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Assessment of Antibiotic Prescribing Practices among Pregnant Women at Tertiary Care Hospital



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ABSTRACT

Antibiotics are a class of medications that are used to treat bacterial infections by killing or inhibiting the growth of bacteria. Antibiotics can be used safely during pregnancy when prescribed by a healthcare provider, as they can help prevent serious complications such as premature birth, low birth weight, and maternal infections. However, certain antibiotics may pose a risk to the developing fetus, and pregnant women should always consult with their healthcare provider before taking any medication. To assess the usage and documentation of Antibiotics during the period of pregnancy. A Prospective observational study was conducted for 6 months at tertiary care Hospital Chitradurga. The Data was collected through face-to-face interaction with pregnant women who attended the Hospital for Check-ups, in which 150 pregnant women provided the information through a self-designed Data collection form. The data were analyzed using the Descriptive method, result was generated through a Microsoft Excel Sheet. Categorical data were presented in numbers and percentages. The importance of evaluating the use of antibiotics in pregnant women in tertiary care hospitals to ensure safe and appropriate treatment. This involves analyzing prescribing patterns, identifying risks, and improving healthcare practices. The data provided shows the percentage of different antibiotics prescribed, including ceftriaxone (56.6%), amoxicillin (37.3%), azithromycin (6%), metronidazole (43.3%), gentamicin (23.3%), and ofloxacin (12.6%).



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INTRODUCTION:

Pregnant women are vulnerable to diseases just like everyone else. However, in addition to pathogens, the infection location, antibiotic pharmacokinetics, the fetus, and potential adverse effects on the kid, the proper management of these women must take these factors into account. The doctor must keep in mind that this particular ailment will affect two organisms while providing medication, and the medication must treat the mother without harming the fetus.¹

Pregnancy is a time when women need to be especially cautious about the medications they take. Antibiotic use is one issue that many pregnant women have in common. Though they are frequently used to treat bacterial infections, there is substantial disagreement regarding the safety of antibiotics during pregnancy. To meet the needs of her growing fetus and get ready for nursing and caring for her child, a woman goes through significant physiological and metabolic changes during pregnancy. Maternal food consumption rises in the early to mid-gestation period to support uteroplacental development and become more susceptible to infection.²

It's crucial to remember that not all antibiotics are thought to be safe to use while pregnant. When taken during pregnancy, several antibiotics have been linked to an increased risk of birth abnormalities or other unfavorable consequences. Nonetheless, a lot of antibiotics are also frequently recommended to expectant mothers since they are thought to be safe for use during this time. The particular antibiotic being used, the stage of pregnancy, and other variables all affect how safe antibiotics are to take while pregnant. specific woman's medical background. If pregnant women need antibiotics.

The safety of antibiotics during pregnancy depends on several factors, including the specific antibiotic being used, the stage of pregnancy, and the individual woman's health history. Pregnant women need to work closely with their healthcare provider to determine the best course of treatment if they require antibiotics. One of the biggest developments in contemporary medicine is the use of antibiotics to treat infectious infections. Antibiotics are therefore frequently prescribed as the most effective means of treating and preventing infections during pregnancy³.

Common antibiotics including erythromycin, cephalosporins, penicillin (like amoxicillin), and other macrolides are generally regarded as safe to take during pregnancy. Common infections including skin, respiratory, and urinary tract infections are frequently treated with these medicines. However, some antibiotics should be avoided during pregnancy as they are known to be detrimental to the growing fetus. Tetracyclines and fluoroquinolones are among them; taking them while pregnant has been linked to an increased risk of birth abnormalities and other negative effects. However, in other cases, alternative treatment options may be considered to minimize any potential risks.

It's critical to understand that infections can take many different forms, such as bacterial, fungal, or viral infections. Only bacterial illnesses are treated by antibiotics. Since they are ineffective against viruses and other non-bacterial illnesses, they are not recommended for treating those kinds of infections. Antibiotic abuse can result in drug-resistant bacteria, which can make antibiotics less effective when used when necessary. For this reason, it's crucial to avoid using antibiotics when neither necessary nor effective. For the management of infections that are not bacterial, there can be other options. Antibiotics, however, can be quite helpful if you have a bacterial illness that needs to be treated. Common bacterial infections during pregnancy include respiratory and urinary tract infections. For these infections, antibiotics are the only medications that will help you get better, and you should take them despite the potential risk to your baby⁴. Because the mother's health is crucial to the fetus's optimal growth, the benefits of antibiotics use during pregnancy extend beyond the mother's ability to regain her health⁵.

