“Prevalence of urinary tract infection in pregnancy at first antenatal care visit – A hospital based study at the teaching hospital attached to KAHER’s J N Medical College, Belagavi”

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ABBREVIATIONS

UTI	–	Urinary Tract Infection
ASB	–	Asymptomatic Bacteriuria
E.coli	–	Escherichia coli
Staph.Aureus	–	Staphylococcus aureus
CONS	–	Coagulase Negative Staphylococcus
AMP	–	Ampicillin
AMC	–	Amoxicillin Clavulanic acid
NIT	–	Nitrofurantoin
CXM	–	Cotrimoxazole
FOS	–	Fosfomycin
CRO	–	Ceftriaxone
KAHER	–	KLE Academy of Higher Education and Research
KLE	–	Karnatak Lingayat Education society
ml	–	millilitre
Vs	-	Versus
OR	–	Odds Ratio
CI	–	Confidence Interval
PPROM	–	Preterm Premature Rupture Of Membranes
FGR	–	Fetal Growth Restriction
LBW	–	Low Birth Weight
CTRI	–	Clinical Trials Registry- India
NICE	–	National Institute for Health and Care Excellence
NA	–	not available
STROBE	–	Strengthening The Reporting of Observational study in Epidemiology

ABSTRACT

Prevalence of urinary tract infection in pregnancy at first antenatal care visit – a hospital based study at the teaching hospital attached to KAHER's J N Medical College, Belagavi

Background & Objectives:

Urinary tract infection (UTI) is one the most common bacterial infections in pregnancy. The anatomical & physiological changes that occur during pregnancy predispose to develop urinary tract infection. UTI (symptomatic and asymptomatic bacteriuria) can lead to serious maternal and perinatal complications if left untreated. This objective of the study is to determine the prevalence of urinary tract infection in pregnancy at first antenatal care visit to the teaching hospital attached to KAHER's JN Medical College, Belagavi and the effect of UTI on pregnancy outcome.

Methods:

This is a prospective cross- sectional study conducted in the teaching hospital attached to KAHER's J N Medical College, Belagavi. Pregnant women without any known renal disease attending the hospital for their first antenatal care visit from January 2018 to December 2018 were enrolled into the study. UTI was diagnosed using mid stream urine culture and colony count yielding bacterial growth of more than or equal to 10^5/ml was taken as significant. The pregnant women were followed up to delivery to find the pregnancy outcome.

Results:

Out of 1602 women analysed, 264 had significant bacteriuria which constitutes 16.5%. Out of 264 women with UTI, 57.57% (152) women were symptomatic and 42.42% (112) women were asymptomatic. There is a significant association between UTI and anaemia, previous history of UTI, catheterisation and

Diabetes. Escherichia coli was the most frequently isolated pathogen followed by Klebsiella pneumoniae, Citrobacter and Staphylococcus aureus. UTI was significantly associated with preterm labour, FGR and PPROM among pregnancy outcomes.

Interpretation & Conclusion:

It is evident from this study that the prevalence of UTI is high among pregnant women and that it can lead to serious pregnancy complications. Therefore it is recommended to screen UTI as early as possible to diagnose and treat the infection accordingly. It is also noted that the prevalence of urinary tract infection is more in third trimester, suggesting rescreening the women in the early third trimester to prevent the maternal and perinatal complications associated with UTI.

Keywords: Urinary tract infection, pregnancy, prevalence, outcome.

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INTRODUCTION

Urinary Tract Infection (UTI) is one of the most common infections during pregnancy. UTI stands the second most common complication after anemia during pregnancy.[1]

UTI in pregnancy may be either symptomatic or asymptomatic infection. The presence of 10^5 colony-forming units per millilitre (cfu/ml) of a single uropathogen in the presence of symptoms is symptomatic bacteriuria. The symptoms include dysuria, urgency, frequency &nocturia in cystitis and fever, flank pain, nausea, vomiting, costovertebral angle tenderness in pyelonephritis. The presence of significant bacteriuria in the absence of symptoms is asymptomatic bacteriuria (ASB). ASB is of importance as there will be a delay in seeking care due to lack of any symptoms.[1-3]

In India, the prevalence of UTI in pregnancy ranges from 3% to 24 %.[4-6] The reported prevalence of asymptomatic bacteriuria around the world ranges from 2 % to 10%.[5] This high prevalence rate can be attributed to various reasons.[7-9] In general, women are more prone to develop urinary tract infection (the short length of urethra i.e., 3-4 cm and the exposure of the urogenital system to bacteria during sexual intercourse facilitate the ascent of microorganisms causing UTI). In addition to the above, pregnancy can result in specific physiological and anatomical changes which cause UTI.[10-12] Progesterone induces smooth muscle relaxation of the bladder and the ureter leading to urinary stasis and vesicoureteric reflux. Also, glycosuria in pregnancy due to impaired tubular resorption provides an excellent culture medium for the bacterial growth. Clothing habits, coital patterns including position, frequency, postcoital cleanliness, use of antibiotics, antiseptics – influence the personal hygiene and in turn reflect on the incidence of UTI.

Many normal perineal floras are implicated in the causation of UTI. Most commonly gram negative organisms are implicated in which Escherichia coli is found in approximately 75 to 90 % of all bacteriuria.[12] Other organisms include Klebsiella pneumonia, Providencia species, Pseudomonas aeruginosa, Enterobacter, Staphylococcus saprophyticus, Staphylococcus aureus, Enterococcus faecalis are the gram positive organisms which may cause infection in 5% to 15% of the cases of UTI. [9]

Both symptomatic and asymptomatic bacteriuria are associated with several pregnancy related complications. It is observed that there is an increased incidence of pre-eclampsia, preterm delivery, preterm premature rupture of membranes, amnionitis and anemia with urinary tract infection in pregnancy. [13-15]

If untreated, asymptomatic bacteriuria can lead to acute cystitis (40%) and pyelonephritis (25-30%) in pregnancy, which constitutes 70% of the cases of symptomatic UTI. Thus, there is an urgent need to screen UTI since urinary tract infections, including both symptomatic and asymptomatic infection, are associated with serious maternal and perinatal complications. By appropriate screening and timely management, we can prevent maternal complications like acute pyelonephritis and chronic renal failure and also reduce the chances of prematurity and foetal mortality in the offspring.[15]There is no strict guideline for the routine screening of UTI in pregnancy in India. Screening of UTI with urine culture in early pregnancy is mentioned in most of the guidelines including the United States Preventive Services Task Force and National Institute for Health and Care Excellence (NICE). [16]

The data on the prevalence of UTI in pregnancy is limited in this part of the country. This study thus aims to find out the prevalence of urinary tract infection in pregnancy at the first antenatal care visit.

OBJECTIVES

Primary objective

To find out the prevalence of urinary tract infection in pregnancy at the first antenatal care visit.

Secondary objective

To find out the effect of urinary tract infection on pregnancy.

REVIEW OF LITERATURE

Urinary tract infections have been described since ancient times. The first documented description is in the "Ebers Papyrus" dated to 1550 BC.[8] It was described by the Egyptians as "sending forth heat from the bladder".[8]

The bacterial invasion leading to inflammatory response of the urothelium and subsequent bacteriuria and pyuria constitutes urinary tract infection.[1]UTI in pregnant women is quite common. The prevalence of urinary tract infection varies from region to region.

The prevalence of urinary tract infection in pregnancy was found to range from 3.3% to 56% with sample sizes of 200 to 1537 pregnant women.[17-22] Amongst this, the prevalence of asymptomatic bacteriuria ranged from 2 % to 25%.[19-22]

The factors like maternal age, occupation or parity showed no significance while past history of urinary tract infection, history of diabetes mellitus and anemia were found to show significance in the occurrence of UTI.[17, 20, 21]

The organisms causing urinary infection in pregnancy and those in general population are the same. Escherichia coli is the most commonly isolated pathogen in UTI in pregnancy which is shown in various studies. [21-27]The other organisms include Klebsiella, Staphylococcus aureus, Citrobacter and Pseudomonas aeruginosa.

There are several studies which describes the association of UTI with pregnancy complications.[28-30] Untreated urinary tract infection is associated with preterm delivery, low birth weight infants, stillbirths and neonatal death.[31]There are studies which differ this.[32,33]

The risk of preterm delivery and low birth weight babies among women with asymptomatic UTI was found to be 50% and 33% in a meta-analysis of 19 studies. [31]

Other pregnancy complications have also been associated with bacteriuria. Urinary tract infection was found to have an increased association with pyelonephritis in a study conducted among 1,500 pregnant women.[33]

Adverse pregnancy complications are seen to occur with pyelonephritis. It has been found that the risk of preterm delivery was more in pregnancies complicated with pyelonephritis in a study conducted on a large scale(among 5,00,000 pregnancies) during a period of 18 years(10.3% versus 7.9% among those who did not have pyelonephritis).[34] No association was found between pyelonephritis and intrauterine death or early neonatal death. Pyelonephritis is also related to risks like anaemia, septicaemia leading to respiratory distress.[35] There is no change in the incidence of pregnancy complications due to UTI with different trimesters.[36]

METHODOLOGY

Study design: A hospital based cross sectional study

Study period: 12 months(January 2018 to December 2018)

Source of data: Pregnant women coming for their first antenatal care visit to outpatient department of teaching hospital attached to KAHER's J N Medical College, Belagavi during the study period.

Sample size:

$$n = \frac{z_{\alpha}^{2} P(1 - P)}{d^{2}}$$

Where p is the percentage of prevalence and

d is the percentage likely difference in the prevalence.

With P = 0.20, d = 5% of p

The value of n is 1600.

Selection criteria

- **Inclusion Criteria**

1. Antenatal women in their first antenatal visit at the teaching hospital attached to KAHER's J N Medical College, Belagavi
2. Any gestational age

- **Exclusion Criteria:**

1. Antenatal women with proven renal disease
2. Antibiotic therapy usage in the last 72 hours

Ethical clearance:

Prior to the commencement, the study was approved by the Ethical and Research Committee, Jawaharlal Nehru Medical College, Belagavi.

(Annexure 1 - Letter number MDC/DOME/29 dated 22/11/2017)

This study was registered prospectively at Clinical Trials Registry- India (CTRI) with registration no- CTRI/2018/10/015942.

Informed consent:

All the participants fulfilling the selection criteria were explained about the purpose of the study and a written informed consent in their own vernacular language was obtained before enrolment.

Method of collection of data:

In antenatal clinic

All the pregnant women in their first antenatal visit at the teaching hospital attached to KAHER's J N Medical College, Belagavi were screened. The women fulfilling the selection criteria were enrolled in the study after obtaining their informed consent. The baseline information including the details of residence and the obstetric details were collected.

Midstream,clean catch urine samples were collected on the day of enrollment using wide mouthed, sterile containers. Patients were counseled on how to collect the urine sample.

Specimen Transportation

The collected urine samples (with the patient's name, number, time and date of collection) were transported at room temperature in a box to the culture lab in the Department of Microbiology within four hours.

In Microbiology lab

The samples were then subjected to urine routine microscopy and culture. Microscopic test included examining the centrifuged urine deposit at high magnification for pus cells, red cells, urine protein, epithelial cells, casts and crystals. Pus cells ≥ 5/ high power field was considered significant for infection.

The samples were then cultured and after overnight incubation on blood agar and Mac Conkey's agar at 37^0 C for 12-14 hours, colony counts yielding bacterial growth of $\geq 10^5$/ml were taken as significant in both symptomatic and asymptomatic pregnant women and were sent for gram staining. Novobiocin sensitivity was done for Gram positive cocci to identify Staphylococcus saprophyticus. Gram negative bacilli were processed for IMViC reaction.

