

# A Comparative Study of Incidence of Urinary Tract Infections during three Trimesters in Pregnancy

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## ABSTRACT

**Aim:** To provide a complete review of urinary tract infections during pregnancy among women at different stages.

**Methods:** In present study all aspects of urinary tract infections were observed like epidemiology, pathogenesis, resistance, clinical features and preventions.

**Results:** Current study stated that all the results are significant (<0.005) in Group A, Group B and Group C the positive Urine Analysis and Urine Culture indicated urinary tract infections in all the pregnant women (56.80±35.20, 48.30±10.18, 69±35.20, 78.30±20.18 and 96.80±35.20, 98.30±20.18) with variations in each trimester respectively.

**Conclusion:** It has seen that rate of urinary tract infections in third trimester is higher than second and first among pregnant women.

**Key words:** Bacteriuria, cystitis, gestation, pregnancy, pyelonephritis, urinary tract infection

## INTRODUCTION

There are many factors can cause urinary tract infections during pregnancy. In women the chances of urinary tract infections are higher than men because of shorter of urethra which make easier the entrance of bacteria to the bladder *Schnarr and Smaill* (2008). Similarly in pregnant women hormonal changes may cause urinary tract infections. In women the urethra is located close to the rectum and *E. coli*, comes from the bowel to reach in the bladder to cause urinary tract infections *Smaill and Gyte* (2010).

During pregnancy sex is healthy while *E. coli* may push into the urethra through downside pushing in vagina. Waste and extra water from the body removes from the body through the urinary tract *Mittal and Wing* (2005). Urine made up by kidneys and ureters carry to the bladder in some cases normal bacteria come from skin and other parts. The urinary tract infections may occur in bladder known as acute cystitis. The urethritis, nephritis are also part of urinary tract *Kenyon et al.* (2001).

Different researchers proved through their studies that at least 5 to 7 percent women may develop at least one urinary tract infections during pregnancy *Kenyon et al.* (2008). In a study it was seen that anatomical relationship of the female urethra to the vagina makes it liable to trauma during sexual intercourse as well as bacteria being massaged up the urethra into the bladder during pregnancy or childbirth; the moist environment of the females perineum favors microbial growth and predisposes females to bladder contamination *Kenyon et al.* (2003).

## MATERIALS AND METHODS:

Present study was conducted in Department of Obstetrics and Gynecology Islam teaching hospital Sialkot and DHQ Teaching Hospital Gujranwala. In this study 300 patients were selected and divided them into three different groups. In Group A, 50 women of trimester one in Group B, 50 women of trimester two while in group C, 50 women were of trimester three. Urine Analysis and Urine Culture

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pathological analysis are used to diagnose the UTI in different groups. Bacteriology of *Escherichia coli*, *Proteus mirabilis*, *Klebsiella pneumoniae*, and *streptococcus* and *Staphylococcus saprophyticus* was observed regarding percentage mean standard deviation. The raw data was interoperated with model SPSS.

## RESULTS

Group A, pregnant women with 8-12 weak

Parameters	UTI positive Mean ± SD	UTI negative Mean ± SD	P value
Urine Analysis	56.80±35.20	3.2±1.2	0.00
Urine Culture	48.30±10.18	1.7±2.4	0.00

<0.005

Urinary tract infections	Percentage Mean ± SD	P value
Acute cystitis	48.20±20.12	0.00
Acute pyelonephritis	30.80±10.12	0.00

<0.005

Bacteriology	Percentage Mean ± SD	P value
<i>Escherichia coli</i>	61±10	0.00
<i>Proteus mirabilis</i>	48±30	0.00
<i>Klebsiella pneumoniae</i>	19±20	0.00
<i>streptococcus</i>	4.3±2.1	0.00
<i>Staphylococcus saprophyticus</i>	2.7±2.8	0.00

<0.005

Group B, pregnant women with 14-24 weak

Parameters	UTI positive Percentage Mean ± SD	UTI negative Percentage Mean ± SD	P value
Urine Analysis	69±35.20	3.2±1.2	0.00
Urine Culture	78.30±20.18	1.7±2.4	0.00

<0.005

Urinary tract infections	Percentage Mean ± SD	P value
Acute cystitis	68.20±20.12	0.00
Acute pyelonephritis	50.80±10.12	0.00

<0.005

Bacteriology	Percentage Mean $\pm$ SD	P value
Escherichia coli	72 $\pm$ 10	0.00
Proteus mirabilis	50 $\pm$ 30	0.00
Klebsiella pneumoniae	19 $\pm$ 20	0.00
streptococcus	5.3 $\pm$ 2.1	0.00
Staphylococcus saprophyticus	2.7 $\pm$ 2.8	0.00

<0.005

Group C , pregnant women with 25-36 week

Parameters	UTI positive Percentage Mean $\pm$ SD	UTI negative Percentage Mean $\pm$ SD	P value
Urine Analysis	96.80 $\pm$ 35.20	3.2 $\pm$ 1.2	0.00
Urine Culture	98.30 $\pm$ 20.18	1.7 $\pm$ 2.4	0.00

<0.005

Urinary tract infections	Percentage Mean $\pm$ SD	P value
Acute cystitis	58.20 $\pm$ 20.12	0.00
Acute pyelonephritis	40.80 $\pm$ 10.12	0.00

<0.005

Bacteriology	Percentage Mean $\pm$ SD	P value
Escherichia coli	71 $\pm$ 10	0.00
Proteus mirabilis	58 $\pm$ 30	0.00
Klebsiella pneumoniae	29 $\pm$ 20	0.00
streptococcus	7.3 $\pm$ 2.1	0.00
Staphylococcus saprophyticus	3.7 $\pm$ 2.8	0.00

<0.005

All the results are significant (<0.005) in Group A , Group B and Group C the positive Urine Analysis and Urine Culture indicated urinary tract infections in all the pregnant women (56.80 $\pm$ 35.20, 48.30 $\pm$ 10.18, 69 $\pm$ 35.20, 78.30 $\pm$ 20.18 and 96.80 $\pm$ 35.20, 98.30 $\pm$ 20.18) with variations in each trimester respectively. Major UTI i.e., acute cystitis and acute pyelonephritis were diagnosed in the patients of each group. The identified Bacteria in each Group were Escherichia coli, Proteus mirabilis, Klebsiella pneumoniae, Staphylococcus respectively.

## DISCUSSION

McCormick et al.,(2008) stated that Urinary tract infections caused by mostly asymptomatic bacteria especially , acute cystitis and pyelonephritis in pregnant women during three trimesters. Delzell and Lefevre,(2000) claimed in their research that mostly Gram negative bacteria developed Urinary tract infections like Escherichia coli, Proteus mirabilis etc. Smaill and Vazquez (2007) found in their study that Escherichia coli are the most notorious pathogen

which spread Urinary tract infection in pregnant women. In another study researchers claimed that differences in urine pH and osmolality and pregnancy-induced glycosuria and aminoaciduria may facilitate bacterial growth, Vazquez and Villar (2003). On other side Sexual activity may increase the chances of Urinary tract infections in pregnant women Villar et al., (2000). Current study also presented the same results that in pregnant women the notorious pathogens are Gram negative and percentage of UTI in three trimesters is variable. It had seen in this study that the rate of UTI in third trimester is higher than the second and first among pregnant women.

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