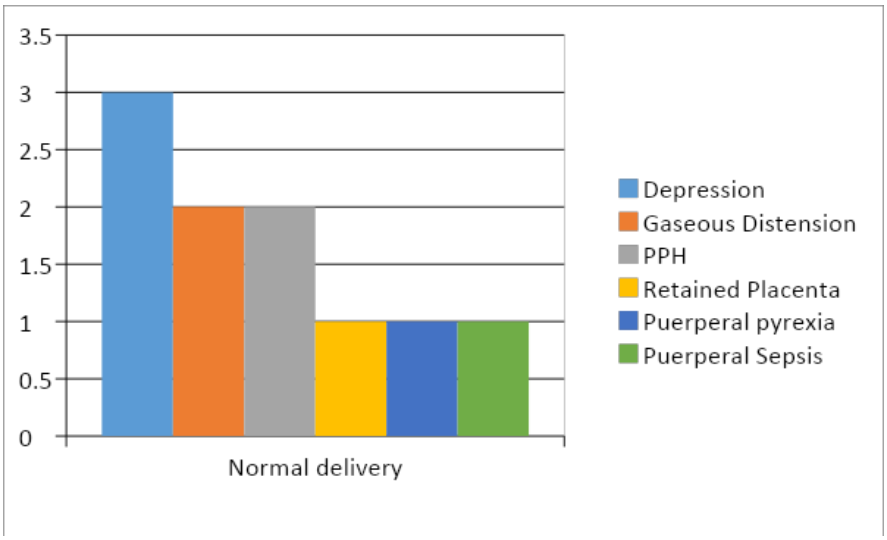

Fig: 4.

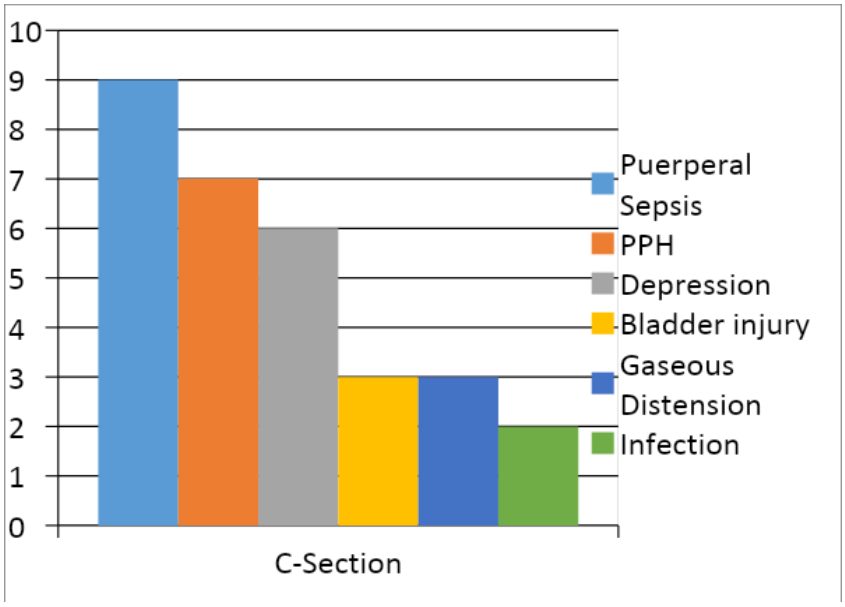

Fig: 5.

7. COST ANALYSIS

The mean cost of branded drugs per unit (55.9484) was higher than the mean cost of generic drugs per unit (21.6981)

