

## Original paper

# Prevalence of Asymptomatic Urinary Tract Infections in Pregnant Women at Al-Abbasiah Primary Health Care Center in Kerbala

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## Abstract

**Background:** Asymptomatic urinary tract infection (UTI) during pregnancy may progress to pyelonephritis. Urinary tract infection increase risk of preterm labor and premature rupture of the membranes, and low-birth-weight infants.

**Aim:** To estimate prevalence of asymptomatic urinary tract infection during pregnancy

**Method:** A cross-sectional study was conducted in a total of 200 women (hundred pregnant women and hundred non-pregnant mothers) with no signs and symptoms of urinary tract infection, from 1st of January to 28th May of 2013. Mid-stream urine samples were collected from all participants and examined directly under high power field, Pus cells > 5 / HPF indicate the presence of infection .

**Result:** forty eight of the pregnant (48%) and twenty (20%) of the non-pregnant had UTI which was statistically very significant (p value < 0.005). Also, there was a significant statistical relation between the UTI and the educational level (p value < 0.05), but there was negative relation with the age (p value > 0.05).

**Conclusion:** there is a high prevalence of asymptomatic urinary tract infections in pregnant and non-pregnant women irrespective of their age or educational level of them

**Key words:** pregnancy, asymptomatic UTI, Al-Abbasiah

## Introduction

Infections in general are a major cause of morbidity and mortality in the world. Of the approximately 53 million deaths worldwide in 2009, at least a third was due to infectious diseases. Infection can be defined as the multiplication of microbes (from viruses to multicellular parasites) in the tissues of the host; the host may or may not be symptomatic<sup>(1, 2, 3, 4)</sup>. Urinary tract infection (UTI) is a common health problem<sup>(2, 5)</sup>. Urinary tract infections are more common in girls, who are also more likely to have asymptomatic bacteriuria<sup>(2, 5, 6)</sup>. Urinary tract infections are more among women compared with men due to shorter urethra, closer proximity of the anus with vagina, and pathogen entry facilitated by sexual activity<sup>(5)</sup>. Up to 50%

of women have a UTI at some time<sup>(5, 7)</sup>. The prevalence of UTI in women is about 3% at the age of 20, increasing by about 1% in each subsequent decade<sup>(5)</sup>. Urinary tract infection is one of the most common medical complications of pregnancy, UTIs occur in up to 20% of pregnancies and account for as many as 10% of antepartum hospitalizations<sup>(8, 9)</sup>. The incidence of UTIs increases during pregnancy<sup>(9)</sup>. Pregnant women are more susceptible to UTI, owing to altered anatomical and physiological state during pregnancy<sup>(8)</sup>. Urinary tract infection is defined as the presence of at least 100,000 organisms per milliliter of urine in an asymptomatic patient, or as more than 100 organisms/ml of urine with accompanying pyuria (>5 WBCs/HPF) in a symptomatic patient<sup>(10)</sup>. The microorganisms reach the urinary tract either ascending from the urethra,

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lymphatic, hematogenous, or direct extension from another organ system<sup>(2, 3, 5)</sup>. *Escherichia coli* is among the most common and important human bacterial pathogens, causing more than 90% of all urinary tract infections<sup>(11)</sup>. The asymptomatic UTI in pregnancy can lead to pyelonephritis, prematurity, low birth weight infants<sup>(6, 7)</sup>. This study was established to determine the prevalence of asymptomatic UTI in pregnant women at the area covered by Al Abbasiah primary health care center at the center of Kerbala province in Iraq. The null hypothesis (Ho) in this study postulates that there is no difference in the prevalence of UTI between pregnant and non- pregnant .

