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PROSPECTIVE ANALYSIS OF PRISCRIPTION PATTERN OF ANTIMICROBIAL THERAPY FOR URINARY TRACT INFECTIONS IN PREGNANT FEMALE PATIENT

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ABSTRACT

Pregnancy is a state of relative immunocompromise. This immunocompromise may be another cause for the increased frequency of UTIs seen in pregnancy. UTIs are one of the most common medical complications of pregnancy. Urinary tract infections (UTI) in pregnancy are a large and under-emphasized risk factor for pregnancy morbidity and adverse birth outcomes in low- and middle-income country. A prospective, single centric, observational and descriptive type hospital based study was conducted at the Gynecology Department of a tertiary care hospital for a period of 9 months. This prospective analysis comprises the prevalence of UTI in 53 pregnant female patients with study of their antibiotic prescription pattern. this present prospective study shows that the prevalence rate of urinary tract infection in pregnancy is 26.5%.(53 UTI cases out of screened 200 patients) Controversially, many literature reviewed showed that in pregnant women's UTI incidence can be as high as 8 to 20%. Present study indicates the incidence of UTI in pregnancy in relation to gestation period shows that max. UTI patients are from second Trimester (55%) in comparison to first trimester (28%). Least rate of UTI incidence was in Third trimester (17%) due to clinical supervision of pregnant females from starting of gestation. Observation indicates incidence of UTI in relation to age groups under three gestation periods, max. UTI patients were under age group 21 to 30 years of all gestation periods. In first trimester, Second Trimester and third trimester there were 68%, 62% and 56% respectively UTI patients were under age group 21-30 years. This prevalence was due to physiological changes that occur majorly in second trimester. Incidence of UTI pregnant patients under age group <20 years was more in both 1st and 3rd trimester than under age group >30 years. These findings indicate that no relationship exists between age and incidence of UTI in pregnancy.

Urinary Tract Infections are confirmed on the basis of bacteriuria present. Urinary tract infections are generally uncomplicated in non pregnant females but becomes complicated in pregnancy specially when left untreated. Present study showed incidence of uncomplicated urithritis and cystitis (65%) and No complicated UTI cases (pyelonephritis). Gestation distribution of uncomplicated UTI patients showed that max. urithritis(38%) was in

Present study shows the frequently isolated organism in UTI in pregnancy include species of Enterobacteriaceae especially Escherichia coli and others citrobactor and proteus. Klebsiella was the second (22%) most isolated organism. Cephalosporin's with more than 90% general susceptibility than fluoroquinolones (<90%). Average general susceptibility was found with Ampicillin and sulphonamides. fluoroquinolones was also alternative choices. All antibiotic prescription was based on antibiotic sensitivity to culture organism. Present study shows max UTI patients of 1st trimester received Nitrofurantoin (47%) as a monotherapy. Due to Antibiotic sensitivity to cultural organism, ciphalosporins and fluoroquinolones was also prescribed as monotherapy. Only single UTI pregnant patient shows sensitivity to cotrimoxazole in first trimester. Cotrimoxazole was prescribed with folic acid supplement. As a safe nonteratogenic drug nitrofurantoin was prescribed to max patients with others drugs in combination. Phenazopyridine an urinary analgesic also prescribed in max. number in combination with nitrofurantoin.

Data analysis of observation of 2nd trimester showed that higher percent distribution of patients were received Nitrofurantoin with other drug combinations. Max. no of patients (75%) received Nitrofurantoin with phenazopyridine in comparision to other urinary antibiotics. Patients with Vit.B12 deficiency were also receiving Nitofurantoin with folic acid supplement. Only single Hypertensive pregnant received Methyldopa with ciphalosporins. Only single case of gestational diabetes received nitrofurantoin with glibenclamide with safer indication. Nitrofurantoin was again highly prescribed urinary antibiotic drug with other drug combination.

Present study revealed in 3rd trimester fluoroquinolones were better treatment options with other drugs combination. All pregnant female patients with or without Comorbid conditions received fluoroquinolones.

Keywords: fluoroquinolones, Nitrofurantoin

1. INTRODUCTION

A urinary tract infection (UTI) is an infection in any part of urinary system including kidneys, ureters, bladder and urethra. UTI is defined as significant bacteriuria in the setting of symptoms of cystitis or pyelonephritis. The urinary tract can be divided into the upper urinary tract and the lower urinary tract. The upper urinary tract consists of the kidneys and the ureters, and the lower urinary tract consists of the bladder and the urethra. Most infections involve the lower urinary tract — the bladder and the urethra. Urinary tract infection is an extremely common condition that occurs in both male and female of all the ages. The prevalence and incidence of UTI is higher in women than in men, due to several clinical factors including anatomic differences, hormonal effects and behavioral patterns. Pregnancy is a state of relative immunocompromise. This immunocompromise may be another cause for the increased frequency of UTIs seen in pregnancy. UTIs are one of the most common medical complications of pregnancy. Urinary tract infections (UTI) in pregnancy are a large and under-emphasized risk factor for pregnancy morbidity and adverse birth outcomes in low- and middle-income country (LMIC) settings. Increased incidence of UTI during pregnancy is due to the morphological and the physiological changes that take Place in the genitourinary tract during pregnancy.

Urinary tract infections (UTIs) are frequently encountered in pregnant women. Pyelonephritis is the most common serious medical condition seen in pregnancy. Thus, it is crucial for providers of obstetric care to be knowledgeable about normal findings of the urinary tract, evaluation of abnormalities, and treatment of disease. Fortunately, UTIs in pregnancy are most often easily.

Pregnancy causes numerous hormonal and mechanical changes in the body.Changes of the urinary tract and immunologic changes of pregnancy predispose women to urinary tract infection. Physiologic changes of the urinary tract include dilation of the ureter and renal calyces; this occurs due to progesterone-related smooth muscle relaxation and ureteral compression from the gravid uterus. Ureteral dilation may be marked. Decreased bladder capacity commonly results in urinary frequency.

Beginning in the 6th week, with peak incidence during 22nd–24th weeks of gestation, 90% of the pregnant women develop ureteric dilatation thereby increasing the risk of urinary stasis and vesicoureteric reflux.[4] In addition, glycosuria and aminoaciduria during pregnancy provide an excellent culture medium for bacteria in areas of urinary stasis. These changes along with already short urethra and difficulty with hygiene due to the distended pregnant belly increase the frequency of UTI in pregnant women.

CLASSIFICATION ON THE BASIS OF ANATOMIC SITE OF INVOLVEMENT

Each type of UTI has more-specific signs and symptoms, depending on which part of urinary tract is affected. They are —

A. UPPER URINARY TRACT INFECTIONS

B. LOWER URINARY TRACT INFECTIONS

A. Upper urinary tract infections: Kidney and ureter

Infections of the upper urinary tract include pyelonephritis. When Kidneys are affected called acute pyelonephritis.

B. Lower urinary tract infections: Bladder and urethra

Infections of the lower urinary tract include cystitis, urethritis. When bladders are affected called cystitis and when urethra are affected called urethritis.

2. STUDY PROCEDURE

2.1 Study design

A prospective, single centric, observational and descriptive type hospital based study, will be conducted at the Gynecology Department of a tertiary care hospital for a period of 9 months from January 25, 2020 – 0ct 31, 2020. The study will be initiated after with due permission from Head of the

Clinical Research Department, Heart & General Hospital and from the Institutional Ethical Committee approval from the hospital. About 200 pregnant Females will be screened for UTI's during the study from the time of admission.

Study Site:

Gynecology Department, Heart & General Hospital, Jaipur

Sample size:

Pregnant Female patients visiting the Medicine OPD for consultation.

Study population:

Pregnant Female patients diagnosed with Urinary Tract Infections who conformed to the specified Inclusion and Exclusion Criteria will be enrolled for this study.

Inclusion criteria

- Pregnant females with Urinary Tract Infections (OPD patients)
- Pregnant Female patients > 18 years of age group

Exclusion criteria

- Pregnant females without Urinary Tract Infections (OPD patients)
- Hospitalized/Inpatient females admitted for Delivery
- Pregnant Female patients < 18 years of age group
- Pregnant female patients with other Noscomial infections

Source of data

Patient Case Report Form (Patient demographics, past medical and medication history, laboratory Findings, Prescription).