Here, urinary tract infection was defined as the presence of at least 10^5 organisms per millilitre of urine in an asymptomatic patient or symptomatic patient with accompanying pyuria (≥ 5 WBCs/ mL). Women enrolled in the study were followed up for the pregnancy outcome.

Statistical Analysis

Data analysis was done using R i386.3.5.1 statistical software. Continuous data was represented in the form of mean ± SD and the categorical variables were represented by the frequency table. Association between categorical variable was studied using chi-square test/ Fisher test. Continuous data was compared using t-test/ Mann Whitney U-test. Trend test was done using Cochran Armitage test.

RESULTS

The study was conducted in the Department of Obstetrics and Gynaecology at the teaching hospital attached to KAHER's J N Medical College, Belagavi from January 2018 to December 2018.

A total of 1820 antenatal women were screened. Among whom, 40 women did not consent. Out of the remaining 1780 consented women, 72 samples were missed and 106 samples were contaminated. The remaining 1602 women were enrolled in the study.

264 out of the 1602 women had significant bacteriuria which constitutes 16.5%. Out of 264, 57.57% (152) women were symptomatic and 42.42% (112) women were asymptomatic. 83.5% (1338) women had no growth in culture.

Out of 1602 women, 244 women (15.23%) were lost to follow up and the remaining 1358 (84.77%) were followed up for pregnancy outcome.

Of the 1358 women, 1115 women (82.10%) had pregnancy termination at teaching hospital attached to KAHER and the information regarding the rest of the 243 women (17.89%) who had delivered at other hospitals was collected by telephonic communication. 1115 women who had in house delivery were further analysed.

The results of the analysis were reported as follows.

STROBE Diagram

(Strengthening the Reporting of Observational study in Epidemiology)

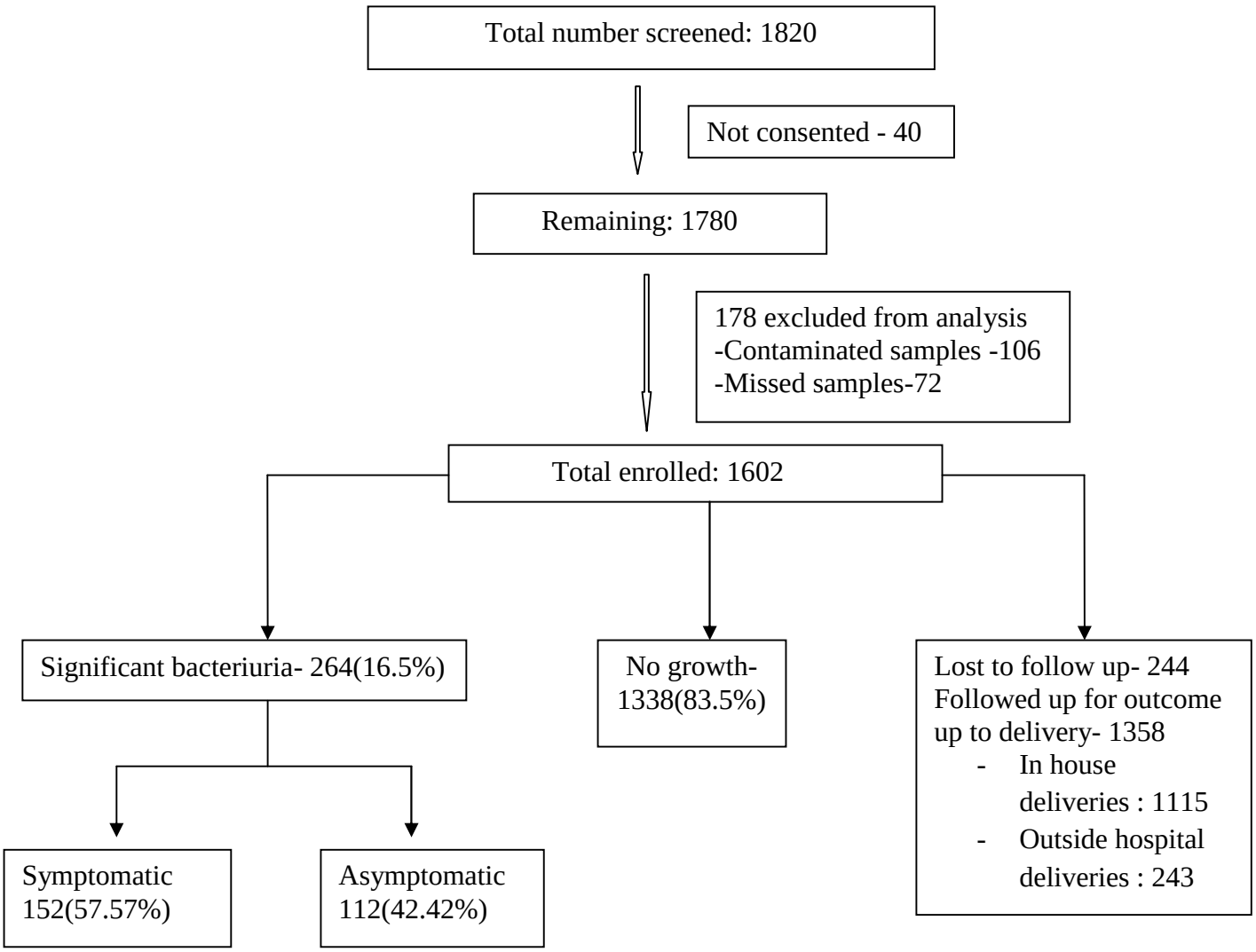


Table I: Distribution of cases by growth in culture

Significant Bacteriuria			Total
Yes (264) – 16.5%		**No growth**	
Symptomatic	**Asymptomatic**		
152 (9.50%)	112 (7%)	1338 (83.5%)	1602

Table I shows that among the total cases, 264(16.5%) had significant bacteriuria in which 152(9.50%) were symptomatic and remaining 112(7%) were asymptomatic. This is illustrated in figure I.

Figure I: Prevalence of urinary tract infection

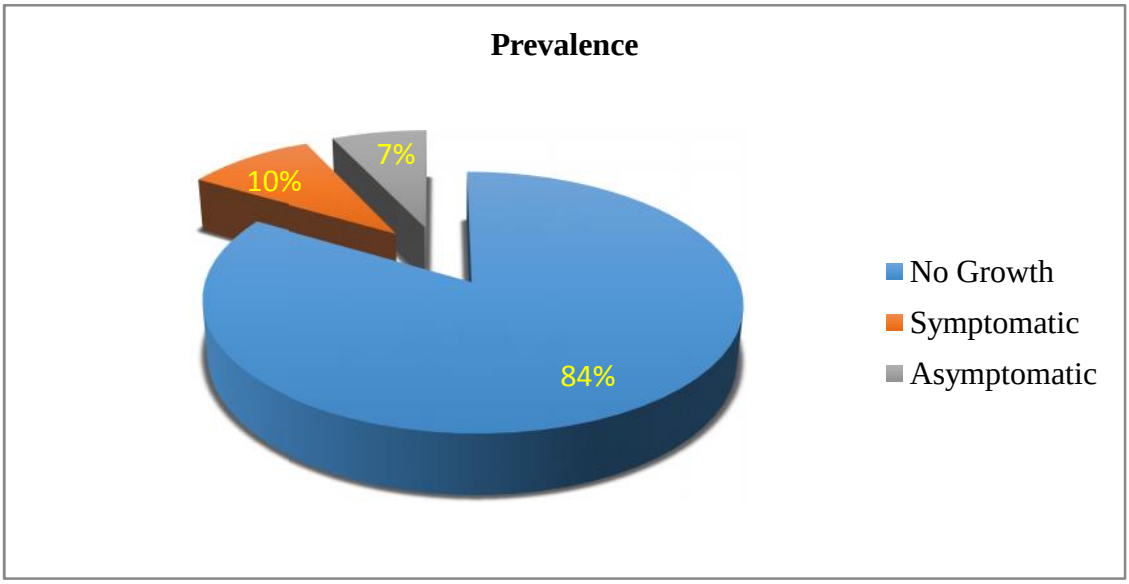


Table II: Prevalence of UTI by Age group

Age Group	With UTI	Without UTI	Total	P-value
≤ 20	47 (18.43%)	208 (81.57%)	255	0.7161
21-30	208 (16.69 %)	1038 (83.31%)	1246	
≥30	29 (28.71%)	72 (71.29%)	101	

Table II shows that the prevalence of UTI was high in the age group "≥30" years age group followed by "≤20" years. The least prevalence had occurred in "21-30" years aged population. The mean age in the UTI group is 24.24 ± 3.97 years and that in the non – UTI group is 24.28 ± 3.70 years. Using Cochran Armitage test, it is concluded that there is no increasing trend in UTI over age group.

Figure II: Prevalence of UTI by Age group

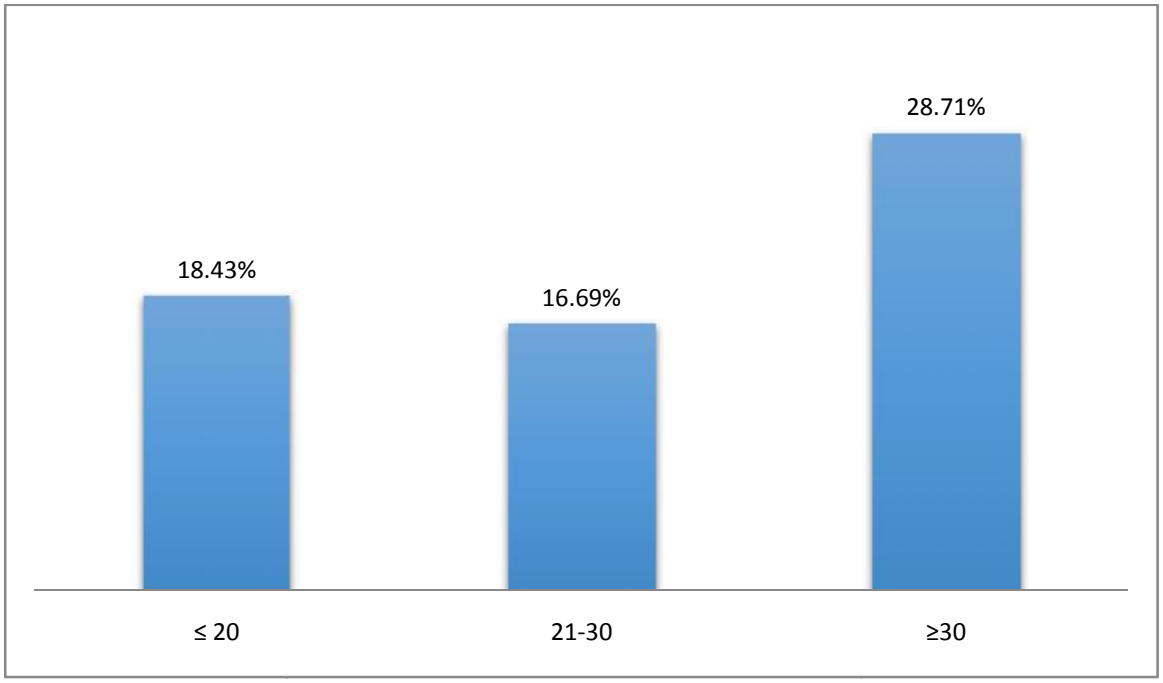


Table III: Association of period of gestation with UTI

Period of gestation	Total	With UTI	Percentage	P-value
Early pregnancy	121	22	18.18%	0.0692[#]
Mid pregnancy	625	82	13.12%	
Late pregnancy	856	160	18.69%	

[#] *Cochran Armitage test for increasing trend*

Early pregnancy: Up to 16 weeks; Mid: 16 weeks- 28 weeks; Late: More than 28 weeks

It is evident from table III that majority of the women seeking antenatal care in the hospital is in the third trimester (856 women). However, UTI is not significantly associated with period of gestation. This is shown in Figure III.