## Methods

A cross-sectional study was carried out at Al-Abbasiah primary health care center (at the center of Kerbala province in Iraq), from 1st of January to 21st of May of 2013. Two hundred female were included in the study, all of them had not any sign or symptom refer to the UTI, the female were divided into two group; group A (100 pregnant women, they were in the second trimester), and group B (100 non-pregnant mothers); The two groups were subdivided into further subgroups; those

below 25 years old of age and those over 25 years of age. The pregnant women attend the health center monthly, while the non-pregnant women were mothers who came for timing schedules of vaccination of their children. Mid-stream urine samples were collected from all participants using wide-mouthed sterile capped container, and examined directly under high power field, Pus cells >5/HPF were considered significant for infection. The null hypothesis (Ho) postulate that there is no difference between the prevalence of UTI in pregnant and non-pregnant women. Chi square, p value (p value < 0.05 is significant), odd ratio were used for the analysis.

## Results

The mean age of the pregnant women (group A) was  $26.27 \pm 11.535$  year "mean  $\pm$  2SD", while that of the non-pregnant women (group B) was  $27.24 \pm 8.972$  year, statistically not significant (p value > 0.05).

The prevalence of UTI among the whole participant was 34%, while it is 48% and 20% among pregnant and non-pregnant respectively, and that is very significant (p value < 0.001) (table -1).

**Table 1.** The association between UTI and pregnancy status

		Pregnant N (%)	Non pregnant N (%)	Total N (%)	P value
Urinary tract infection	+	48 (48 %)	20 (20 %)	68 (34 %)	P value < 0.001
	-	52 (52 %)	80 (80 %)	132 (66 %)	
Total		100	100	200	

In group A; five of the pregnant completed the primary school (two of them had UTI), fourteen of the pregnant women completed their middle school (eight of them had UTI), forty nine of the pregnant women complete the secondary school (twenty three of them had UTI), and 32% complete the post-secondary school (fifteen of them had UTI). While in the non-pregnant women group (group B); two of them

completed the primary school (no of them had UTI), sixteen of them completed their middle school (three of them had UTI), forty eight completed the secondary school (ten of them had UTI), and thirty four of them completed the post-secondary school (seven of them had UTI), (table -2)

The association between the educational levels and UTI were statically significant (table – 3) below.

Regarding the subgroups (25 out of 48 of pregnant with UTI) were below 25 years old age, while (13 out of 20 of non-pregnant) were below 25 years old age that

was not significant statistically ( $p$  value was  $> 0.05$ ) (table – 4).

The odd ratio was 4 (the non-pregnant was the denominator). So the null hypothesis ( $H_0$ ) was rejected.

**Table 2.** the educational level of both groups

	Group A		Group B		Total
	With UTI	Without UTI	With UTI	Without UTI	
Completed the primary school	2	3	0	2	7
Completed the middle school	8	6	3	13	33
Completed the secondary school	23	26	10	38	97
Completed an institute or college	15	17	7	27	66
Total	48	52	20	80	200

**Table 3.** the association between UTI and educational level

	With UTI	Without UTI	Total	P value
Completed the primary school	2	5	7	$< 0.05$
Completed the middle school	11	19	30	
Completed the secondary school	33	64	97	
Completed an institute or college	22	44	66	
Total	68	132	200	

**Table 4.** the relation of age of women with UTI

The age	With UTI	Without UTI	Total	P value
$>25$ years old	30	70	100	$>0.05$
$\leq 25$ years old	38	62	100	
Total	68	132	200	

## Discussion

The results demonstrated that the prevalence of asymptomatic UTI among all the women included in the study was 34%, while it was 48% in pregnant women, which was very significant ( $p < 0.005$ ) with odd of 4 which means that there is four times probability to get UTI during pregnancy. The result of this study lies between that of 66% in Al-Muthanna province and 30% in diyala province in Iraq. But the result was higher than that in Saudi Arabia (35.2%), Ethiopia (18.8%), Qatar (9.9%), Hong Kong (2 - 8.3%), Iran (6.1%), UAE (4.8%), but it is less than that of Nigeria (78 – 86%)<sup>(12- 15)</sup>. The asymptomatic UTI is common during pregnancy<sup>(1,2,5,6)</sup> can be attributed to urinary stasis, which results from hormonal ureteral dilation, hormonal ureteral hypo peristalsis, and pressure of