Data collection:

The data will be collected from the individual patient in a structured Performa i.e. Case Report Form.

Study population/ Research subjects:

A total of 100 pregnant female patients are included in this study are diagnosed with urinary tract infections and who are matched for Inclusion criteria consecutively attending the outpatient care clinic of the Heart & General Hospital, established through consultation with treating physicians are reviewed.

They are over 18 years of age and underwent treatment with Antimicrobial therapy. All study subjects gave written and oral informed consent as they were recruited at the Gyane department. Subjects are randomly selected in this study who meets the Inclusion criteria. Patients with Exclusion criteria as per study protocol are not included in this study.

2.2 Study Procedure:

A CRF was prepared to record the following information of the pregnant female patients visited to Out Patients Department OPD.

Prescription Pattern: According to WHO core prescribing indicators---

- Average drugs prescribed
- Generic Name Wise Drug Prescribed
- Antibiotics Prescribed
- Injections Prescribed
- Drugs prescribed (Listed in Essential Drug List India-2019)

Socio-Demographic Profile:

- Name, Age, Sex and Education of Patient
- Occupation and Family income (to classify under socio-economic group)
- Locality and Address of Patient

Above mentioned data and physicians prescribed prescription pattern of antibiotics of each outdoor pregnant female patients were collected electronically on predesigned Case Report form.

Pregnant female patients with urinary tract infection receiving antibiotics alone or in combination.

2.3 Data Analysis and Statistical Method:

Descriptive statistics will be used to summarize Patients demographics and survey responses. Percentage of data will be calculated by using Microsoft Excel sheet.

A suitable statistical test will be used to compare the rate of antibiotics prescribed as per standard guideline and not as per guidelines. All testing will be done at a significance level of 0.05.

3. RESULTS

A prospective, single centric, observational and descriptive type hospital based study, was conducted at the Gynecology Department of a tertiary care hospital for a period of 9 months from January 25, 2020 – 0ct 31, 2020. The study will be initiated after with due permission from Head of the Clinical Research Department, Heart & General Hospital and from the Institutional Ethical Committee approval

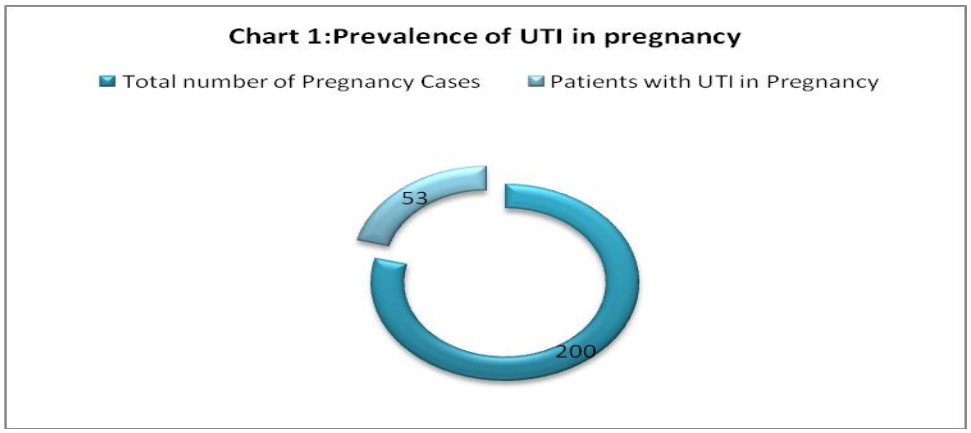
from the hospital. About 200 pregnant Females will be screened for UTI's during the study from the time of admission.

3.1 Prevalence of UTI in screened pregnant female patients

Out of total screened pregnant females, 53 pregnant females were found to have UTI. Show in Table.1

Table : 1 Prevalence of UTI in pregnancy

Total number of pregnancy cases	Patients with UTI in Pregnancy	Percent
200	53	26.5%

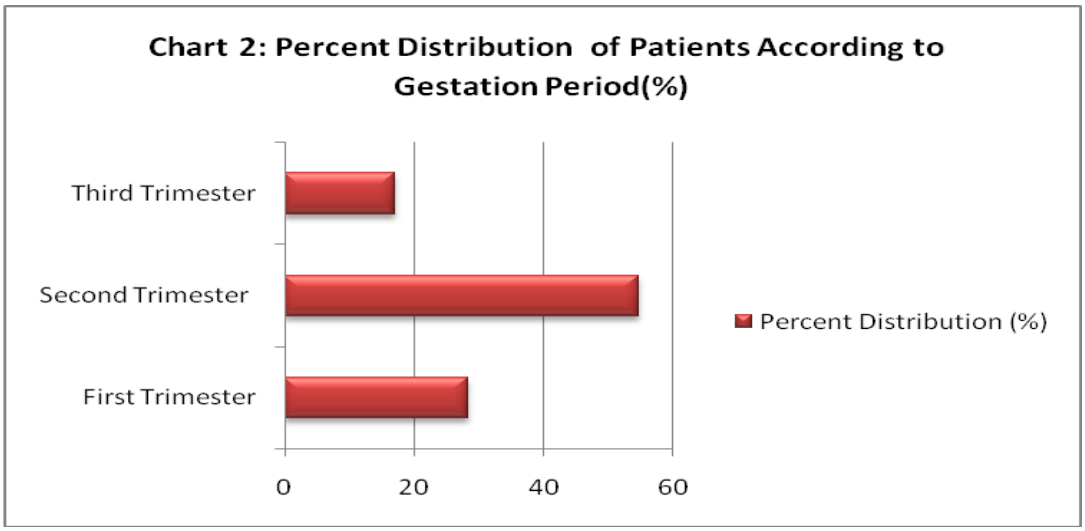


3.2 Patient Details According to Gestation Period:

Table 2, showing, distribution of pregnant female patients according to their gestation period, out of total 53 pregnant female patients with UTI.

Table 2: - Distribution of Patients According to Gestation Period

Gestation Period	No. of Patients	Percent Distribution (%)
First Trimester	15	28.30
Second Trimester	29	54.71
Third Trimester	09	16.98
Total	53	100



3.3 Demographic Detail of Patients

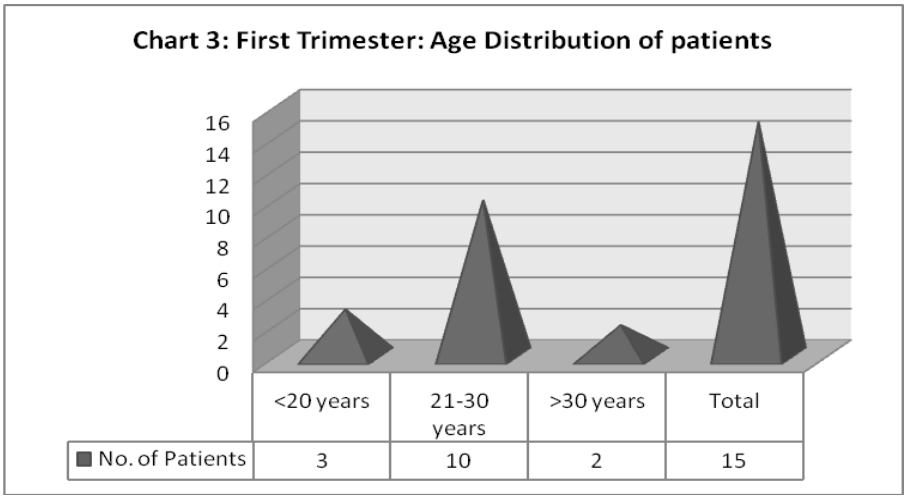
3.3.1 *Age Distribution of patients according to their Gestation Period*

3.3.1.1 *For First Trimester*

Table 6.3.1.1, showing, percent distribution of pregnant female patients according to their Age in first Trimester period, out of total 15 pregnant female patients with UTI.