Figure III: Association of Gestation period with UTI

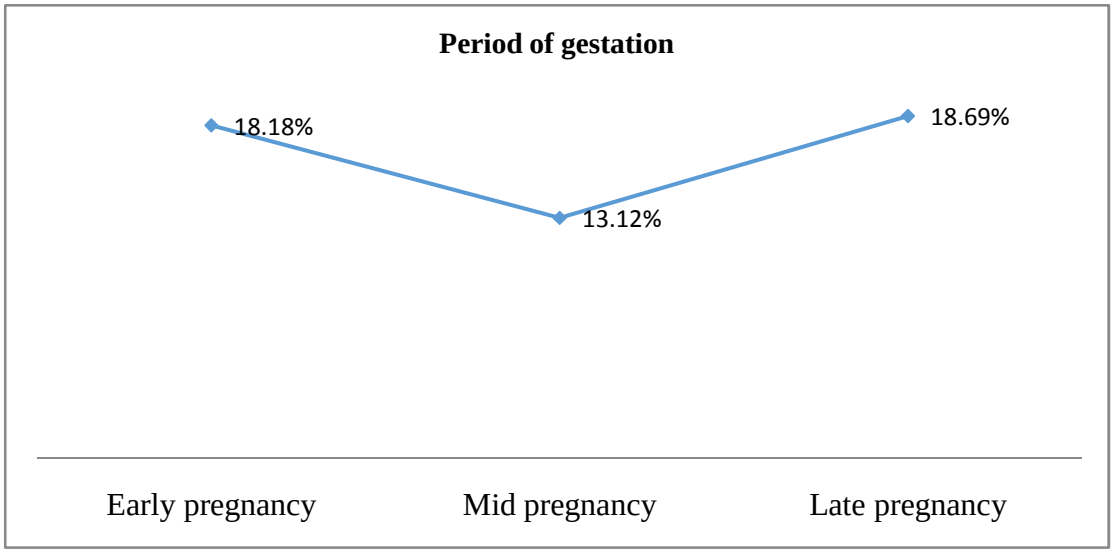


Table IV: Association of Parity with UTI

Parity	Total	With UTI	Percentage	P-value
Primigravida	756	111	14.68%	0.0741
Multigravida	846	153	18.09%	

Table IV shows that UTI is not significantly associated with parity.Figure IV illustrates the distribution of UTI cases according to parity

Figure IV: Distribution of UTI cases according to parity

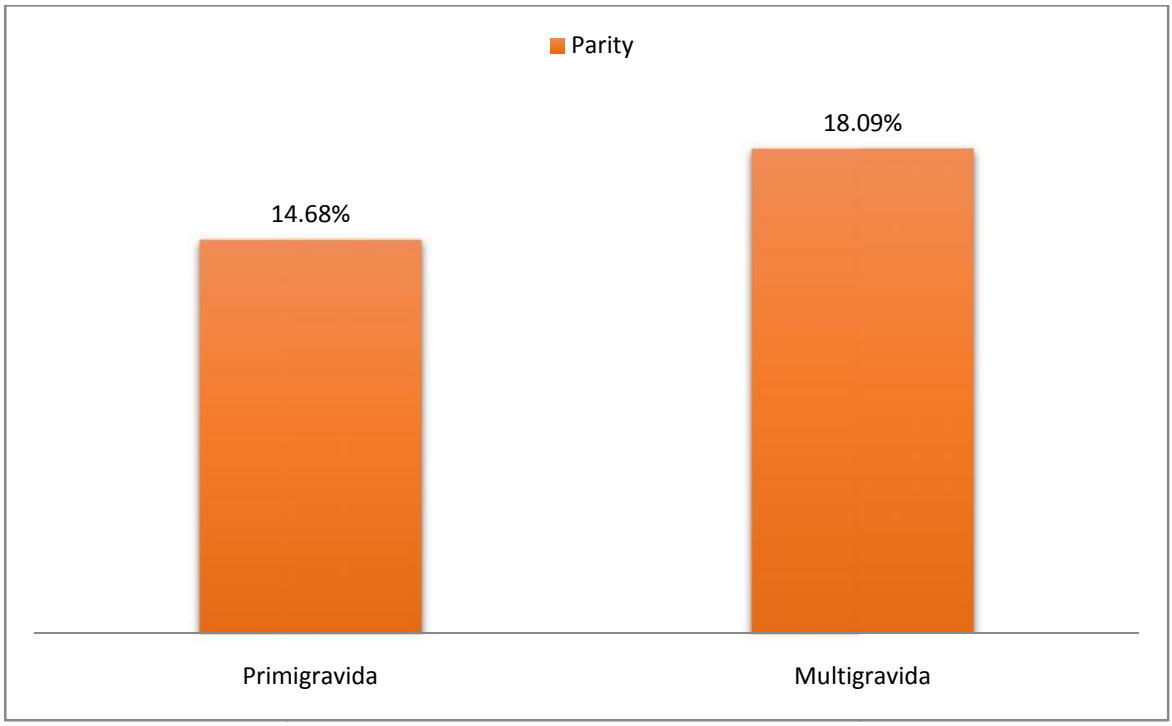


Table V: Association of anaemia with UTI

Haemoglobin level	Total	With UTI	Percentage	P value
< 11 g/dl	499	126	25.25%	< 0.0001
≥ 11 g/dl	1103	138	12.51%	

As shown in table V, out of 499 cases of anaemia, 25.25% (126) women had UTI while out of 1103 women without anaemia, 12.51% (138) women had UTI. It is evident from the table that UTI and anaemia are significantly associated. (p = <0.0001).

The high prevalence in anaemia among UTI positive cases may be due to the fact that majority of the women take their initial antenatal care at the peripheral centres and come to this hospital in their late pregnancy with complications like anaemia.

Table VI: Association between urine pus cells and UTI

Urine Pus cells	Total	Significant growth	Percentage	P- value
≤ 4/ hpf	1408	117	8.31%	<0.0001
> 4/ hpf	194	147	74.62%	

Table VI shows that out of the 1408 women with urine pus cells ≤ 4/ hpf, 8.31% (117) women had UTI while 147(74.62%) out of 194 women with urine pus cells >4/hpf showed significant growth. UTI is significantly associated with presence of urine pus cells >4/hpf.

Table VII: Prevalence of UTI by season

Season	Total	With UTI	Percentage (%)	P-value
Winter	591	73	12.35	0.00571
Summer	251	54	21.51	
Monsoon	439	77	17.53	
Autumn	321	60	18.69	

Table VII shows that UTI occurs maximum in summer and least in winter. The same is shown in figure V.

Figure V: Prevalence of UTI with season

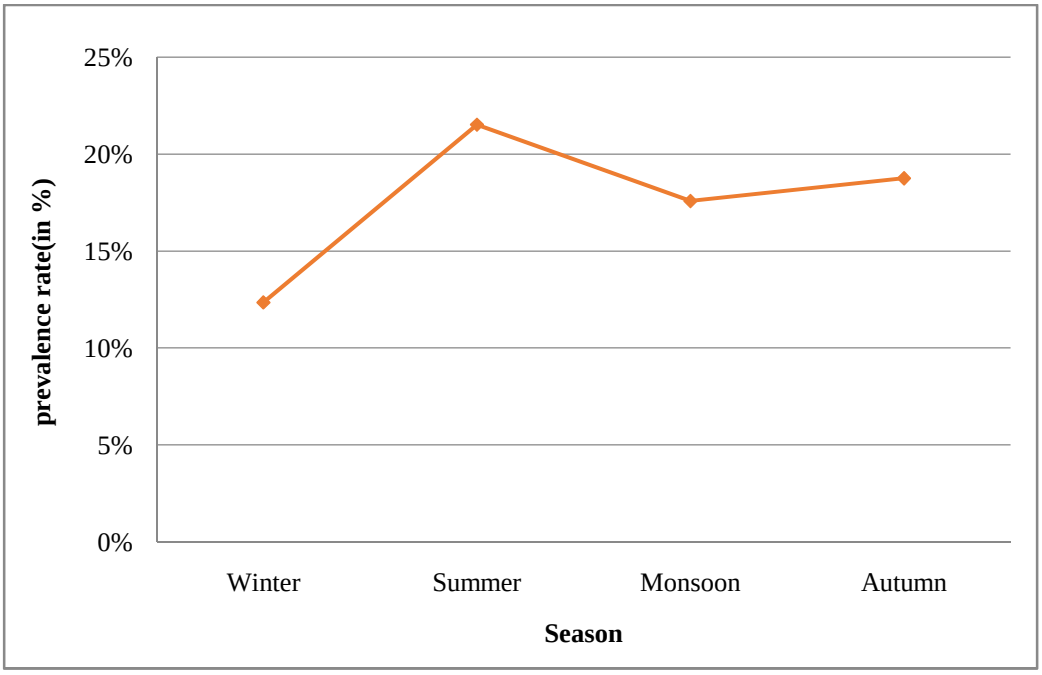


Table VIII: Distribution of Organisms in culture

Organism	Number of organisms	Percentage (%)
E. coli	124	46.97%
Klebsiella pneumoniae	52	19.70%
Citrobacter	23	8.71%
Staphylococcus Aureus	16	6.06%
CONS	10	3.79%
Enterobacter Species	7	2.65%
Pseudomonas Aeruginosa	7	2.65%
Others	25	9.47%
Total	**264**	

Table VIII depicts that Escherichia coli is frequently present among UTI cases followed by Klebsiella pneumoniae, Citrobacter, Staphylococcus aureus. This has been shown in figure 6.

Figure VI: Distribution of bacterial population among UTI cases

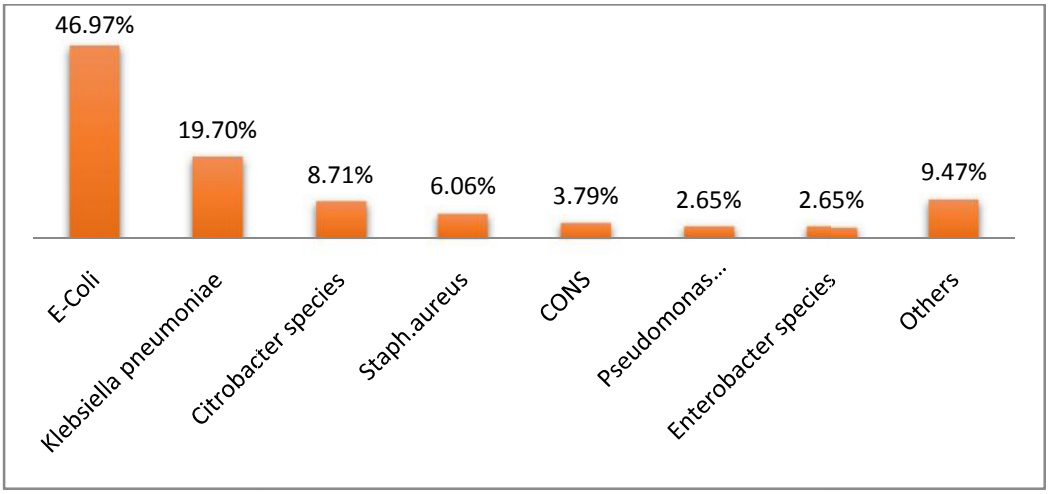


Table IX: Association of UTI with other risk factors

Risk factor		Total	With UTI	Percentage	P-value
History of UTI in Past	Yes	97	67	69.07%	<0.0001
History of Catheterisation	Yes	150	63	42%	<0.0001
History of Diabetes	Yes	89	57	64.04	<0.0001

It is evident from table IX that the proportion of UTI among those cases with past history of UTI is significantly more than those without past UTI history. Also, past history of catheterisation and history of diabetes are significantly associated with the occurrence of UTI.