In 1979, the United States Food and Drug Administration (FDA) developed a pregnancy risk categorization system to determine the teratogenic potential of drugs⁶.

The FDA pregnancy category for drugs:

- **Category A:** Shown to be safe for pregnant people.
- **Category B:** Animal studies did not show risk to the fetus; no adequate human studies.
- **Category C:** Animal studies showed adverse effects on the fetus or no animal or human studies.

- **Category D:** Animal studies showed increased risk to the fetus, but the benefits may outweigh the risks.
- **Category X:** Animal studies show clear risk and no benefits⁵.

Pregnant women can safely use medications in Category A, whereas they shouldn't use drugs in Category X because they can harm fetuses. The remaining groups lie in the middle of these two extremes. Drugs classified as category B are regarded to be generally safe for humans and be safe in research on animals. Animal research has shown that Category C medications have a higher risk of harm, although human data does not conclusively support this. Despite evidence of an elevated risk of harm to human babies, Category D may still be appropriate for usage during pregnancy in certain circumstances.⁷

Pregnant women need to communicate openly with their healthcare provider about any concerns they may have regarding the use of antibiotics during pregnancy. Women should also make sure to inform their healthcare provider if they are pregnant or planning to become pregnant before starting any new medication. Another reason for assessing the usage of antibiotics among pregnant women is to identify any potential risks associated with antibiotic use during pregnancy. Certain antibiotics may cross the placenta and affect fetal development, leading to adverse outcomes such as low birth weight, congenital malformations, and neonatal sepsis.

The assessment of antibiotic usage among pregnant women at tertiary care hospitals can also help identify areas for improvement in healthcare practices. For example, if healthcare providers are prescribing antibiotics unnecessarily or for prolonged periods, interventions can be implemented to improve prescribing practices and reduce the risk of antibiotic resistance.

In conclusion, assessing the usage of antibiotics among pregnant women at tertiary care hospitals is essential to ensure that antibiotics are being used appropriately and safely. This assessment can help identify potential risks associated with antibiotic use during pregnancy and improve healthcare practices. Therefore, healthcare providers should be aware of the importance of appropriate antibiotic use during pregnancy.

2. MATERIALS AND METHODS

STUDY SITE: The study was conducted in the Basaveshwara Medical College Hospital and Research Centre, Chitradurga.

STUDY APPROVAL: This study was approved by the “Institutional Ethical Committee” of S J M College of Pharmacy, Chitradurga.

STUDY DURATION: The study was conducted for 6 months.

STUDY DESIGN: A hospital-based prospective observational study

STUDY CRITERIA: The study was conducted by considering the following criteria.

INCLUSION CRITERIA:

- Study includes pregnant women of Basaveshwara Medical College Hospital & Research Centre, Chitradurga.

EXCLUSION CRITERIA:

- Pregnant women who refused to provide information.

SOURCES OF DATA:

- Demographic details collected from one-to-one interaction in suitably designed Data collection form.
- Evaluation of Data collection form.

STUDY PROCEDURE:

- This was a prospective observational study carried out for six months after getting approval from the institutional ethics committee.
- The study will be conducted among pregnant women at Basaveshwara Medical College Hospital & Research Centre, Chitradurga.
- The study will be carried out with prior permission from the Principal/Higher authorities of the institution.

- The data will be collected from the students in a suitably designed data collection form.
- The study includes a self-designed questionnaire that has been filled out by the study subjects during one-to-one interaction in a particular hospital.

STATISTICS:

The collected data was entered into a Microsoft Excel spreadsheet and the results were analyzed by using IBM SPSS-25. Descriptive methods were applied for the analysis of data.

RESULTS

1. Details of Age Classification

A total of 150 subjects were found during the study period. The age groups among them are classified as 18-30 (82.6%) and 31-45(17.3%). The results are shown in Table No.1.