Table 3. For First Trimester Age Distribution of patients

First Trimester		
Age	**No. of Patients**	**Percent (%)**
<20 years	**03**	**20**
21-30 years	**10**	**66.66**
>30 years	**02**	**13.33**
Total	**15**	**100%**

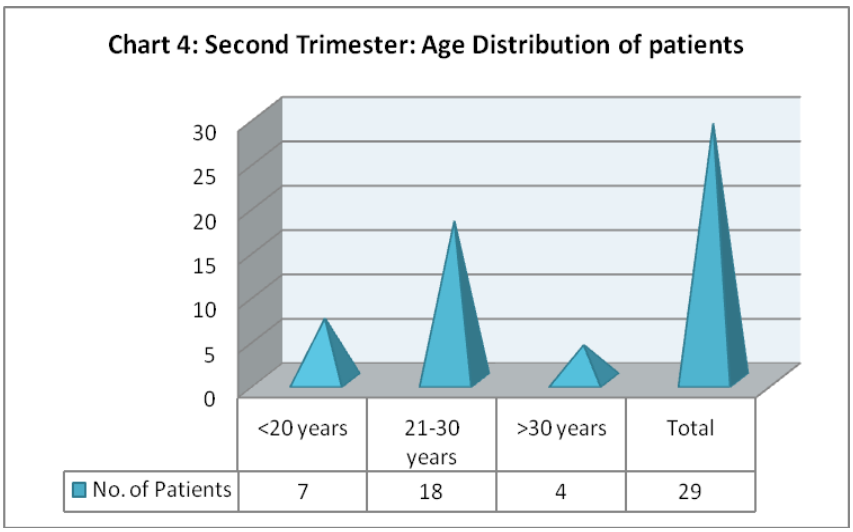


3.3.1.2 *For Second Trimester*

Table 4, showing, percent distribution of pregnant female patients according to their Age in second Trimester period, out of total 29 pregnant female patients with UTI.

Table 4. For Second Trimester Age Distribution of patients

Second Trimester		
Age	**No. of Patients**	**Percent (%)**
<20 years	**07**	**24.13**
21-30 years	**18**	**62.06**
>30 years	**04**	**13.79**
Total	**29**	**100%**

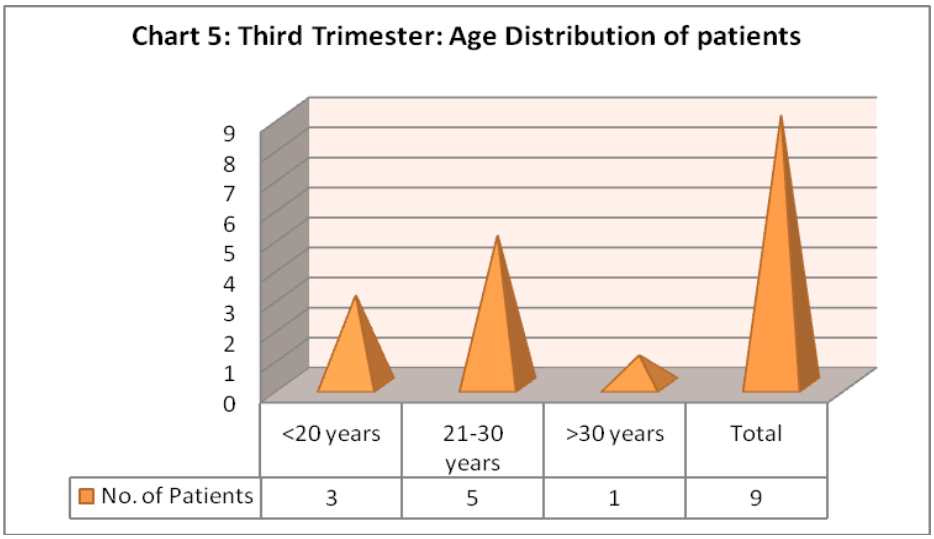


3.3.1.3 *For Third Trimester*

Table 5, showing, percent distribution of pregnant female patients according to their Age in Third Trimester period, out of total 09 pregnant female patients with UTI.

Table 5. For Third Trimester Age Distribution of patients

Third Trimester		
Age	**No. of Patients**	**Percent (%)**
<20 years	**03**	**33.33**
21-30 years	**05**	**55.55**
>30 years	**01**	**11.11**
Total	**09**	**100%**

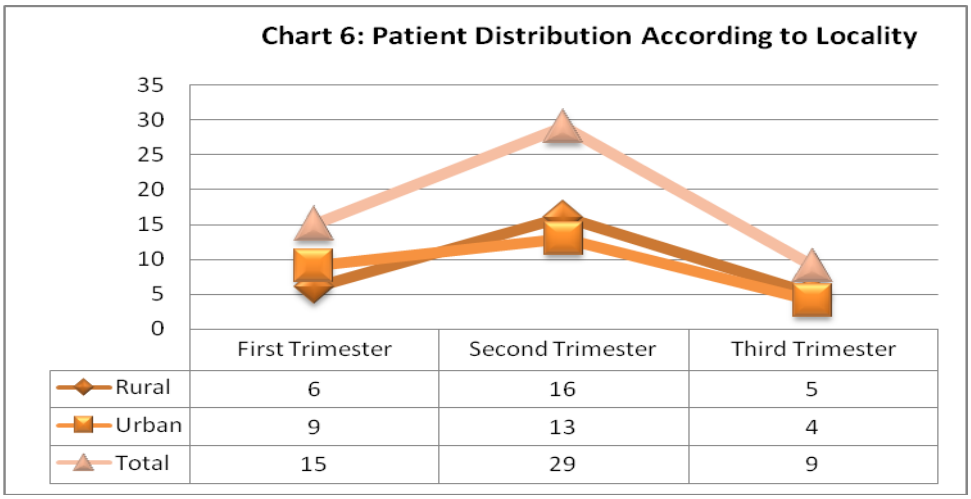


3.3.2 *Distribution of patients according to their Locality*

Table 6, showing, distribution of pregnant female patients according to their locality in gestation period, out of total 53 pregnant female patients with UTI.

Table 6. Patient Distribution According to Locality

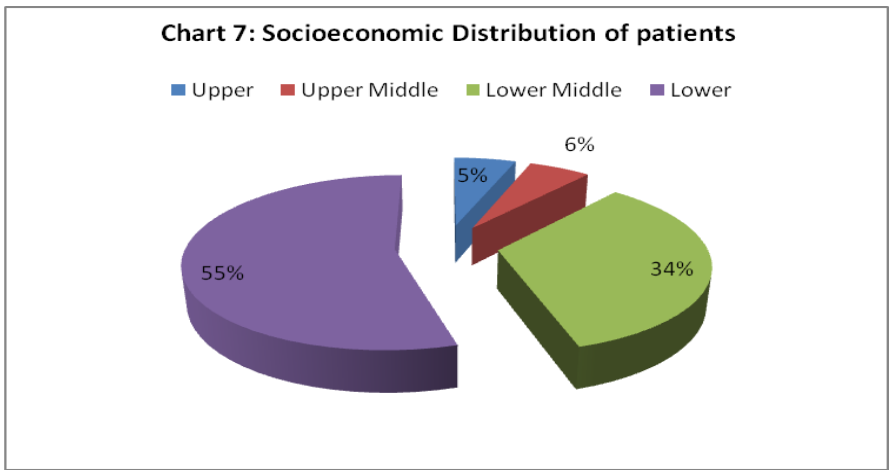
Number of Patients			
Locality	**First Trimester**	**Second Trimester**	**Third Trimester**
Rural	**06**	**16**	**05**
Urban	**09**	**13**	**04**
Total	**15**	**29**	**09**



3.3.3 *Distribution of patients according to their Socioeconomic Status*

Table 7. Socioeconomic Distribution of patients

Socioeconomic Status	Number of Patients	Percent (%) Distribution
Upper	03	5.66
Upper Middle	03	5.66
Lower Middle	18	33.96
Lower	29	54.71
Total	53	100%



3.4 Clinical Observation Detail of Patients

3.4.1 Bacteriuria in Pregnant female patients with UTI

Table 8. Bacteriuria in Pregnant female patients with UTI

Bacteriuria	Number of Patients	Percent (%) Distribution
Symptomatic Bacteriuria	19	35.84
Asymptomatic Bacteriuria	34	64.15
Total	53	100%