Table X: Distribution of Antibiotic susceptibility of organisms causing UTI

Organism	Antibiotic susceptibility							Total
	AMP	AMC	NIT	CXM	FOS	CRO	None	
E. coli	22 (17.7%)	30 (24.19%)	76 (61.29%)	26 (20.97%)	55 (44.35%)	16 (12.9%)	33 (26.61%)	124
Enterobacter Species	2 (28.7%)	1 (14.29%)	1 (14.29%)	1 (14.29%)	0 (0%)	0 (0%)	4 (57.14%)	7
Klebsiellapneumoniae	9 (17.3%)	14 (26.92%)	19 (36.54%)	13 (25%)	22 (42.31%)	8 (15.38%)	21 (40.38%)	52
Pseudomonas aeruginosa	1 (14.3%)	2 (28.57%)	1 (14.29%)	0 (0%)	1 (14.29%)	1 (14.29%)	3 (42.86%)	7
Citrobacter	2 (8.7%)	4 (17.39%)	11 (47.83%)	5 (21.74%)	11 (47.83%)	1 (4.35%)	6 (26.09%)	23
Staph. aureus	2 (12.5%)	8 (50%)	4 (25%)	3 (18.75%)	3 (18.75%)	2 (12.5%)	7 (43.75%)	16
CONS	3 (30%)	4 (40%)	5 (50%)	3 (30%)	5 (50%)	2 (20%)	5 (50%)	10
Others	1 (4%)	3 (12%)	5 (20%)	2 (8%)	2 (8%)	0 (0%)	18 (72%)	25

*none indicated that the organism is not susceptible to any antibiotic

Table X depicts that Nitrofurantoin continues to be the most effective drug for the treatment of UTI. Majority of E. coli, Citrobacter and CONS organisms are susceptible to Nitrofurantoin followed by Fosfomycin. For Enterobacter species, Ampicillin is majorly susceptible; Majority of the cases with Klebsiella are susceptible to Fosfomycin whereas most cases of Staphylococcus aureus are susceptible to Amoxicillin- clavulanic acid.

Pregnancy Outcome:

Out of 1602 women analysed, 244 women were lost to follow up. The remaining 1358 women were followed up for pregnancy outcome. Among this, 1115 were in house deliveries and 243 delivered in outside hospitals.

Among 1358 antenatal women who were followed up, 72(5.30%) women had preterm delivery while 1286(94.69%) women had term delivery. Of the women who had preterm delivery, 10.12% (25/241) women had UTI while 4.23% (47/1111) women did not have UTI. This is statistically significant (P value – 0.0003).

1115 antenatal women who had in house deliveries were analysed further for pregnancy outcome.

Table XI: Association of UTI and Maternal Outcome

	Total (1115)	With UTI (214)	Without UTI (901)	P- value
PPROM	43	18 (8.41%)	25 (2.77%)	0.0001
Preeclampsia	39	9 (4.21%)	30 (3.33%)	0.5307

Table XI shows that the proportion of PPROM is significantly more among the UTI cases than among the non-UTI cases. There is no significant difference in occurrence of preeclampsia between UTI and non-UTI cases. This is shown in figure VII.

Figure VII: Association of UTI and Maternal Outcome

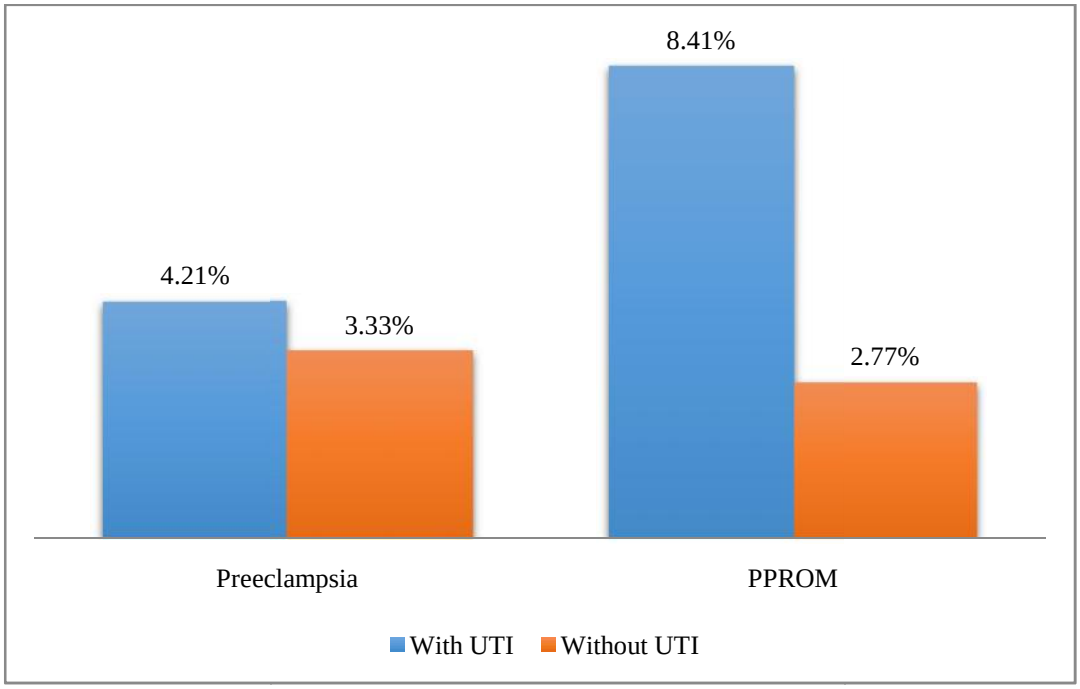
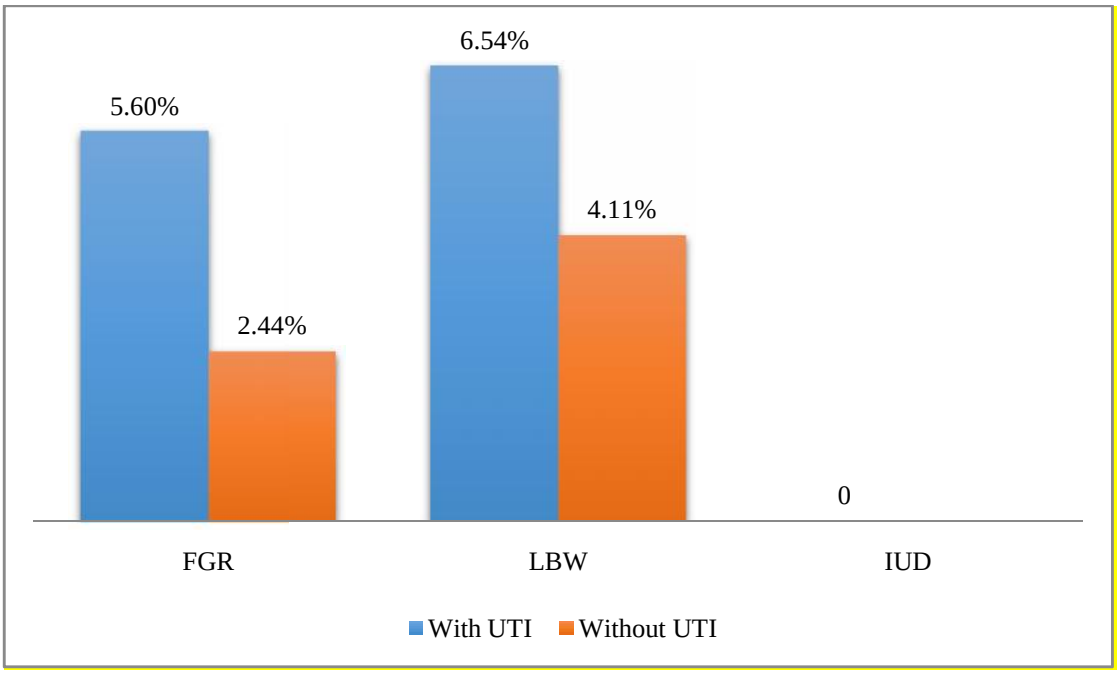


Table XII: Association between UTI and Perinatal outcome

	With UTI (214)	Without UTI (901)	Total (1115)	P- value
FGR	12(5.60%)	22(2.44%)	34	0.0155
LBW	14(6.54%)	37(4.11%)	51	0.1253
IUD	0	0	0	-

It is depicted from table XII that proportion of FGR in women with UTI is significantly more than those without UTI while the proportion of LBW is not significant. Figure VIII illustrates thesame.

Figure VIII: Association of UTI and Perinatal Outcome



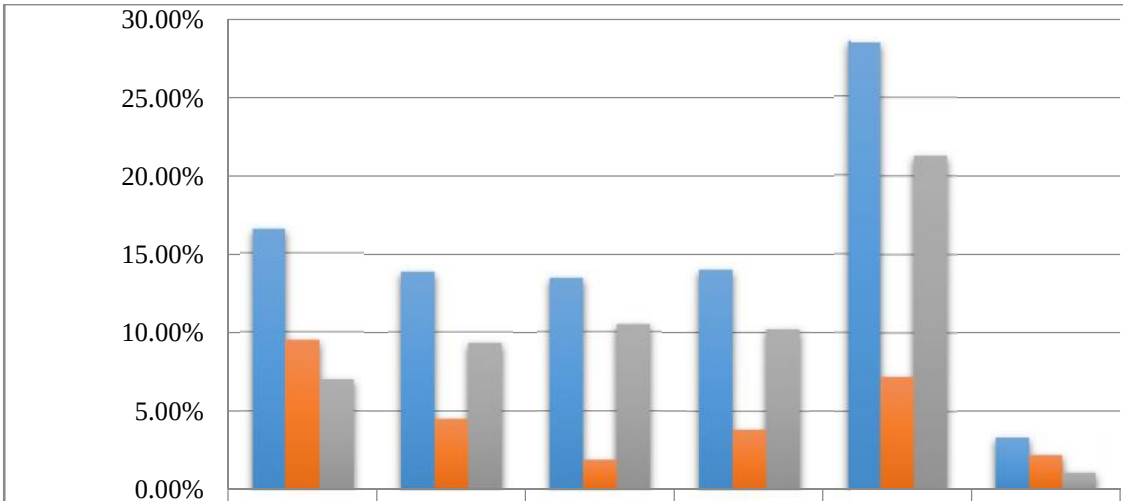
DISCUSSION

Urinary tract infection in pregnancy is a common cause of serious maternal and perinatal morbidity. With appropriate screening and treatment, the morbidity and mortality burden can be significantly reduced.

Prevalence of UTI:

In the present study, the prevalence of UTI among the antenatal cases was 16.5%. Among the total UTI positive cases, 9.5% were symptomatic and 7.5% were asymptomatic.

Figure IX: Comparison of prevalence of UTI with other studies



	Present study	Karuna et al[18]	Srinath et al[37]	Hamdan et al[40]	Sheikh et al[17]	Kant et al[44]
UTI	16.50%	13.80%	13.40%	14%	28.50%	3.30%
Symptomatic	9.50%	4.50%	1.90%	3.82%	7.20%	2.20%
Asymptomatic	7%	9.30%	10.47%	10.21%	21.30%	1.10%

The present data was in accordance with various studies of Indian sub-continent[18,37]except Kant S et al.[44] It could be because it was conducted in a secondary care centre while the present study was done in a tertiary care centre .

A higher prevalence was observed in few other studies.[17,18,43]The higher prevalence noted in African and Arabian countries may due to the limited water supply, reduced access to microbiological services for proper screening of UTI and poor antenatal care.

