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RESEARCH ARTICLE

ASSESSING AND EVALUATING THE DRUG USE PATTERN, MEDICATION ADHERENCE BY THE IMPACT OF CLINICAL PHARMACIST MEDIATED COUNSELLING AMONG PREGNANT WOMEN AND THEIR HEALTH - A OBSERVATIONAL STUDY

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ABSTRACT

This study was done to assess the drug use pattern among pregnant women and to evaluate the impact of clinical pharmacist mediated counselling on medication adherence by providing regular patient education regarding pregnancy and precautions recommended to prevent the complications in the later stages. A consent was taken from each pregnant women who were voluntarily enrolled in the study. The prescriptions possessing at least two or more drugs were analyzed. The drugs prescribed and taken by the pregnant women were considered based on their pharmacological class. Analysis of prescription patterns did not show the use of any drugs that should not be prescribed during pregnancy. Majority of the drugs prescribed belonged to vitamins, minerals and nutrients which play a very major role in foetal development. During the study, medication adherence of the pregnant women was assessed and the impact of counselling on adherence was seen. There is an increase in the rate of adherence in the pregnant women during their first and second follow-ups when compared with their baseline medication adherence. Pregnant women are counselled and educated regarding the advantages and disadvantages of various drug used during pregnancy. Thus the monitoring of prescription and drug utilization studies can identify the problems and provide feedback to prescribers so as to create awareness about irrational use of drugs. The impact of self-medication and other alternative therapies should also be explained to pregnant women and educating regarding the advantages and disadvantages and to identify the drawbacks of non adherence among them.

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INTRODUCTION

The study of assessing the prescribing pattern is a part of medical examination which seeks monitoring, evaluation and necessary changes by the physicians in the prescribing practices to achieve safe, rational, cost effective medical care as well as adherence towards the drugs. As a result the monitoring of prescription and drug utilization studies can recognize the problems and grant feedback to prescribers so as to generate awareness regarding irrational use of drugs and its complications (Sharma *et al.*, 2004). Adherence could be defined as the extent to which a patient's behavior (in terms of regularly taking medication as per dose, frequency recommended, following good diet plan, modifying habits, or attending clinics) as per medical advice (McDonald and Garg, 2002). Adherence rates are usually lower among patients with chronic conditions and higher in case of acute conditions, depends upon sticking to the therapy (Lars Osterberg and Terrence Blaschke, 2005).

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Adherence is basically lacking because of some factors like patient-related factors, such as side effects from the drugs, lack of motivation (Bardel and Waliander, 200). The main goal of medication adherence is to improve the outcome for each patient through the correct use of prescribed medicines, to relieve the patient's illness, make symptom relief (Svardsudd, 2007). The main importance of clinical pharmacist mediated counseling for pregnant women to make sure that they understand the nature and magnitude of a risk associated with a skipping of drug or unnecessarily usage of the drug (Jasti *et al.*, 2005). Rational drug prescribing is defined as the use of the least number of drugs to acquire the best possible outcome in the shortest period of time and at a affordable cost (Minocha *et al.*, 2000). To balance optimal treatment of the maternal symptoms and disease against possible harm to the foetus. More than 80% of pregnant women take atleast one type of medication during their pregnancy. Vitamins, Folic acid and iron supplements, analgesics/ antipyretics, anti-infectives and anti-histamines are the majority of drugs consumed during pregnancy. In pregnancy, drug treatment presents a special concern regarding the threat of teratogenic effects of the drug and physiologic changes in the mother, in response to pregnancy (Sharma *et al.*, 2006). It is essential to optimize the

safe use of medicines to attain good health of both pregnant women and their foetus⁹. A cautious concern should be taken about the benefits and risks to the mother and foetus while prescribing drugs during pregnancy. The drugs prescribed to pregnant mothers for therapeutic purposes may cause serious adverse effects in the developing foetus. As it is very complex to determine the effects on the foetus before marketing new drugs due to obvious ethical reasons, so most of the drugs are not recommended to be used during pregnancy. Due to inadequate knowledge about deleterious consequences for the foetus, prescribed drugs used by pregnant women should be carefully monitored in order to prevent the complications. To minimize the foetal risks, the lowest possible effective dose should be advised. Unnecessary abortions and dangers are associated with foetal exposure to teratogenic drugs also risks are associated with misinformation about the teratogenicity of drugs. The drug manufacturing companies, medical and health communities should make every possible effort to keep women safe and their foetus from risks. So the need of clinical pharmacist mediated counselling to pregnant women is very much essential to prevent the complications associated with drugs also explaining about the safety as well as the dangers of drug use in pregnancy plays a major role in having good medication adherence. In the present study an attempt is made to assess the pattern of drug use among pregnant women and to evaluate the impact of counseling on medication adherence by providing regular patient education regarding pregnancy in each trimester.

Aims and objectives

- To study and evaluate the prescribing patterns of drugs, medication adherence during pregnancy in the outpatient department of Obstetrics and Gynecology.
- To educate the pregnant women regarding drugs, diet, lifestyle and complications during pregnancy.