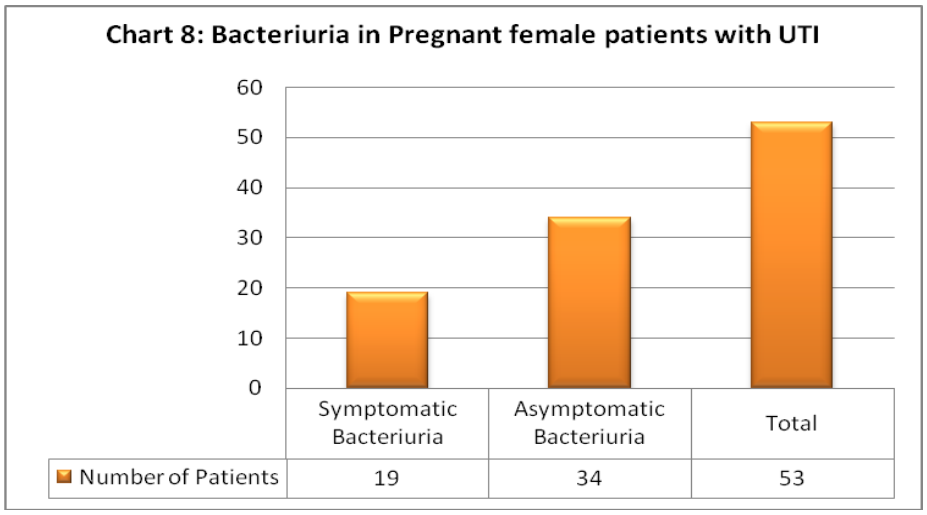


Table 9. Asymptomatic Bacteriuria in Pregnant female patients with UTI according to Gestation Period.

Asymptomatic Bacteriuria		
Gestation Period	Number of Patients	Percent (%) Distribution
First Trimester	09	26.47
Second Trimester	20	58.82
Third Trimester	05	14.70
Total	34	100%

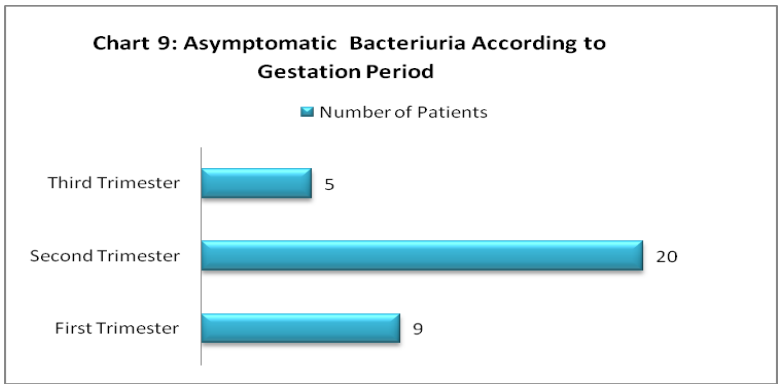
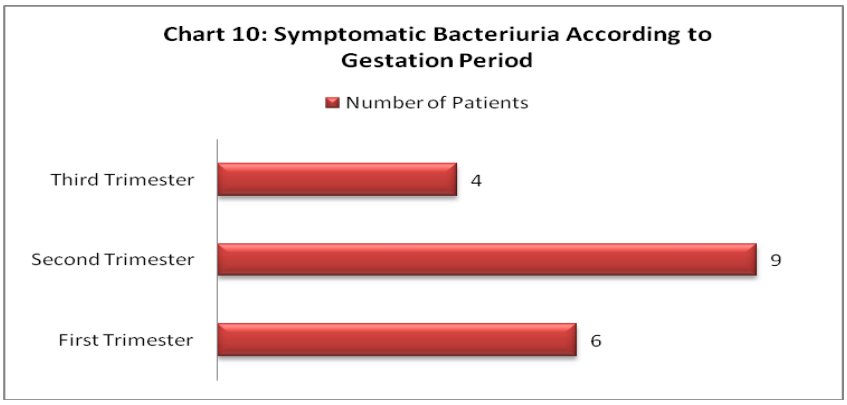


Table 10. Symptomatic Bacteriuria in Pregnant female patients with UTI according to Gestation Period.

Symptomatic Bacteriuria		
Gestation Period	**Number of Patients**	**Percent (%) Distribution**
First Trimester	**06**	**31.57**
Second Trimester	**09**	**47.36**
Third Trimester	**04**	**21.05**
Total	**19**	**100%**



3.4.2 *Distribution of pregnant female patients with UTI according to complication*

Table 11. Distribution of Patients according to Complications

Complications	Number of Patients	Percent (%) Distribution
Complicated UTI (Pyelonephritis)	**0**	**00**
Uncomplicated UTI (Cystitis, Urithritis)	**19**	**64.15**
Total	**19**	**100%**

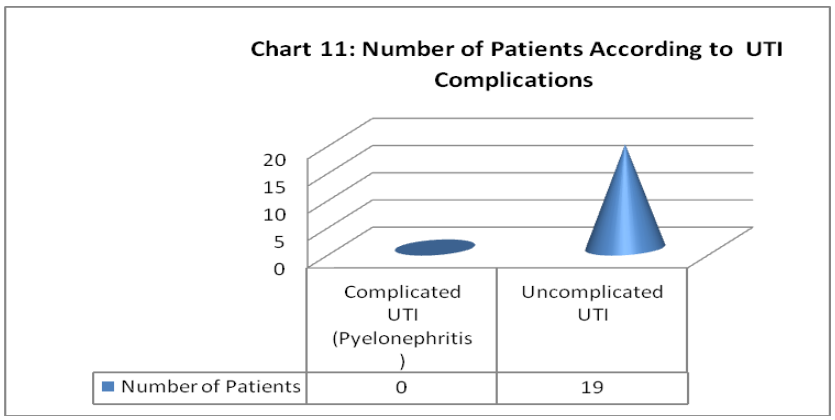


Table 12. Distribution of Uncomplicated UTI Patients according to Gestation Period.

Uncomplicated UTI Patients (Urithritis)		
Gestation Period	**Number of Patients**	**Percent (%) Distribution**
First Trimester	**05**	**38.46**
Second Trimester	**04**	**30.76**
Third Trimester	**04**	**30.76**
Total	**13**	**100%**

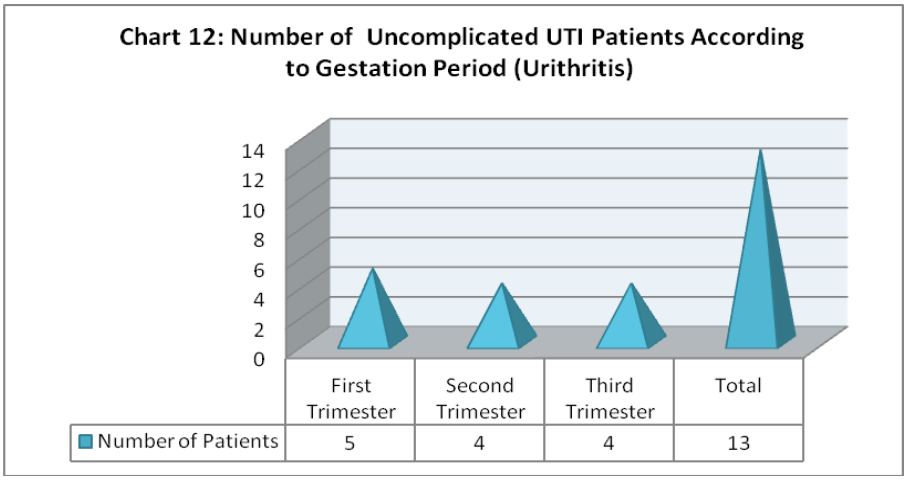
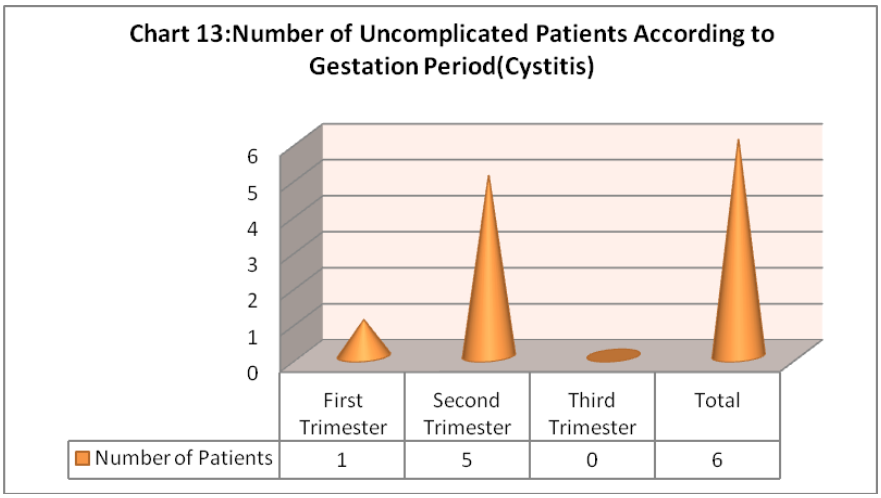


Table 13. Distribution of Uncomplicated UTI Patients according to Gestation Period.