- **Maternal Age**

In the present study, we observed that prevalence of UTI is high in women of age group ≥30 years (28.71%) followed by women of ≤ 20 years (18.43%). Least prevalence is in age group of 21- 30 years (16.69%). The mean age in the UTI group is 24.24 ± 3.97 years and that in the non – UTI group is 24.28 ± 3.70 years. The results were not statistically significant.

Table XIII: Comparison of UTI & maternal age with other studies

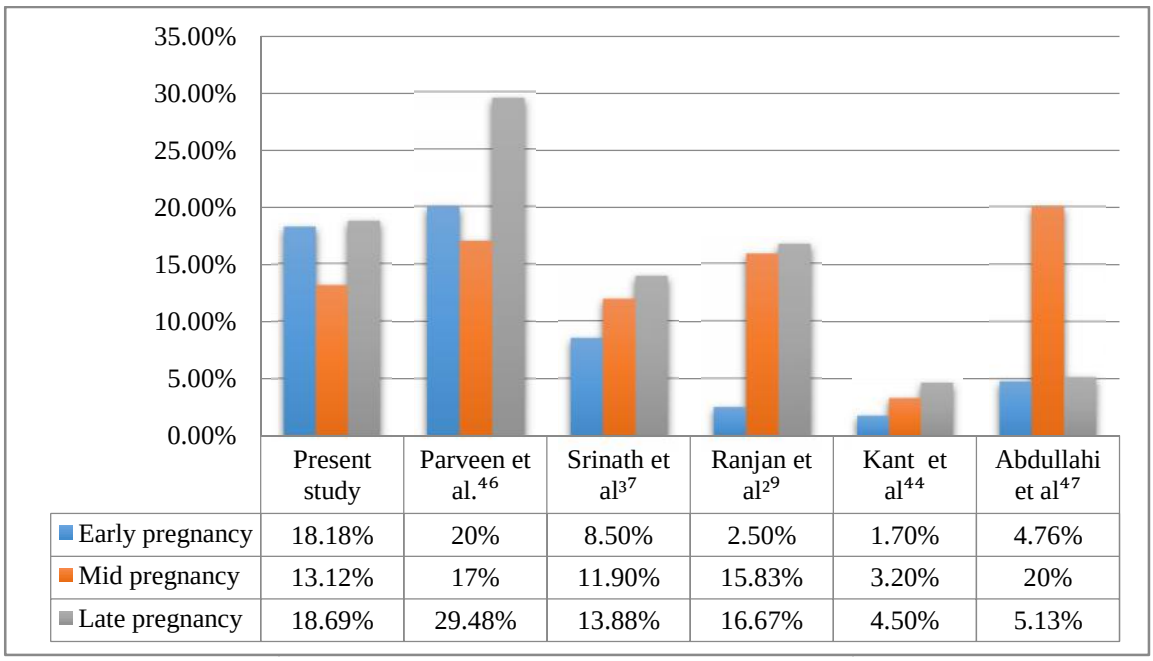
Studies	Age distribution	Percentage
Present study	> 30 years	28.71%
Srinath MP et al.[37]	> 35 years	30.0%
Kant, et.al [44]	> 25 years	36.10%
Al-Mamoryi NA et al.[45]	≥ 36 years	46.15%
Ranjan et.al [29]	>25 years	50.0%
Kashinathan A et al.[21]	26-30 years	59.10%
Lavanya SV et al.[22]	≤ 20 years	71.42%

The present study correlates well with other studies.[21, 29, 37, 44, 45] whereas study by Lavanya SV et al.[22]showed a higherprevalence rate in the youngerage group.

- **Period of gestation**

In the present study, we have observed that the prevalence of urinary tract infection was highest in the late pregnancy (18.69%), followed by early pregnancy (18.18%) and mid pregnancy (13.12%).

Table X: Comparison of UTI & Period of gestation with other studies



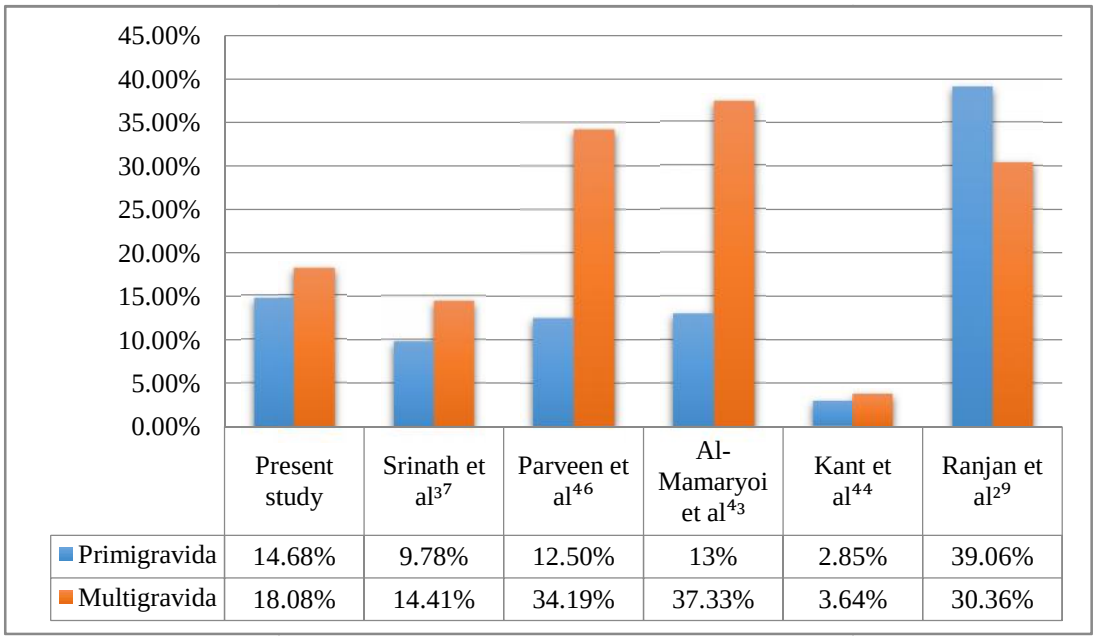
	Present study	Parveen et al.[46]	Srinath et al[37]	Ranjan et al[29]	Kant et al[44]	Abdullahi et al[47]
Early pregnancy	18.18%	20%	8.50%	2.50%	1.70%	4.76%
Mid pregnancy	13.12%	17%	11.90%	15.83%	3.20%	20%
Late pregnancy	18.69%	29.48%	13.88%	16.67%	4.50%	5.13%

The results are well matched with most of the studies[29, 37, 44, 46] while Abdullahi IH et al.[47] found a higher frequency of UTI in the mid pregnancy.

- **Parity**

In the present study, we observed that urinary infection was more common in multigravida than in primigravida.

Table XI: Comparison of Parity with other studies



	Present study	Srinath et al[37]	Parveen et al[46]	Al-Mamaryoi et al[43]	Kant et al[44]	Ranjan et al[29]
Primigravida	14.68%	9.78%	12.50%	13%	2.85%	39.06%
Multigravida	18.08%	14.41%	34.19%	37.33%	3.64%	30.36%

The results of the present study is well matched with those of other studies[37, 46, 44] whereas in few other studies, it was noted that primigravidas had a higher frequency of UTI.[22, 29]

- **Seasonal variation**

In the present study, UTI was more prevalent in summer season (21.5%) as compared to winters (12.35%). In a study conducted by Anderson JE on "seasonality of urinary infection in women", the seasonal change has been considered as one of the main factors affecting UTI and the highest incidence of UTI was observed in summer which matches with the findings of the present study. [48]

- **Other risk factors**

In the present study, there is a significant association of anemia, past history of UTI, history of catheterisation and history of diabetes with urinary tract infection.

Table XIV: Comparison of other risk factors with various studies

	Present study	Shaheen et al.[38]	Al- Mamoryi NA et al.[45]	Hamdan HZ et al[40]	Emiru T et al[49]	Srinath MP et al.[37]
Anaemia	25.25%	50.5%	-	-	27.6%	-
H/o UTI in the past	69.07%	70.77%	64.2%	42.4%	18.1%	13.04%
H/o catheterisation in the past	42%	-	-	-	16.7%	-
H/o Diabetes	64.04%	63.63%	33.1%	-	-	33.3 %

It is evident from the table that maternal anemia is more prone to get urinary infection. The results correlate with other studies.[38,49]The high prevalence of anemia in the women in the developing countries may be due to their low immunity.

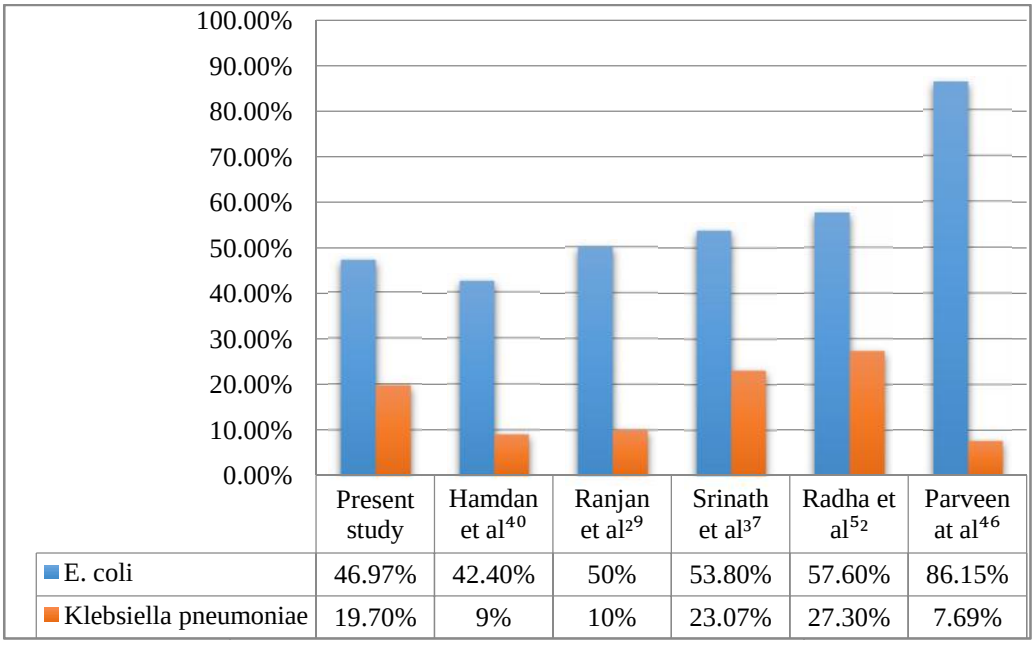
The result showing that the prevalence of UTI in a pregnant lady with a prior history of UTI is higher than the one without a previous history of UTI correlates with other studies.[11, 37, 45, 49]It may be due to drug-resistant organism from those who had previous history of urinary tract infection.[50]

In catheterised patients, the daily risk of developing a UTI ranges from 3% to 7%.[51] Catheterisation favours inoculation and adhesion of microbes into the bladder mucosa and in turn initiates inflammation.

- **Organisms**

Bacterial isolates have been changing from time to time and from place to place. In present study, E. coli organism (46.97%) was most frequently present among UTI positive cases followed by Klebsiella species (19.7%), Citrobacter (8.7%) and Staphylococcus aureus (6.06%).