Table No 1: Age distribution

Age			
Sl No:	Age (years)	Frequency	Percent
1	18-30	124	82.6%
2	31-45	26	17.3%
3	Total	150	100%

2. Details of Co-Morbidity

A total of 150 subjects were found during the study period. The groups among them are co-morbidity to be found to be as shown in the results as shown in Table No. 2.

Table No. 2: Co-Morbidity

Co-Morbidity			
SI No:	Co Morbidity	Frequency	Percent
1	NO	96	64%
2	Yes	54	36%
3	Total	150	100%

3. Details of the Number of subjects as per Trimester

The number of patients is divided as per the trimester Among 150 subjects in the first trimester 20 (13.4%) second trimester 16 (10.6%) and third trimester 114(75.6%) can be seen.

Table No. 3: Number of subjects as per Trimester

Trimester	Number Of Patients	Percentage
1 st	20	13.4%
2 nd	16	10.6%
3 rd	114	76%
Total	150	100 %

4.The FDA pregnancy category for drug

The number of Antibiotics given to pregnant women has been calculated according to FDA the study and displayed in the form of a table and chart below.

Table No. 4 The FDA pregnancy category for drug

SL NO	CATEGORY OF DRUG	NO OF DRUGS
1	A	0
2	B	215
3	C	19
4	D	35
5	X	0

5. Details of the percentage of Antibiotics

The percentage of Antibiotics given to pregnant women has been calculated according to the study and displayed in the form of a table and chart below.

Table No. 5 Percentage of Antibiotics

Antibiotics	Frequency	Percent
ceftriaxone	85	56.6%
amoxicillin	56	37.3%
azithromycin	9	6%
MetrOnidazole	65	43.3%
gentamycin	35	23.3%
ofloxacin	19	12.6%

DISCUSSION

The results of this study provide insight into the complex environment surrounding pregnant patients' use of antibiotics inside tertiary care facilities. The investigation turned up several interesting details that should be thought about and discussed.

First off, our data show that the use of antibiotics during pregnancy is common, which raises questions about possible effects on the health of both the mother and the fetus. The rate of antibiotic usage in this group aligns with previous research indicating a pattern rather than a significant deviation from prescribing practices.

This study has brought to light several important issues, one of which is the need for a rigorous evaluation of the reasons for prescribing antibiotics to expectant mothers. It becomes necessary to distinguish between reasonable and maybe unnecessary use, making sure that advantages exceed disadvantages. In addition, examining the prescription patterns of different antibiotic classes can provide valuable understanding regarding the suitability of treatment approaches used in this context⁸.

The study also raises questions about the possible effects of antibiotic use on the mother's and the developing fetus's short- and long-term health outcomes. Future study efforts should

concentrate on the effects on the neonatal microbiota, possible connections to unfavorable birth outcomes, and the emergence of antibiotic resistance in pregnant women.

Furthermore, it is important to pay attention to the sociodemographic characteristics that influence the trends in antibiotic prescription among pregnant women at this tertiary care hospital. Comprehending these variables including socioeconomic position, geographic location, and healthcare accessibility may aid in devising focused interventions designed to maximize the use of antibiotics in this susceptible demographic⁹.

Although this study offers insightful information, it should be noted that it has limitations, such as retrospective data collection and a lack of longitudinal follow-up. Antibiotic consumption patterns among pregnant women in tertiary care settings may be better understood in the future by utilizing prospective designs and integrating multi-centric data¹⁰.

In light of tertiary care facilities, this study concludes by highlighting the significance of prudent antibiotic usage among expectant mothers and the necessity of ongoing assessment and attention to maximize maternal and fetal health outcomes.


CONCLUSION

In conclusion, the study found that a significant proportion of pregnant women at the tertiary care hospital were prescribed antibiotics during their antenatal visits. The most prescribed antibiotics were group B, FDA-category antibiotics. As we see the most reliable antibiotics are cephalosporin and penicillin groups. However, the rate of antibiotic usage in this group aligns with previous research, indicating a pattern rather than a significant deviation from customary practices. Healthcare providers need to follow guidelines and protocols for prescribing antibiotics to pregnant women to ensure appropriate use and minimize potential harm to both the mother and the developing fetus. Further studies are needed to explore the reasons for antibiotic prescribing patterns in this population and to develop interventions to improve antibiotic prescribing practices.

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