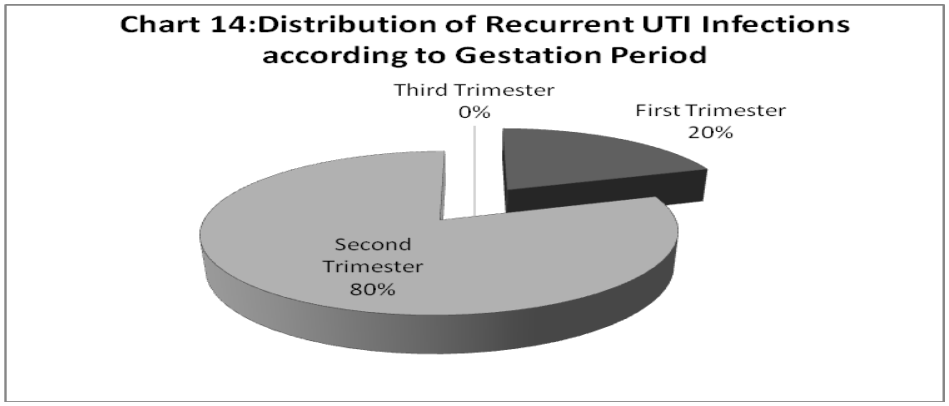
Uncomplicated UTI Patients (Cystitis)		
Gestation Period	**Number of Patients**	**Percent (%) Distribution**
First Trimester	**01**	**16.66**
Second Trimester	**05**	**83.33**
Third Trimester	**00**	**00**
Total	**06**	**100%**



3.4.3 ***Distribution of pregnant female patients with UTI according to Recurrent Infections***

Table 14. Distribution of Recurrent UTI Infections according to Gestation Period.

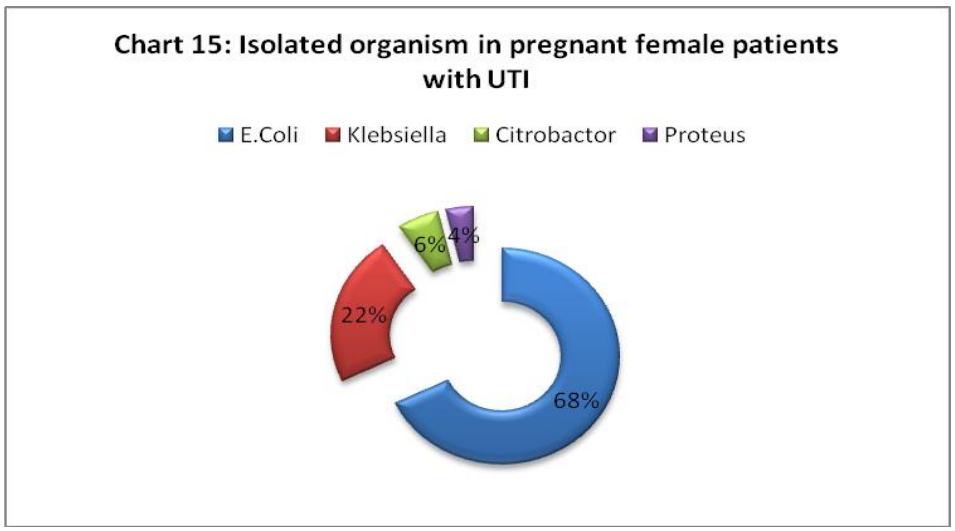
Recurrent UTI Infection Patients		
Gestation Period	**Number of Patients**	**Percent (%) Distribution**
First Trimester	**01**	**16.66**
Second Trimester	**04**	**80.00**
Third Trimester	**00**	**00**
Total	**05**	**100%**



3.4.4 *Isolated organism in pregnant female patients with UTI*

Table 15. Isolated organism in pregnant female patients with UTI

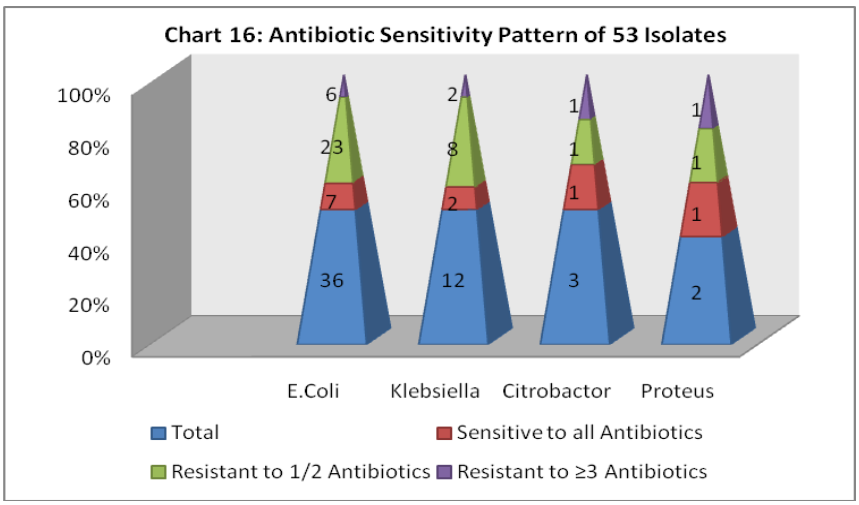
Isolated Organism	Number of Patients	Percent (%) Distribution
E.Coli	**36**	**67.92**
Klebsiella	**12**	**22.64**
Citrobactor	**3**	**5.66**
Proteus	**2**	**3.77**
Total	**53**	**100%**



3.4.5 *Antibiotic Sensitivity Pattern of 53 Isolates*

Table 16. Antibiotic Sensitivity Pattern of 53 Isolates

Isolated Organism	Total Patients	Sensitive to all Antibiotics	Resistant to 1/2 Antibiotics	Resistant to ≥3 Antibiotics
E.Coli	**36**	**07**	**23**	**06**
Klebsiella	**12**	**02**	**08**	**02**
Citrobactor	**3**	**01**	**01**	**01**
Proteus	**2**	**01**	**01**	**01**
Total	**53**			



3.4.6 General *Antibiotic Susceptibility for 53 Isolates*

To the study the effectiveness of the antibiotics against the isolated organism thirteen antibiotics were used for the susceptibility study against the isolated organism.