Figure XII : Comparison of growth in urine culture with other studies



	Present study	Hamdan et al[40]	Ranjan et al[29]	Srinath et al[37]	Radha et al[52]	Parveen at al[46]
E. coli	46.97%	42.40%	50%	53.80%	57.60%	86.15%
Klebsiella pneumoniae	19.70%	9%	10%	23.07%	27.30%	7.69%

The results of the present study were in accordance with the different studies.[29, 37, 46]

This pattern could be due to the fact that urinary stasis is common in pregnancy and since most Escherichia coli strains prefer that environment, they cause urinary infection.. The poor genital hygiene practises by the antenatal women could also be a reason.[50]

- **Pregnancy outcome**

The present study showed that preterm labour (10.1%), preterm premature rupture of membranes (8.41%) and fetal growth restriction (5.60%) had a significant higher rate in women with urinary infection compared to those without infection.

Table XV: Comparison of association of UTI & Pregnancy outcome with other studies

Pregnancy outcome	Present study	Radha S et al.[52]	Emamghorashi et al[54]	Amiri M et al.[28]
Preeclampsia	4.21%	6.06%	-	-
Preterm labour	10.1%	18.2%	-	-
PPROM	8.41%	-	-	-
FGR	5.60%	6.1%	21%	43.33%
LBW	6.54%	15.2%	-	-
IUD	0	-	11%	-

The prevalence of complications in the present study are comparatively lower than the other studies.[28, 52, 54]The lower prevalence of complications in this hospital may be because the patients who were diagnosed with UTI during the study period might have been treated. Recent Cochrane analysis also agrees that preterm

premature rupture of membranes is seen in relation to urinary infection which favours the findings. [53]

Strengths of the study:

- The sample size of the study is adequate
- The study is a prospective cross – sectional study
- Of the 1602 women enrolled in the study, lost to follow up for pregnancy outcome is only 15%. Though pregnancy outcome information of 1358 women was available, information of 1115 women who had delivered in the study hospital was analysed.

Limitations of the study:

- Though the sample size is large, the number of patients in early pregnancy is only 121.
- Treatment information of urinary tract infection was not collected.

CONCLUSION

From the present study, the prevalence of urinary tract infection among pregnant women is found to be 16.5%, of which 60% are symptomatic and 40% are asymptomatic. UTI is significantly associated withcomplications like preterm labour, preterm premature rupture of membranes and FGR babies.

Therefore, we recommend screening of urinary tract infection (by urine microscopy and culture) as early as possible to diagnose and treat accordingly. Screening in the early third trimester is also helpful in preventing the maternal and perinatal complications as it is evident from the study as majority of the women who were analysed were in the third trimester.

SUMMARY

A hospital based study was conducted from January 2018 to December 2018 at the teaching hospital attached to KAHER's J N Medical College, Belagavi. The objectives of the study were to find out the prevalence of urinary tract infection among pregnant women at their first antenatal visit and to find out the effect of UTI on pregnancy.

A total of 1820 pregnant women were screened, out of which 40 women did not consent. 1780 women were enrolled into the study. Among this, 178 women were excluded from analysis as 106 samples were contaminated and 72 samples were misplaced. The remaining 1602 pregnant women were analysed.

- Among 1602 antenatal women, 264(16.5%) had significant bacteriuria in which 152/264(57.57%) were symptomatic and remaining 112/264(42.42%) were asymptomatic.
- A significant association was observed between past history of UTI, history of catheterisation and diabetes with UTI in pregnancy (P = 0.0001).
- Anaemia had a significant association with urinary tract (P = 0.0001).
- Escherichia coli (46.97%) was the most common organism among UTI positive cases, followed by Klebsiella (19.7%), Citrobacter (8.7%) and Staphylococcus aureus (6.06%).
- Most of the organisms were susceptible to Nitrofurantoin followed by Fosfomycin. For Enterobacter species, Ampicillin was most effective. Fosfomycin was effective against majority of cases with Klebsiella.
- Out of the 1602 women analysed, 1358 women were followed up for pregnancy outcome. Among 1358 women who were followed up to pregnancy, 10.10% (25/241) women had preterm labour associated with UTI while 4.23% (47/1111)

women with preterm labour did not have UTI. This is statistically significant (P value – 0.0003).

- 1115/1358(82.10%) women had in house delivery while 243(21.79%) delivered in outside hospitals. 1115 women who had delivered in the study hospital were further analysed for pregnancy outcome.
- Out of 1115 women analysed, 4.21% developed preeclampsia, 8.41% developed PPROM, 5.60% had FGR and 6.54% had low birth weight babies in the UTI group. In the non - UTI group 3.33% developed preeclampsia, 2.77% developed PPROM, 2.44% had FGR and 4.11% had low birth weight babies. There is a significant association between UTI and preterm labour, PPROM and FGR in the study.

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INFORMED CONSENT FORM

Purpose of the study

I have been informed by Dr. _____, Post Graduate in M.S. Obstetrics and Gynaecology under the guidance of Dr. _____ **M.D(FICOG),** Professor and Head, Department of Obstetrics and Gynaecology, J N Medical College, KLE University, Belagavi is conducting a study to determine the prevalence of UTI in pregnancy at the first antenatal care visit in a teaching hospital attached to KLE University's J N Medical College, Belagavi.

One of the most common bacterial infections among pregnant women is UTI. It can lead to many serious maternal and perinatal complications. This includes acute pyelonephritis, anaemia, preeclampsia, premature rupture of membrane, preterm birth, low birth weight and even death of mother and foetus. The data on prevalence of UTI in early pregnancy is scarce in this part of the country especially in South India. The purpose of this study is to determine the prevalence of UTI in pregnancy at the first antenatal care visit in a teaching hospital attached to KLE University's J N Medical College, Belagavi.

Study procedure:

Once I have signed the informed consent form, the personal details like name, age, place, address, my education, my health, reproductive history and other information will be noted down. Urine sample will be taken and processed for investigations like urine analysis and urine culture. The reports will be noted and I will be followed up.

Potential Risks

There are no observable risks associated with the study.

Benefits

There is a benefit as I will be followed up in myantenatal period and if urine culture shows significant bacteriuria, will be treated for the same.

Financial incentive for participation

I will not receive any payment for taking part in this research study.

Alternatives

If I decide not to participate in the study, my health care provider will provide the usual standard care during my pregnancy, delivery and upto through 6 weeks after delivery**.**

Privacy

To protect my privacy, all the collected information will be given a number rather than using my name. Any information collected during the study will remain confidential. My medical files will be reviewed only at the hospital (or study doctor's office) to check the information and verify the result without breaking my confidentiality. Only de-identified information on my pregnancy will be shared so as to learn the results of the study.

Authorisation to publish results

The information about me will be analysed together with other study participants.

Results of this study will be published and presented to scientific groups for scientific purposes, but I will never be individually identified in the presentation of the study results.

Institutional Policy

In case I have any questions related to the study, in future or in case of study related injury or illness, I can contact Dr._____ , Department of Obstetrics and Gynaecology, KLE University's J N Medical College, Ph. No._____ or phone number: _____ or Dr._____, Professor and Head, Dept. Of Obstetrics and Gynaecology, KLE University's J N Medical College, Belagavi.

Voluntary Participation

My participation in the study is voluntary. In case I need any further information regarding my rights as study participant, I may contact Dr. Roopa M Bellad, Professor of Paediatrics, as Chairman of J. N. Medical College Institutional Ethics Committee on Human Subjects Research, Phone No.0831 2473777 ext-1527 at J N Medical College, Belagavi. My doctor will take care of me during this pregnancy or in the future. I am free to stop participation in this study at any time and for any reason.

Signatures

Person requesting consent, please check applicable boxes:

☐ Consent obtained (for adult respondent)

I have read the consent form or the consent form has been read to me. I understand the consent and the signature or sign below confirms that I agree to participate in this study (The participant will receive a copy of this form.)

Study identification number: ☐☐☐☐

_____ _____

Signature or thumbprint of participant Date

_____ _____

Signature or thumbprint of witness Date

ಮಾಹಿತಿ ಒಪ್ಪಿಗೆ ಪತ್ರ

ಅಧ್ಯಯನದ ಉದ್ದೇಶ

ನನಗೆ ಡಾ. , ಸ್ನಾತಕೋತ್ತರ ವಿದ್ಯಾರ್ಥಿನಿ, ಎಮ್.ಎಸ್ ಪ್ರಸೂತಿ ಹಾಗೂ ಸ್ತ್ರೀರೋಗ ಶಾಸ್ತ್ರ ವಿಭಾಗ, ಡಾ. , ಪ್ರೊ.ಹಾಗು ಮುಖ್ಯಸ್ಥರು, ಪ್ರಸೂತಿ ಹಾಗೂ ಸ್ತ್ರೀರೋಗ ಶಾಸ್ತ್ರ ವಿಭಾಗ, ಜೆ.ಎನ್.ವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯ, ಕೆ.ಎಲ್.ಇ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ ಇವರ ಮಾರ್ಗದರ್ಶನದಲ್ಲಿ ಕೆ.ಎಲ್.ಇ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಜೆ.ಎನ್.ವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯದ ಕಲಿಕಾ ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಗರ್ಭಾಸ್ಥೆಯ ಮೊದಲ ಹಂತದ ಪ್ರಸವಪೂರ್ವ ಆರೈಕೆಯ ಭೇಟಿಯ ಸಮಯದಲ್ಲಿ ಮೂತ್ರನಾಳದ ಸೋಂಕಿನ ಪ್ರಭುತ್ವದ ಕುರಿತು ಅಧ್ಯಯನ ಮಾಡಲಾಗುವುದೆಂದು ನನಗೆ ತಿಳಿಸಲಾಗಿದೆ.

ಗರ್ಭವತಿ ಹೆಣ್ಣುಮಕ್ಕಳಲ್ಲಿ, ಸಾಮಾನ್ಯವಾಗಿ ಕಾಣಸಿಗುವ ಬ್ಯಾಕ್ಟಿರಿಯಲ ಸೋಂಕೆಂದರೆ ಯು.ಟಿ.ಐ. ಇದು ಅತ್ಯಂತ ಗಂಭೀರವಾದ ಸಮಸ್ಯೆಗಳನ್ನು ಉಂಟು ಮಾಡಬಹುದು. ಇದರಲ್ಲಿ ಪಿಲೊನೆಫೆರೈಟಿಸ್, ರಕ್ತಹೀನತೆ, ಪ್ರಿಕಾಂಪ್ಸಿಯ, ಪೊರೆಯ ಆಕಾಲಿಕ ಛಿದ್ರ, ಅವಧಿ ಪೂರ್ವ ಜನನ, ಕಡಿಮೆ ತೂಕದ ನವಜಾತ ಶಿಶುಗಳು ಹಾಗೆಯೇ ತಾಯಿ ಹಾಗೂ ಶಿಶುವಿನ ಮರಣವೂ ಸಂಭವಿಸಬಹುದು. ಯುಟಿಐ ನ ಪ್ರಭುತ್ವದ ಮಾಹಿತಿ ಕಲೆ ಹಾಕಿದಾಗ ಅದು ಅಷ್ಟಾಗಿ ಸಿಗುವುದಿಲ್ಲ. ಹಾಗಾಗಿ, ಈ ಅಧ್ಯಯನದ ಉದ್ದೇಶವೆಂದರೆ, ಕೆ.ಎಲ್.ಇ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಜೆ.ಎನ್.ವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯದ ಕಲಿಕಾ ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಗರ್ಭಾಸ್ಥೆಯ ಮೊದಲ ಹಂತದ ಪ್ರಸವಪೂರ್ವ ಆರೈಕೆಯ ಭೇಟಿಯ ಸಮಯದಲ್ಲಿ ಮೂತ್ರನಾಳದ ಸೋಂಕಿನ ಪ್ರಭುತ್ವದ ಕುರಿತು ಅಧ್ಯಯನ ನಡೆಸುವುದು.