MATERIALS AND METHODS

Study Site: The study was conducted in the outpatient department of Obstetrics and Gynaecology, at Government General Hospital, Anantapuramu.

Study Duration: Study was performed for a period of Eight months from March 2017 to October 2017.

Study design: It was A Prospective, Observational study conducted on 220 pregnant women to know the prescribing patterns, medication adherence by the impact of clinical pharmacist mediated counselling during pregnancy.

Study criteria: Pregnant women who were voluntarily enrolled into the study by considering the following criteria:

Inclusion Criteria: Pregnant women attending to the OBG-OPD who are on at least two or more drug treatments were enrolled in the study including at least 2 follow ups. Pregnant women who are willing to participate voluntarily in the study. Pregnant women who are above 18years.

Exclusion Criteria: Pregnant women below who are below age of 18 years. Pregnant women who are not willing to participate in the study.

Source of data: Pregnant women visiting Obstetrics and Gynaecology Outpatient Department of Government General Hospital, Ananthapuramu. Patient Data collection forms and outpatient cards of above pregnant women.

Study procedure: The data relevant to the study were collected from 260 pregnant women but only 220 were voluntarily enrolled in the study as 40 pregnant women failed for follow ups for some unknown reasons.

Prescribing pattern analysis: Prescriptions of the pregnant women containing atleast two or more drugs were analyzed and the drugs prescribed were classified according to their pharmacological class. The pregnant women were divided according to their trimester and the prescriptions were analyzed for different classes of drugs.

Assessment of Medication Adherence: The medication adherence of the pregnant women was assessed at baseline line by using the medication adherence questionnaires. The pregnant women were counseled regarding drug use and importance of medication adherence. During first and second follow-ups same medication adherence questionnaires were used to reassess their medication adherence.

Statistical analysis: Statistical analysis of the data was done by chi square method and Wilcoxon signed- ranked test.

RESULTS

During the 8 months study period, 260 pregnant women were enrolled. Total 220 pregnant women completed the study; the remaining 40 pregnant women did not turn for the follow up due to some unknown reasons. Those who have completed the study were included in the analysis. All the 220 participants of the study were initially provided MAS questionnaires at the time of enrollment and subsequent follow up and medication adherence score was evaluated at baseline, first and second follow up.

DISCUSSION

Prescriptions of the pregnant women were analyzed for different classes of drugs prescribed during pregnancy. Folic acid was prescribed to 74(91.3%) women in their first trimester, 107(95.5 %) in second trimester, to 23(85.1 %) women in their third trimester. Vitamins were prescribed to 72(88.8 %) pregnant women in first trimester and to 104(92.8 %) women in second trimester and 21(77.7 %) in third trimester. Proteins were prescribed to pregnant women 73(90.1%), 109(97.3 %) and 20(74 %) in their first, second and third trimesters respectively. Nutrients were prescribed to 50(61.7%) in first trimester and to 95(84.8 %) in second trimester, 15(55.5 %) in third trimester. Anti-hypertensive drugs for pregnant women belonging to first trimester 10(12.3%) and to 52(46.4 %) during second trimester and to 15(55.5 %) women in their third trimester. Similarly all other medicines like B-complex, Antibiotics, Iron, Calcium and others are prescribed as per each trimester in case of pregnant women. A similar study was conducted by Dileep K Rohra in which anti-anemic drugs including iron preparations and vitamin and mineral supplements (79.4%) were the most frequently prescribed drugs followed by analgesics (6.2%) and

Table 1. Baseline demographic characteristics of enrolled pregnant women

S.No	Baseline Criteria	Number (N= 220)	Percentage %
1.	Age		
	18- 22	59	26.8%
	23-27	118	53.6%
	28-32	37	16.8%
	33-37	06	2.7%
2.	Educational Background		
	Literate	74	33.6%
	Illiterate	146	66.3%
3.	Occupation		
	Employed	39	17.72%
	Housewife	115	52.27%
	Others	66	30%
4.	Socio-economic status		
	Poor	87	39.5%
	Middle class	109	49.5%
	Above middle class	24	10.9%
5.	Place of residence		
	Rural	113	51.3%
	Urban	107	48.6%
6.	Trimester wise		
	First	81	36.8%
	Second	112	50.9%
	Third	27	12.2%
7.	Co-morbidities		
	Anemia	101	45.9%
	Hypertension	53	24%
	Diabetes	37	16.8%
	Anemia+ Hypertension	29	13.1%
8.	Number of children		
	No children	35	15.9%
	1 children	86	39 %
	2 children	75	34%
	3 children	24	10.9%

Table 2. Pattern of prescribing analysis of drug use in pregnancy in each trimester