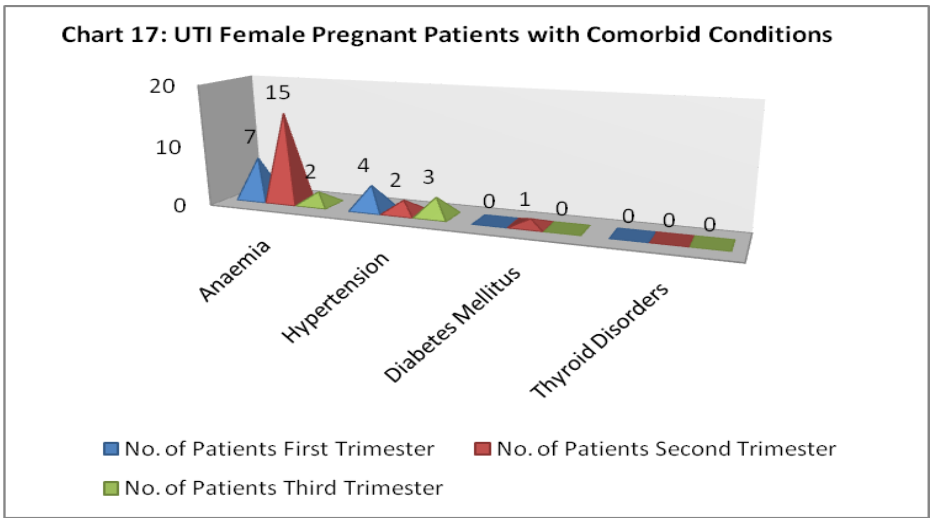
Table 17. General Antibiotic Sensitivity Pattern of 53 Isolates

S.No.	Antibiotic Used	Percentage of susceptibility
1	Amoxicillin	100%
2	Ampicillin	67%
3	Amikacin	100%
4	Nitrofurantoin	89%
5	Nalidixic acid	50%
6	Ciprofloxacin	80%
7	Norfloxacin	81%
8	Levofloxacin	80%
9	Cotrimoxazole	71%
10	Cefpodoxime	92%
11	Cefalexin	90%
12	Ceftriaxone	96%
13	Gentamycin	86%

3.4.7 *Patients distribution according to comorbidity*

Table 18. UTI Female Pregnant Patients with Comorbid Conditions

Comorbid Conditions	No. of Patients First Trimester	No. of Patients Second Trimester	No. of Patients Third Trimester
Anaemia	07	15	02
Hypertension	04	02	03
Diabetes Mellitus	00	01	00
Thyroid Disorders	00	00	00



3.5 Prescription Pattern Details

Table 19. Antibiotic Prescription prescribed for Pregnant Female Patients with UTI in First Trimester as per Antibiotic Sensitivity

Antibiotic Prescribed	No. of Patients First Trimester	(%) Percent Distribution
Nitrofurantoin	07	46.66
Ampicillin	02	13.33
Amoxicillin	02	13.33
Cotrimoxazole	01	0.66
Cefalexin	02	13.33
Total	15	100%

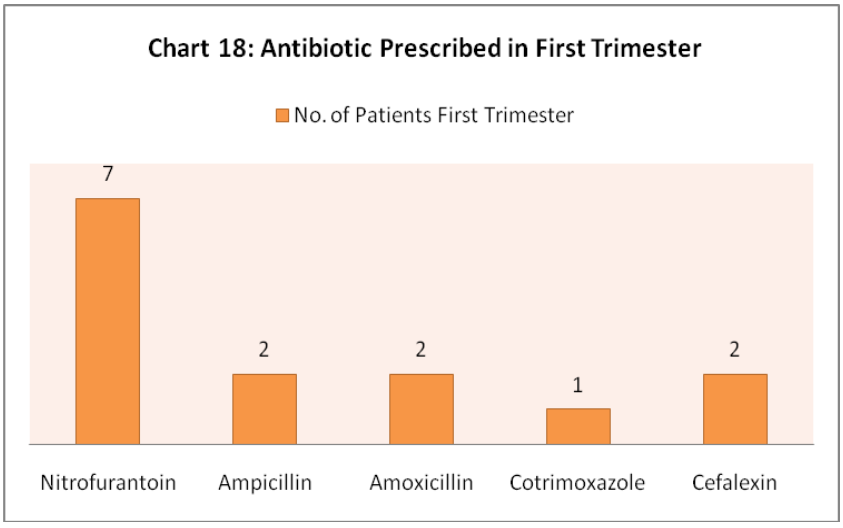


Table 20. Antibiotic Prescription prescribed for Pregnant Female Patients with UTI in Second Trimester as per Antibiotic Sensitivity

Antibiotic Prescribed	No. of Patients Second Trimester	(%) Percent Distribution
Nitrofurantoin	12	41.37
Nalidixic Acid	05	17.24
Amikacin	02	6.89
Amoxicillin	02	6.89
Norfloxacin	03	10.34
Cefalexin	04	13.79
Gentamycin	01	3.44
Total	29	100%

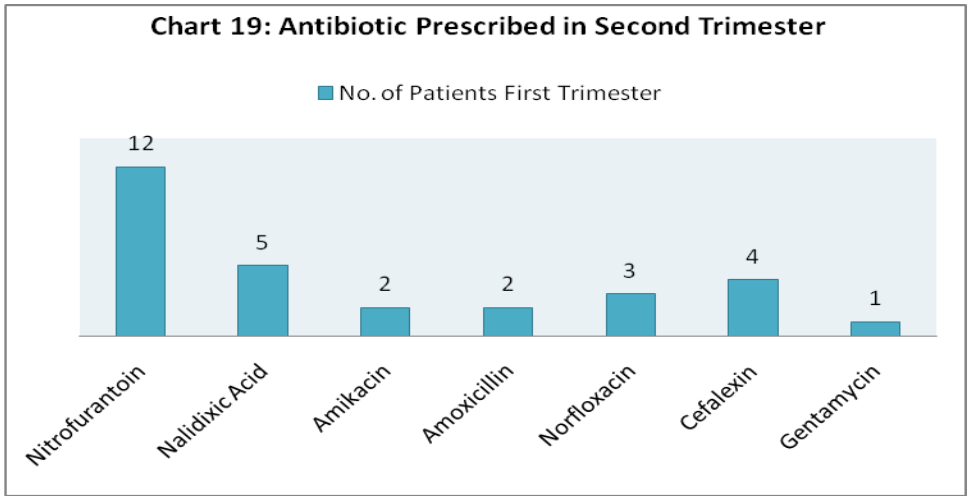


Table 21. Antibiotic Prescription prescribed for Pregnant Female Patients with UTI in Third Trimester as per Antibiotic Sensitivity

Antibiotic Prescribed	No. of Patients Third Trimester	(%) Percent Distribution
Ciprofloxacin	05	55.55
Norfloxacin	02	22.22
Levofloxacin	02	22.22
Total	09	100%

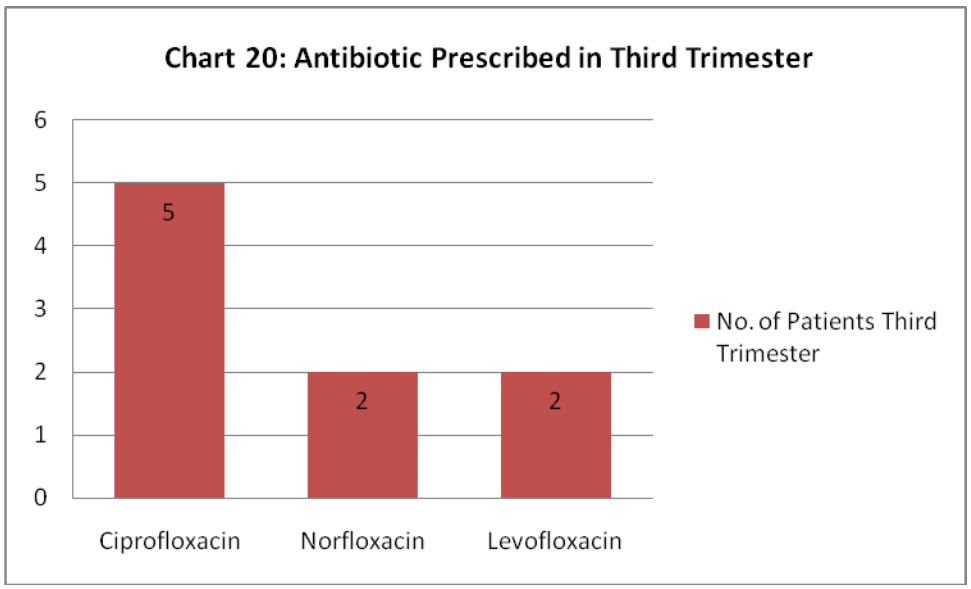


Table 21. Antibiotic Prescription with other drugs prescribed for Pregnant Female Patients with UTI in First Trimester