ಅಧ್ಯಯನದ ವಿಧಾನ

ನಾನು ಈ ಪತ್ರಕ್ಕೆ ಸಹಿ ಹಾಕಿದ ನಂತರ, ನನ್ನ ವಯಕ್ತಿಕ ಮಾಹಿತಿ ಅಂದರೆ ಹೆಸರು, ವಯಸ್ಸು, ಸ್ಥಳ, ವಿಳಾಸ, ನನ್ನ ಶಿಕ್ಷಣ, ನನ್ನ ಆರೋಗ್ಯ, ಅದರಂತೆ ಬೇರೆ ಮಾಹಿತಿಯನ್ನು ಪಡೆಯಲಾಗುವುದು. ಮೂತ್ರದ ಸ್ಯಾಂಪಲನ್ನು ಪಡೆದು ಅದನ್ನು ತಪಾಸಣೆಗೆ ಕಳಿಸಲಾಗುವುದು. ಅದರ ವರದಿಗಳನ್ನು ಆಧರಿಸಿ, ನಿಮ್ಮನ್ನು

ಸಂಪರ್ಕಿಸಲಾಗುವುದು. ನನ್ನ ಹಾಗು ಶಿಶುವಿನ ಆರೋಗ್ಯದ ಮಾಹಿತಿಯನ್ನು ನನಗೆ ಹೆರಿಗೆಯ ನಂತರ ನೀಡಲಾಗುವುದು.

ಅಪಾಯಗಳು

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ಅಪಾಯಗಳಿರುವುದಿಲ್ಲ.

ಲಾಭಗಳು

ನಿಮ್ಮ ಪ್ರಸವಪೂರ್ವದ ಎಲ್ಲ ಭೇಟಿಗಳ ಮಾಹಿತಿ ಇಡಲಾಗುವುದು, ಹಾಗೆಯೇ ಮೂತ್ರದ ವರದಿಯಲ್ಲಿ ಬ್ಯಾಕ್ಟೀರಿಯ ಕಂಡು ಬಂದಲ್ಲಿ, ಅದಕ್ಕೆ ಸೂಕ್ತ ಚಿಕಿತ್ಸೆ ನೀಡಲಾಗುವುದು.

ಹಣಕಾಸಿನ ನೆರವು

ನನಗೆ ಯಾವುದೇ ರೀತಿಯ ಹಣಕಾಸಿನ ನೆರವು ನೀಡಲಾಗುವುದಿಲ್ಲ.

ಪರ್ಯಾಯಗಳು

ನಾನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸದೇ ಹೋದರೆ, ನನ್ನ ಆರೈಕೆ ಗರ್ಭಾವಸ್ಥೆಯ ಸಮಯದಲ್ಲಿ ಎಂದಿನಂತೆ ನಡೆಯುವುದು ಹಾಗೂ ಹೆರಿಗೆಯ ೬ ವಾರಗಳ ವರೆಗೆ ಆರೈಕೆ ನೀಡಲಾಗುವುದು.

ಗೌಪ್ಯತೆ

ನಿಮ್ಮ ಗೌಪ್ಯತೆಯನ್ನು ಕಾಪಾಡಲು, ನಿಮ್ಮಿಂದ ಪಡೆದ ಮಾಹಿತಿಯನ್ನು ಒಂದು ಸಂಖ್ಯೆಯ ಮೂಲಕ ಇಡಲಾಗುವುದು. ನಿಮ್ಮ ಮಾಹಿತಿಯನ್ನು ಗೌಪ್ಯವಾಗಿಡಲಾಗುವುದು. ನಿಮ್ಮ ವೈದ್ಯಕೀಯ ಮಾಹಿತಿಯನ್ನು ಆಸ್ಪತ್ರೆಯ ಉಪಯೋಗಕ್ಕೆ ಬಳಸಲಾಗುವುದು.

ಫಲಿತಾಂಶಗಳನ್ನು ಪ್ರಕಟಿಸುವ ಅಧಿಕಾರ

ನನ್ನ ಮಾಹಿತಿಯನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ಅಧ್ಯಯನ ಮಾಡಿ, ಅದರಿಂದ ಬಂದ ಫಲಿತಾಂಶವನ್ನು ವೈದ್ಯಕೀಯ ಸಂದರ್ಭಕ್ಕೆ ಬಳಸಲಾಗುವುದು, ಆದರೆ ನನ್ನ ಯಾವುದೇ ಮಾಹಿತಿಯನ್ನು ಹಾಗೂ ಫಲಿತಾಂಶಗಳನ್ನು ವಯಕ್ತಿಕವಾಗಿ ಪ್ರದರ್ಶನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.

ಸಾಂಸ್ಥಿಕ ನೀತಿ

ನಿಮಗೆ ಈ ಅಧ್ಯಯನದ ಕುರಿತು ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳಿದ್ದಲ್ಲಿ ಅಥವಾ ಭವಿಷ್ಯದಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ಗಾಯ ಅಥವಾ ಖಾಯಿಲೆ ಆದಲ್ಲಿ, ಡಾ. , ಸ್ನಾತಕೋತ್ತರ ವಿದ್ಯಾರ್ಥಿನಿ, ಎಮ್.ಎಸ್ ಪ್ರಸೂತಿ ಹಾಗೂ ಸ್ತ್ರೀರೋಗ ಶಾಸ್ತ್ರ ವಿಭಾಗ, ಅಥವಾ ಡಾ. , ಪ್ರೊ.ಹಾಗು ಮುಖ್ಯಸ್ಥರು, ಪ್ರಸೂತಿ ಹಾಗೂ ಸ್ತ್ರೀರೋಗ ಶಾಸ್ತ್ರ ವಿಭಾಗ, ಜೆ.ಎನ್.ವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯ, ಕೆ.ಎಲ್.ಇ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ ಅಥವಾ ಇದಕ್ಕೆ ಸಂಪರ್ಕಿಸಬಹುದು.

ಸ್ವಯಂಪ್ರೇರಿತ ಭಾಗಾವಹಿಸುವಿಕೆ

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ನನ್ನ ಭಾಗವಹಿಸುವಿಕೆ ಸಂಪೂರ್ಣ ಐಚ್ಛಿಕವಾಗಿದೆ. ಯಾವುದೇ ಸಂದರ್ಭದಲ್ಲಿ ನನಗೆ ಬೇರೆ ಯಾವುದೇ ಮಾಹಿತಿ ಬೇಕಿದ್ದಲ್ಲಿ ನಾನು ಡಾ.ರೂಪಾ ಬೆಲ್ಲದ, ಪ್ರೊ. ಶಿಶು ವಿಭಾಗ, ಅಧ್ಯಕ್ಷರು, ಜೆ.ಎನ್.ವೈದ್ಯಕೀಯ ಮಹಾವಿದ್ಯಾಲಯದ ಸಾಂಸ್ಥಿಕ ನೀತಿ ಸಮಿತಿ ೦೮೩೧-೨೪೭೩೭೭, ಎಕ್ಸ್ಟ:೧೫೨೭, ಇವರನ್ನು ಸಂಪರ್ಕಿಸಬಹುದು. ಭವಿಷ್ಯದಲ್ಲಿ ನನ್ನ ವೈದರು ಗರ್ಭಾವಸ್ಥೆಯ ಸಮಯದಲ್ಲಿ ನನ್ನ ಆರೈಕೆ ಮಾಡುವರು. ನಾನು ಯಾವಾಗ ಬೇಕಾದರೂ ಈ ಅಧ್ಯಯನದಿಂದ ಹೊರ ಬರಬಹುದು.

ಸಹಿಗಳು

ಇದರಲ್ಲಿ ಯಾವುದು ಅನ್ವಯಿಸುತ್ತೋ ಅದನ್ನು ನಮೂದಿಸಿ

☐ ಒಪ್ಪಿಗೆ (ವಯಸ್ಕ ಪ್ರತಿಕ್ರಿಯೆಗಾರರಿಗೆ)

ನಾನು ಈ ಪತ್ರವನ್ನು ಓದಿದ್ದೇನೆ ಅಥವಾ ಓದಿ ಹೇಳಲಾಗಿದೆ. ನನ್ನ ಸಹಿ ಈ ಮೂಲಕ ಈ ಅಧ್ಯಯನದಲ್ಲಿ ನನ್ನ ಭಾಗವಹಿಸುವಿಕೆಯನ್ನು ತಿಳಿಸುತ್ತದೆ. (ಅಭ್ಯರ್ಥಿಗೆ ಇದರ ಪ್ರತಿಯನ್ನು ನೀಡಲಾಗುವುದು)

ಗುರುತಿನ ಸಂಖ್ಯೆ: ☐☐☐☐

_____ _____

ಸಹಿ ಅಥವಾ ಹೆಬ್ಬೆಟ್ಟು ದಿನಾಂಕ

सूचितसहमतिपत्र

अध्ययनकाउद्देश

मुझेडा.अंज ाकोत्तरविद्यार्थिनि, एम.एसप्रसूति व स्त्रीरोगविभाग, डा.एम.बि.बेल्लद, प्रोफे प्रसूति व स्त्रीरोगविभाग, इनकेमार्गदर्शनमे, के.एल.इविश्वविद्यालयकेजे.एन.मेडिकलकालेजकेशिक्शाअस्पतालमेगर्भवतिमहिलाओमेप्रसवपूर्वदेख बालकेदौरानमूत्रपथकेसंक्रंमणकेप्रसारकाएकअध्ययनकरनाऐसेमुझेबतायागयाहै.

गर्भवतिमहिलाओमेयुटिऐयहएकसामान्यसंक्रमणहै.यहआगेचलकरमातृएवंजन्मजातजटिलताओका कारणबनसकताहै.इसमेपिलोनेफ्राइटिस, एनिमिया, प्रिएक्लांप्शिया, झिल्लिकिसमयपूर्वविघटन, प्रीटर्मजन्म,

जननमेवजनकमहोनाऔरमांएवंशिशुकामरणहोसकताहै.दक्षिणभारतमेयुटिऐकाप्रसरणबहुतहीकमहै. इसलिएइसअध्ययनकाउद्देशथाकिके.एल.इविश्वविद्यालयके .एन.मेडिकलकालेजकेशिक्शाअस्पताल मेगर्भवतिमहिलाओमेप्रसवपूर्वदेखबालकेदौरानमूत्रपथकेसंक्रंमणकेप्रसारकाएकअध्ययनकरना

विधान

एकबारमैइससहमतिपत्रपरहस्थाक्षरकरनेकेबाद, मेरेव्यक्तिगतविवरणजैसेनाम, उम्र, पता, शिक्षण, आरोग्य,

इतिहासऔरऐसेकुछजानकारिलियाजायेगा.मूत्रकास्यांपललियाजायेगाऔरपरीविक्षणकेलियेभेजाजा येगा.इसकेनतीजोपरगौरदियाजायेगा.मेरेऔरशिशुकाआरोग्यकाजानकारिगर्भवितरणहोनेकेबादबता याजायेगा.

जोखिम

इसअध्ययनमेकोईजोखिमनहिहोगा.

लाभ

इसअध्ययनकेदौरान,

प्रसवपूर्वसमयमेमेरिदिखबालकियाजायेगाऔरमूत्रकेपरीविक्शणमेअगरबैक्टिरियादिखेतो,

उसकाइलाजकियाजायेगा.

भागिदारिकेलियेवित्तीयप्रोत्साहन

मुझेकिसीतरहकावित्तीयप्रोत्साहननहिदियाजायेगा.

वैकल्पिक

यदिइसअध्ययनमेभागनहिलियाहो, मेरिप्रसवपूर्वऔरवितरणके ६ हप्तोतकदेखबालहोतारहेगा

गौप्यता

आपकिगौप्यताकेलिये,

आपसेलियेगयेजानकारिकोएकनंबरदेकररखाजायेगा.आपकिजानकारिगौप्यरूपसेलियाजायेगा.आप

किमेडिकलफाइलसिर्फअस्पतालमेदेखाजायेगा.