S.No.	Drug class	No.of pregnant women 1 st Trimester	No.of pregnant women 2 nd Trimester	No.of pregnant women 3 rd Trimester
1.	Folic acid	74(91.3%)	107(95.5 %)	23(85.1 %)
2.	Vitamins	72(88.8 %)	104(92.8 %)	21(77.7 %)
3.	Proteins	73(90.1%)	109(97.3 %)	20(74 %)
4.	Nutrients	50(61.7%)	95(84.8 %)	15(55.5 %)
5.	Anti-hypertensives	10(12.3%)	52(46.4 %)	15(55.5 %)
6.	B-complex	61(75.3%)	102(91 %)	19(70.3 %)
7.	Antibiotics	19(23.4 %)	46 (41 %)	10(37 %)
8.	Iron	55(67.9%)	72(64.2 %)	12(44.4 %)
9.	Calcium	70(86.4%)	93(83 %)	11(40.7 %)
10.	Others	23(28.3%)	31(27.6 %)	8(29.6 %)

Assessment of medication adherence in pregnant women; Morisky Medication Adherence Scale (MAS) Score; Morisky Medication Adherence Score (MAS) (n=220): Score (0-6)

Table 3. Baseline adherence score to first follow up score

Average of baseline	Average of follow up I	Mean ± SD	P-Value
4.57	6.92	2.760 ± 1.24	P<0.0001

Table 4. Baseline adherence score to second follow up score

Average of baseline	Average of follow up II	Mean ± SD	P-Value
4.57	8.01	3.892 ± 0.98	P<0.0001

Medication adherence score was calculated for pregnant women with 1st and 2nd follow up .

Table 5. Factors for medication non-adherence

S.No.	Reasons	No.of patients(n=220)	Percentage (%)
1.	High cost of medications	73	33.1%
2.	Fear of side effects	69	31.3%
3.	Forgetfulness	84	38.1%
4.	Lack of access to hospital/drug store	57	25.9%
5.	Lack of symptoms	51	23.1%
6.	Lack of family support/Motivation	45	20.4%
7.	Believed medication was not effective and decided not to take dose	42	19%
8.	Lack of immediate benefit of therapy	33	15%
9.	Absorbed in daily work and forget to take/Occupation related problems	21	9.5%
10.	Complexity of medication regimen (number of daily doses; number of concurrent medications)	10	4.5%

anti-bacterials (2.2%). Seven thirty nine women (19.6%) received prescriptions containing drugs other than vitamin or mineral supplements (Rohra *et al.*, 2008). During the study medication adherence of the pregnant women was assessed and the impact of clinical pharmacist mediated counseling on adherence was seen. There is an increase in the rate of adherence in the pregnant women during their first and second follow-ups when compared with their baseline medication adherence scores. The study showed significant difference in medication adherence at baseline to first and second follow ups ($P < 0.0001$). The medication adherence scores during first, second and third trimesters were also significant at baseline level to first and second follow ups. During the time of baseline assessment we asked the reasons to stop/miss the medications to the patients. Following were the reasons for non-adherence.

Seventy three (33.1%) pregnant women reported that high cost of the medication was one of the reasons for medication non-adherence. As majority of the pregnant women enrolled were from poor and middle class families and from low economic group they couldn't afford the cost of medications. Another frequently reported reason for non-adherence was forgetfulness 84(38.1%). This problem was resolved by using the tools like medication reminder or diary keeping.

Fifty seven (25.9%) pregnant women reported that lack of access to hospital or drug store was another main reason for prescription non-adherence. Many of the pregnant women were from rural areas where they don't have access to health care services, or medications.

Sixty nine (31.3%) women reported that fear of side effects caused by the medications was the problem to continue their therapy. This problem was solved by counseling them regarding side effects caused by each drug and rescue action to be taken when it happens.

Fourty two (19%) pregnant women believed that the medications were not very effective, Twenty one (9.5%) of them were having occupational problems and Fourty five (20.4%) women were non-adherent due to lack of motivation and family support. Complexity of medication regimen Ten (4.5%). All the reasons for medication non-adherence were solved by providing regular counseling by clinical pharmacists in specific areas so as to improve their adherence rates in order to avoid complications which are caused because of skipping the drug and unnecessarily usage of other irrelevant drugs.

Conclusion

Prescription patterns were analysed but did not show any difference like the usage of any drugs that should not be prescribed during pregnancy. The prescribed drugs majorly belongs to category like vitamins, minerals and nutrients which play a very foremost role in foetal development without any abnormality and to prevent complications. Other drugs mostly prescribed were anti-hypertensives which were prescribed in pre-eclampsia condition.

Anti-hypertensives which are contraindicated in pregnancy were not prescribed to any of the pregnant women. In the study the major reasons for non-adherence were forgetfulness, High cost of medications, fear of side effects, lack of hospital/drug store, and lack of motivation. Pregnant women education and counselling them by clinical pharmacists may be helpful in solving some of the problems, except lack of hospital/drug store and high cost of medications which need further strategies to improve them. By providing regular counseling and patient education regarding the pregnancy, complications, care to be taken in each trimester, medications usage regularly as per prescribed, the rate of medication adherence was improved during first and second follow-ups when compared with the baseline assessment. The impact of self-medication and other alternative therapies should also be explained to them. Educating and counselling periodically regarding the advantages and disadvantages of various drug used during pregnancy may help in having good medication adherence as well as preventing unnecessary use of drugs so as to prevent adverse drug reactions.

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