Antibiotic Prescribed	No. of Patients First Trimester	(%) Percent Distribution
Nitrofurantoin+ Phenazopyridine	03	20
Amoxicillin+ Phenazopyridine+ Methyldopa	02	100
Cotrimoxazole+ Folic Acid	01	100
Nitrofurantoin + Iron+ Folic Acid	03	33.33
Nitrofurantoin + Methyldopa	02	13.33

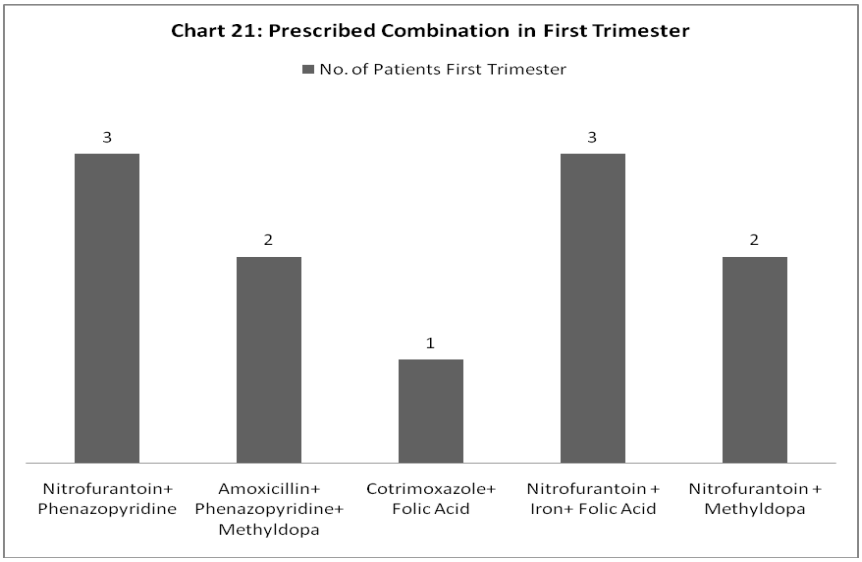


Table 22. Antibiotic Prescription with other drugs prescribed for Pregnant Female Patients with UTI in Second Trimester

Antibiotic Prescribed	No. of Patients Second Trimester	(%) Percent Distribution
Nitrofurantoin+ Phenazopyridine	09	75
Nalidixic Acid+ Phenazopyridine	03	60
Norfloxacin+ Phenazopyridine	01	33.33
Cefalexin+ Phenazopyridine	01	25
Nitrofurantoin+ Folic Acid	07	58.33
Nalidixic Acid+ folic Acid	05	40
Cefalexin+ Methyldopa	01	25
Nitrofurantoin+ Glibenclamide	01	08.33

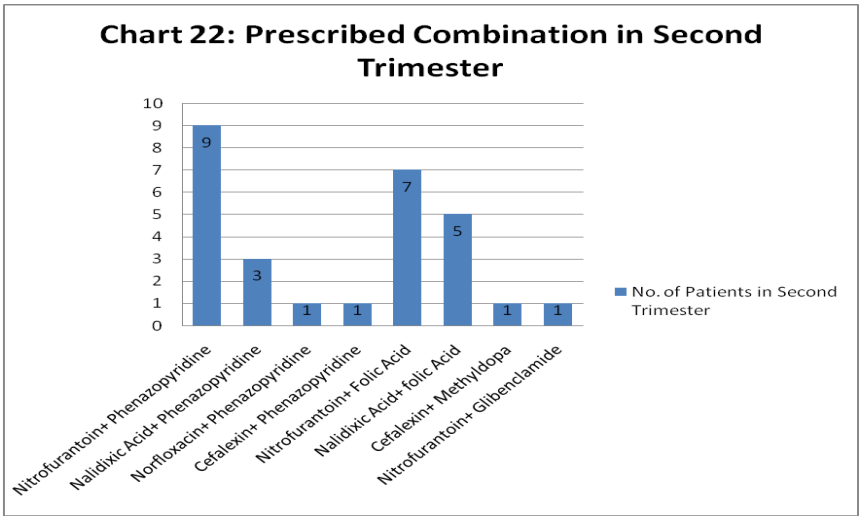


Table 23. Antibiotic Prescription with other drugs prescribed for Pregnant Female Patients with UTI in Third Trimester

Antibiotic Prescribed	No. of Patients Third Trimester	(%) Percent Distribution
Ciprofloxacin+ Folic Acid	01	40
Ciprofloxacin+ Methyldopa	01	20
Norfloxacin+ Folic Acid	01	50
Norfloxacin+ Hydralazine	01	50
Levofloxacin+ Methyldopa	01	50

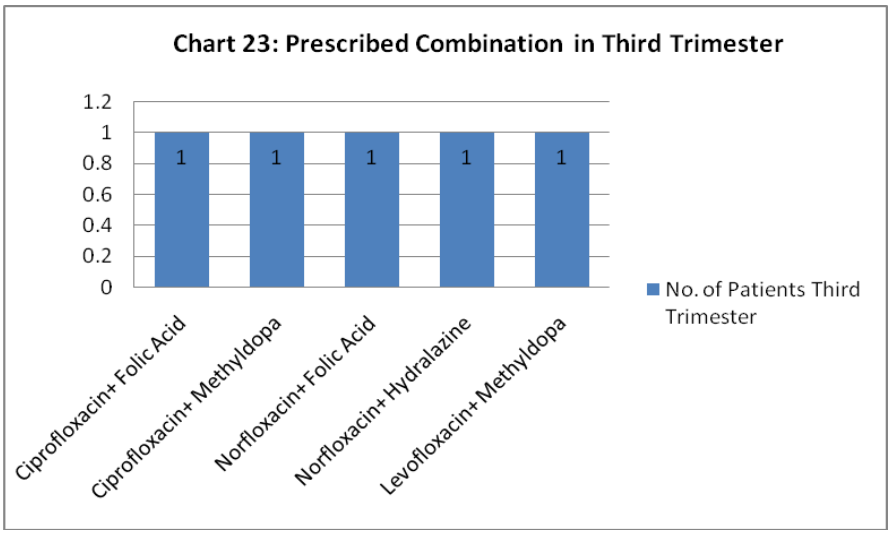
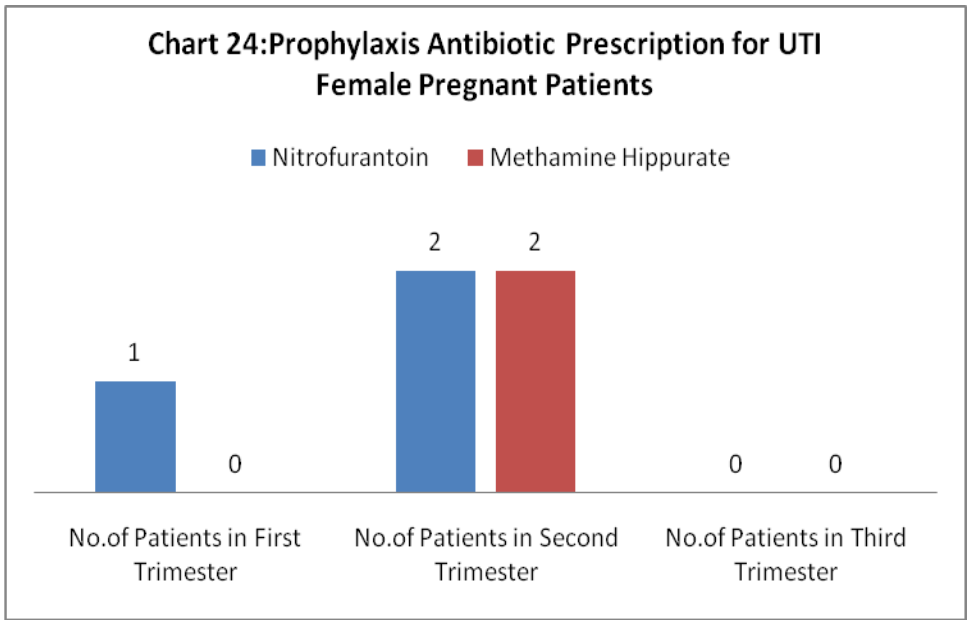


Table 24. Prophylaxis Antibiotic Prescription for UTI Female Pregnant Patients

Prophylactic Prescription	No. of Patients First Trimester	No. of Patients Second Trimester	No. of Patients Third Trimester
Nitrofurantoin	01	02	00
Methanamine Hippurate	00	02	00



4. DISCUSSION

Discussion of observations is an essential and important part in any scientific clinical research. Discussion is based on the observations and proper analysis. This prospective analysis comprises the prevalence of UTI in 53 pregnant female patients with study of their antibiotic prescription pattern. The findings derived from analysis of variable data are subjected to discussion. Interpretation of the result observed will enable to health care personnel's in formulating the solutions.