परिणामोकोप्रकाशितकरनेकेलियेप्राधिकारण

आपकिजानकारिसहीतरहसेनापाजायेगा.इसकेनतीजोकोवैज्नानिकसंदर्भोकेलियाइस्तेमालकियाजाये

गा.

संस्थागतनीति

आपकोअगरकोइप्रश्नहोतो, याभविश्यमेकोइघावयारोगकालक्षणहैतो, डा ,

स्नातकोत्तरविद्यार्थिनि, एम.एसप्रसूति व स्त्रीरोगविभाग, ० और

याडा.एम.बि.बेल्लद, प्रोफेसरतथाप्रमुख, प्रसूति व

स्त्रीरोगविभाग,के.एल.इविश्वविद्यालयके .एन.मेडिकल ८३

९४४८१२४८९३ इन्हेसंपर्ककरे.

स्वैच्छिकभागीदारि

मेरिभागिदारिसंपूर्णऐच्छिकहै.यदिमुझेकोइभिजानकारिचाहियेतो, मैडा.रूपा .एम.बेल्लद, प्रोफेसर, शिशुविभाग, अध्यक्षजे.एन.मेडिकलकालेज, मानवविशयअनुसंधानपरसंस्थागतनीतिशास्त्रसमिति, ०८३१-२४७३७७७, १५२७ यहापरसंपर्ककरे. मेरेडाक्टरमेरिदेखबालकरेंगे.मैकभिभिइसअध्ययनसेबाहरजासकतिहूं.

हस्थाक्षर

सहमति का अनुरोध करने वाला व्यक्ति, कृपया लागू बॉक्स जांचें

सहमति प्राप्त (वयस्क प्रतिवादी के लिए) ☐

मैंने सहमति फॉर्म पढ़ा है या सहमति फॉर्म मुझे पढ़ा गया है मैं सहमति और हस्ताक्षर को समझतिहूं या नीचे दिए गए साइन की पुष्टि करति हूं कि मैं इस अध्ययन में भाग लेने के लिए सहमत हूं (प्रतिभागी को इस फॉर्म की एक प्रति प्राप्त होगी।)

पहचान संख्या: ☐☐☐☐

_____ _____

प्रतिभागी या कानूनी तारीख

सूचितसहमतिपत्र

अध्ययनचाउद्देश

मलाडा.अं तकोत्तरविद्यार्थिनि, एम.एसप्रसूति व स्त्रीरोगविभाग, डा.एम.बि.बेल्लद, प्रोपे प्रसूति व स्त्रीरोगविभाग, यांचामार्गदर्शनात, के.एल.इविश्वविद्यालयचाजे.एन.मेडिकलकालेजचाशिक्शादवाखानातगर्भवतिस्त्रीमध्येप्रसवपूर्वदेख बालचादौरानमूत्रपथचासंक्रंमणचाप्रसारयाचाअध्ययनकरण्यातआलेअसमलामाहितिदिले.

गर्भवतिस्त्रीमध्येयुटिऐहासामान्यसंक्रमणआहे.फुडेहेमातृएवंजन्मजातजटिलताओचाकारणहोउशकते. पिलोनेफ्राइटिस, एनिमिया, प्रिएक्लांप्शिया, झिल्लिकिसमयपूर्वविघटन, प्रीटर्मजन्म, जननमेवजनकमिहोनेअणिमांएवंशिशुचामरणहोउशकते.दक्षिणभारतमध्येयुटिऐचाप्रसरणकमिआहे. यामुळेहाअध्ययनचाउद्देशके.एल.इविश्वविद्याल चाजे.एन.मेडिकलकालेजचाशिक्शादवाखान्यातग र्भवतिस्त्रीमध्येप्रसवपूर्वदेखबालचादौरानमूत्रपथचासंक्रंमणयाचाप्रसारचाअध्ययनकरणे.

विधान

मीयासहमतिपत्रवरहस्थाक्षरकेलेतर, माझव्यक्तिगतविवरणनाव, वय, पता, शिक्षण, आरोग्य, इतिहासअणिकाहीजानकारिघेतायेइल.मूत्रचास्यांपलघेऊनपरीविक्षणकरणार.

यांचानतीजेबगूनमाझाअणिशिशुचाआरोग्याचिजानकारिगर्भवितरणझाल्यानंतरसांगणार.

जोखिम

याअध्ययनातकाहीजोखिमनाहिहोणार.

लाभ

अध्ययनचादौरान,

प्रसवपूर्वसमयातमाझ्हादिखबालकरणारअणिमूत्रचापरीविक्शणमध्येबैक्टिरियादिसेलतर,

त्याचाइलाजकरतायेइल.

भागिदारिलावित्तीयप्रोत्साहन

मलाकोण्ताहिप्रकारचावित्तीयप्रोत्साहननाहीमिळनार.

वैकल्पिक

अध्ययनमध्येभाग न घेतलेतर, माझ्हाप्रसवपूर्वअणिवितरणचा ६ आठवडापर्यंतदेखबालकरण्यातयेइल.

गौप्यता

माझ्यागौप्यतासाठि, माझ्हाकडुनघेतलेलजानकारिलानंबरदेणार. तुमचिजानकारिगौप्यठेविल. तुमचिमेडिकलफाइलफक्तदवाखान्यातवापराजाइल.

परिणामचाप्रकाशितकरण्याचाअधिकार

तुमचिजानकारिसहीतरहसेनापाजाईल.वैज्नानिकसंदर्भालाइस्तेमालकरण्यातयेइल.

संस्थागतनीति

तुम्हालाकाहीप्रश्नअसेल , याभविश्यातघावयारोगलक्षणअसेलतर, डा , स्नातकोत्तरविद्यार्थिनि, एम.एसप्रसूति व स्त्रीरोगविभाग, ० और याडा.एम.बि.बेल्लद, प्रोफेसरतथाप्रमुख, प्रसूति व स्त्रीरोगविभाग,के.एल.इविश्वविद्यालयके .एन.मेडिकर ८३ ९४४८१२४८९३ यान्हासंपर्ककरा.

स्वैच्छिकभागीदारि

माझिभागिदारिसंपूर्णऐच्छिकआहे.यदिमलाकाहिमाहितिपाहिजेतर, मीडा.रूपा.एम.बेल्लद, प्रोफेसर, शिशुविभाग, अध्यक्षजे.एन.मेडिकलकालेज, मानवविशयअनुसंधानचासंस्थागतनीतिशास्त्रसमिति, ०८३१-२४७३७७७, १५२७ यान्हासंपर्ककरा. माझेडाक्टरमाझिदेखबालकरणार. मीकधीपनयाअध्ययनसोडुनजाउशकतो.

हस्थाक्षर

सहमति अनुरोध करणारे व्यक्ति, कृपया लागू बॉक्स जांचें

सहमति प्राप्त (वयस्क प्रतिवादी साठि) ☐

मी सहमति फॉर्म वाचलेअणिसहमति फॉर्म मलावाचुनदाखवले.मी सहमति अणि हस्ताक्षर लासमझूनखालिदिलेसहिचिपुष्टिकरून अध्ययनात भाग घेण्याचिसहमतिआहेम्हणूनसांगते

(प्रतिभागी ला फॉर्म चि एक प्रति दिलाजाइल।)

पहचान संख्या: ☐☐☐☐

_____ _____

प्रतिभागी या कानूनी हस्ताक्षर तारीख

ANNEXURE II–

ETHICAL CLEARANCE CERTIFICATE

K.L.E.UNIVERSITY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)

Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 29 **Date: 22/11/2017**

To,

Dr. Anjana Krishna,
PG student in Obstetrics & Gynecology,
J.N.Medical College.
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"PREVALENCE OF URINARY TRACT INFECTION IN PREGNANCY AT FIRST ANTENATAL CARE VISIT – A HOSPITAL BASED STUDY AT THE TEACHING HOSPITAL ATTACHED TO KLE UNIVERSITY'S J N MEDICAL COLLEGE, BELAGAVI"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Roopa M Bellad)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

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ANNEXURE III – PROFORMA

Screening and recruitment form

Screening number: ☐☐☐☐

Date of screening (dd-mm-yyyy): ☐☐-☐☐-☐☐☐☐

First name : _____ Middle name : _____ Last name: _____

Age (years): ☐☐

OP number: ☐☐☐☐☐☐

Husband's name: _____

Husband's Address :

House number-_____

Street _____

Taluka_____

District_____

Mother's Address :

House number-_____

Street _____

Taluka_____

District_____

Phone number: _____

Husband's phone number: _____

Landline (optional): _____

1.Is it her first antenatal care visit at teaching hospital attached 1-yes ☐ - no

to KLE University's J. N. Medical College, Belagavi

2. Not a known case of renal disease 1-yes ☐ -no

The woman is eligible to consent only if answers to 1and 2 are yes

Eligible ☐
Consented ☐

Enrolled ☐
Not enrolled ☐

Data collection instrument

Enrollment number: ☐☐☐☐

I. **Socio demographic information**:

1. How old are you? ☐☐ ears)

2. What is the level of education? ☐

1= no education

2= primary education only

3= secondary education

4= post secondary/ tertiary education

5= no answer

II. **Present pregnancy**

3. What was the last day of your menstrual cycle? ☐☐ - ☐☐ - ☐☐☐☐

d d m m y y y y

5. Estimated date of delivery(EDD) by LMP

☐☐ ☐☐ ☐☐☐☐

6. Corrected Estimated date of delivery(EDD)if any

☐☐ ☐☐ ☐☐☐☐

7. Gestational age as per corrected EDD- ☐☐ days ☐

8. Obstetric score:

Gravida: ☐

Para: ☐

Living: ☐

Abortion: ☐

Stillbirth: ☐

9. Does the woman have the following symptoms in present pregnancy?

(1=yes 2=no)

- Vomiting ☐
- Dysuria ☐
- Fever ☐
- Chills ☐
- Increased frequency of micturition ☐
- Urgency ☐
- Burning micturition ☐
- Flank pain ☐
- Suprapubic pain ☐

10. Past history(1=yes 2=no)

History of any UTI in the past ☐

History of catheterisation in the past ☐

Known case of Diabetes mellitus ☐

11.Haemoglobin level (gm /dl) : ☐☐ ☐

III. Urine analysis and culture:

12.Urine analysis:

Pus cells/ hpf _____

RBC/ hpf _____

Epithelial cells/ hpf _____

Casts or crystals _____

Urine protein _____

Urine sugar _____

13. Urine culture

Number of organisms: _____

Organism: (1= yes, 2= no)

E.coli ☐

Coagulase negative Staph ☐

Staphylococcus aureus ☐

Klebsiella pneumoniae ☐

Enterobacter aerogenes ☐

Others ☐

If others, specify the organism _____

14. Antibiotic susceptibility of organism (if sensitive mark yes; if resistant, no)

Amoxacillin (AMX) ☐ yes ☐

Amoxacillin- clavulinic acid(AMC) ☐ yes ☐

Ceftriaxone(CRO)yes no ☐ ☐

Nitrofurantoin(NFT)yes no ☐ ☐

Ciprofloxacin(CIP) ☐ yes ☐

Norfloxacin(NOR) ☐ yes ☐

Others specify _____

OUTCOME

Number of antenatal visits ☐

Maternal outcome: (1- yes; 2 - no)

Miscarriage ☐

Pre eclampsia ☐

PROM ☐

Preterm Labour ☐

Foetal outcome: (1- yes; 2 - no)

Birth weight _____ kg

Low birth weight ☐

IUGR ☐

Prematurity ☐

Intra uterine death ☐