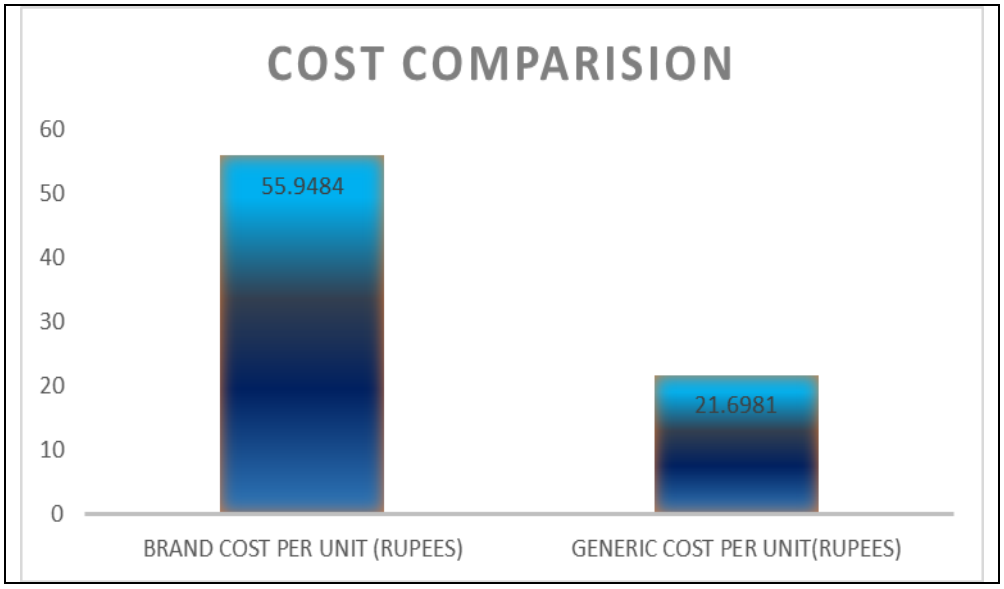

Fig: 6.

DISCUSSION

As during other situations pregnant women often suffer from different types of complication. In this study we found that, pre-eclampsia was the most common complication. The frequency distribution of the complications revealed that 45 pregnant women (21.8%) suffering from pre-eclampsia, 38 suffered from hypothyroidism (18.4%), 24 from hypertension (12.1%), 24 from gestational diabetes mellitus (12.1%), 16 from PV bleeding (7.8%), 14 from mild anemia (6.8%), 12 from moderate anemia (5.8%), 11 from urinary tract infection (5.3%), 10 from severe anemia (4.9%), 7 from chronic hypertension (3.4%) and 28 from gestational hypertension (13.6%). From the study conducted by Ramesh Devkota etal, majority of patients in their study were from age group 20-24(44%) which was followed by age group 25-29 (32.7%), 15-19(12.4%),30-34(9.8%), 3539(0.7%) and 40-44(0.4%) respectively. In our study, out of 206 complications majority of the patients in the study were from the age group 20-25 (n=103) which was

followed by age group 26-30 (n=56), 31-35 (n=37) and 36-40 (n=4).

From the study conducted by Ramesh Devkota etal, out of 275 complications, 67 pregnant women (24.4%) suffered from various types of pain, 40(14.5%) from nausea and vomiting, 20(7.3%) from acid-reflux disease, 24(8.7%) from upper respiratory tract infection, 14(5.1%) from pre vaginal bleeding and 19(6.99%) from urinary tract infection. In our study the results revealed that 45 pregnant women (21.8%) suffering from pre-eclampsia, 38 suffered from hypothyroidism (18.4%), 24 from gestational diabetes mellitus (12.1%), 16 from PV bleeding (7.8%), 14 from mild anemia (6.8%), 12 from moderate anemia (5.8%), 11 from urinary tract infection (5.3%), 10 from severe anemia (4.9%), 7 from chronic hypertension (3.4%) and 28 from gestational hypertension (13.6%).

In our study, a total of 308 drugs have been prescribed to 200 patients. They were classified as per FDA category. Out of 200 prescriptions, labetalol was mostly prescribed(61). From the study conducted by Ramesh Devkota, a total of 961 drugs were prescribed to 275 patients. Out of 961 drugs prescribed, iron, calcium and folic acid given for routine supplementation account for 450 drugs, which is nearly 47% of the total drugs prescribed.

Majority of the drugs prescribed were from FDA pregnancy category B (60.2%) and C (23.4%). 24 drugs (4.9%) prescribed from category D (n=9) and X (n=15) were found to be teratogenic. In our study majority of the medicines prescribed were from FDA pregnancy category C (n=117) and category A (n=97) and drugs prescribed from category B (n=80), category N (n=6) and category X (n=4) were found to be teratogenic.

From the study conducted by Siran M Koroukian , the result indicate that the incidence of major puerperal infection, thromboembolic events, anaesthetic complications, obstetrical surgical wound infection was higher among women undergoing a c-section as compared to those with vaginal delivery. In our study the results indicate that the incidence of puerperal sepsis, postpartum haemorrhage, depression, bladder injury, gaseous distension, infection was higher among women undergone c- section as compared to those with normal vaginal delivery in which complications like depression, gaseous distension, PPH, retained placenta, puerperal pyrexia and puerperal sepsis.

CONCLUSION

A large number of complications during pregnancy were observed. Besides pain and nausea /vomiting, Pre-eclampsia, hypothyroidism, GDM, PV bleeding, mild to moderate anemia, UTI, chronic hypertension and gestational hypertension were frequently encountered. The prescription o drugs to manage these complications revealed the use of drugs almost only when necessary and those considered safe during pregnancy. However teratogenic drugs were also found to be prescribed which might need further assessments.

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