Urinary tract infections (UTI's) are one of the most common infections occur during pregnancy. The intent of this study is to determine Rates of prescribed patterns of antibiotics for UTI's in pregnant females according to empirical Guideline for UTI treatments along with any complications raised due to irrational use of antimicrobial Therapy. Different research studies concluded varied incidence of urinary tract infection in pregnant women's. This present prospective study shows that the prevalence rate of urinary tract infection in pregnancy is 26.5%.(53 UTI cases out of screened 200 patients) Controversially, many literature reviewed showed that in pregnant women's UTI incidence can be as high as 8 to 20%.

Present study indicates the incidence of UTI in pregnancy in relation to gestation period shows that max. UTI patients are from second Trimester (55%) in comparison to first trimester (28%). Least rate of UTI incidence was in Third trimester (17%) due to clinical supervision of pregnant females from starting of gestation.

Observation indicates incidence of UTI in relation to age groups under three gestation periods, max. UTI patients were under age group 21 to 30 years of all gestation periods. In first trimester, Second Trimester and third trimester there were 68%, 62% and 56% respectively UTI patients were under age group 21-30 years. This prevalence was due to physiological changes that occur majorly in second trimester. Incidence of UTI pregnant patients under age group <20 years was more in both 1st and 3rd trimester than under age group >30 years. These findings indicate that no relationship exists between age and incidence of UTI in pregnancy.

Incidence of UTI in relation to locality, observation shows, No significant difference in incidence of UTI in between rural and urban locality. Although rural UTI patients were more in number (55%) than Urban background. Again patients were more in 2nd trimester than 1st and 3rd trimester. Lower socioeconomic status (56%) and lack of proper hygine can be reason of this nearly equal distribution of UTI incidence in rural and urban populations.

Urinary Tract Infections are confirmed on the basis of bacteriuria present. This prospective study supports various reviews for higher rates of occurrence of asymptomatic bacteriuria (No symptoms). The present study indicates that there was max. patients were asymptomatic(64%) and from 2nd trimester(59%) in comparision to 1st trimester(26%) and 3rd trimester(15%). Observations of incidence of symptomatic Bacteriuria showed again 2nd trimester was leading with 47% incidence rate than 1st and 3rd trimester. This study indicates occurance of UTI was more in 2nd and 1st trimester in comparison to 3rd trimester which can be due to awareness and proper medical supervision near term.

Urinary tract infections are generally uncomplicated in non pregnant females but becomes complicated in pregnancy specially when left untreated. Present study showed incidence of uncomplicated urithritis and cystitis (65%) and No complicated UTI cases (pyelonephritis). Gestation distribution of uncomplicated UTI patients showed that max. urithritis(38%) was in 1st trimester and max. cystitis (83%) was in 2nd trimester. Incidence of urithritis in 2nd and 3rd trimester was equal. No cystitis was reported in 3rd trimester. Incidence of recurrent infections was more in 2nd trimester (80)% than in 1st trimester(20%). Again 3rd trimester reported zero incidence of recurrent UTI infections.

Present study shows the frequently isolated organism in UTI in pregnancy include species of Enterobacteriaceae especially Escherichia coli and others citrobactor and proteus. Klebsiella was the second (22%) most isolated organism. Cephalosporin's with more than 90% general susceptibility than fluoroquinolones (<90%). Average general susceptibility was found with Ampicillin and sulphonamides.

Percent distribution of other Comorbid condition indicates that Anaemia and Hypertension was common Comorbid conditions exist in all trimesters. Anaemia was more common in 2nd trimester than 1st trimester. Although Iron and folic acid supplement started early from the beginning of gestation period. Hypertension commonly exists in pregnant females. Hypertension was more common in First trimester and third trimester patients. Only one pregnant female patient in 2nd trimester was found with gestational diabetes. Generally insulin is the DOC for gestational diabetes but in this study we observed OHA Glibenclamide was prescribed for

treating Diabetes. No thyroid disorder cases reported in all trimesters.

In relation to primary objective of this study, Antibiotic prescription pattern in different gestation periods, this study reveals that Nitrofurantoin was the choice of drug prescribed to treat asymptomatic as well as symptomatic bacteriuria. Although penicillin's, ciphalosporins and fluoroquinolones were also alternative choices. All antibiotic prescription was based on antibiotic sensitivity to culture organism. Present study shows max UTI patients of 1st trimester received Nitrofurantoin (47%) as a monotherapy. Due to Antibiotic sensitivity to cultural organism, ciphalosporins and fluoroquinolones was also prescribed as monotherapy. Only single UTI pregnant patient shows sensitivity to cotrimoxazole in first trimester. Cotrimoxazole was prescribed with folic acid supplement. As a safe nonteratogenic drug nitrofurantoin was prescribed to max patients with others drugs in combination. Phenazopyridine an urinary analgesic also prescribed in max. number in combination with nitrofurantoin.

Data analysis of observation of 2nd trimester showed that higher percent distribution of patients were received Nitrofurantoin with other drug combinations. Max. no of patients (75%) received Nitrofurantoin with phenazopyridine in comparision to other urinary antibiotics. Patients with Vit.B12 deficiency were also receiving Nitofurantoin with folic acid supplement. Only single Hypertensive pregnant received Methyldopa with ciphalosporins. Only single case of gestational diabetes received nitrofurantoin with glibenclamide with safer indication. Nitrofurantoin was again highly prescribed urinary antibiotic drug with other drug combination.

Present study revealed in 3rd trimester fluoroquinolones were better treatment options with other drugs combination. All pregnant female patients with or without Comorbid conditions received fluoroquinolones.

Present study showed that reoccurrence of infection cases was more frequent in pregnant females of Second trimester in comparison to third trimester where no patient reported. This was due to physiological change occurs more promptly in second trimester. Single case was reported in pregnant patient of first trimester. Nitrofurantoin and methanamine hippurate was prescribed in equal distribution as prophylaxis treatment for UTI.

Present study reported rationale use of UTI antibiotics in pregnant female UTI patients which fully supported the primary objective of this study. As this study was a pilot study No adverse effects was reported with antibiotics prescribed in all trimesters as antibiotics were prescribed as per empirical guideline issued by ICMR and other authoritative organizations.

5. CONCLUSION

The present prospective, pilot, observational study was performed with the objective to determine rate of antibiotic prescription prescribing as per empirical guidelines. As the irrational prescribing of antibiotics will lead to unnecessary heath problems and increase expenditure for the patients. Prescribing pattern analyzed confirmed that Nitrofurantoin is a relatively inexpensive and safe drug for the treatment of UTI in pregnant female patients. Nitrofurantoin was the highest prescribing drug to treat UTIs in pregnant female patients. Cephalosporin and Quinolones were the second most commonly used drugs for the treatment of UTI. Fluroquinolones was not considered as first line therapy due to proneness to microbial resistance. According to this study antibiotics prescribed was as per empirical guideline. This study has shown that the prevalence of urinary tract infection during pregnancy is 26.5% and *E.coli* is the most common causative agents of UTI in pregnancy.

Data created and analyzed under this present study serves as a frame work for further studies to investigate the scope for educational intervention, action plan generation and improvement in prescribing patterns so as to improve the quality of patient care. Comparing the current prescribing pattern of antibiotics with the standard treatment/ prescription guidelines will enhance the effectiveness of treatment.

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