the expanding uterus against the ureters<sup>(3)</sup>. Seventy five per cent of the asymptomatic UTIs are sporadic, 25 % recurrent, 2 % have complication due to the presence of factors that make bacteria is persistent<sup>(2)</sup>. In pregnant women, asymptomatic UTI has clinical consequences, and both screening for and treatment of this condition are indicated<sup>(13, 14)</sup>. Asymptomatic UTI during pregnancy is associated with preterm birth and perinatal mortality for the fetus and with pyelonephritis for the mother<sup>(9)</sup>. A Cochrane meta-analysis found that treatment of asymptomatic UTI in pregnant women decreased the risk of pyelonephritis by 75%<sup>(16 - 18)</sup>. There were no previous studies in same center for comparison. But it is high enough that it is scary that it flagged red. It is worthy to ask regarding the difference among the above mentioned results; can be attributed to

genetic predisposition, behavioral factors, tissue specific receptors, or to underlying diseases? Can be attributed to anatomical defects, retention of urine (as the female prefer to withhold her urination for long time because of work)? Or can be attributed to the increasing usage of birth control measures? Or can be attributed to infection of their husbands? Is it recurrent? So we need further studies each of which concern with one question of the above, in addition to study the prevalence in other primary health centers in the city.

## Conclusion

There is a high prevalence of asymptomatic urinary tract infections in pregnant and non-pregnant women which it is directly proportional to the educational level of them .

## Recommendations

Further studies are recommended, these studies should include other sectors of city center of Kerbala, also the study should determine the prevalence of urinary tract infections in each trimester, the prevalence of urinary tract infections in the husband of the affected women, and we should determine the infected microorganisms.

## References

1. IDSA Guidelines for Asymptomatic Bacteriuria CID 2005:40 (1 March)
2. Lee Goldman, Andrew I. Schafer. Cecil textbook of medicine. 24<sup>th</sup> ed.
3. Gabre-Selassie S. Asymptomatic bacteriuria in pregnancy; epidemiological clinical and microbiological approach. *Ethiop Med J.* 1998; 36:185–192. (PubMed)
4. Sharifa A. Al Sibiani. Asymptomatic Bacteriuria in Pregnant Women in Jeddah, Western Region of Saudi Arabia: Call for Assessment JKAU: Med. Sci., Vol. 17 No. 1, pp: 29-42 (2010 A.D. / 1431 A.H)
5. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston. Davidson's principal and practice of medicine, 21st ed. pp 469. Churchill Livingstone, Elsevier
6. SY FONG et al. Asymptomatic Bacteriuria in Pregnant Women. *HKJGOM* 2013; 13
7. Tamara L. Callahan, Aaron B. Caughey. Blueprints obstetrics & gynecology 6th. ed. 2013 by Lippincott Williams & Wilkins, a Wolters Kluwer business. Pp.131
8. Tadesse et al. *BMC Research Notes* 2014, 7:155
9. Vasudevan R (2014) Urinary Tract Infection: An Overview of the Infection and the Associated Risk Factors. *J Microbiol Exp* 1: 00008
10. Tamalli. M1., Bioprabhu Sangar<sup>3</sup> and Alghazal, M. A. Urinary tract infection during pregnancy at Al-khoms, Libya. *International Journal of Medicine and Medical Sciences* ISSN: 2167-0404 Vol. 3 , pp. 455-459, July, 2013
11. Emanuel Rubin, Howard M. Reisner ; illustrations by Dimitri Karetnikov, George Barile, and Kathy Jaeger. *Essentials of Rubin's pathology* 6th ed.
12. Taisir Abdulelah kadhim , Incidence of urinary tract infection (UTI) among pregnant women in Al-Muthanna Province *journal of al-qadisiyah for pure science(quarterly)*, Year: 2013 Volume: 18 Issue: 4 Pages: 1-39
13. Sawsan Talib Salman, Nadhim Ghazal Noaman, Anfal Shakir Motib. *Epidemiological Study of Symptomatic and Asymptomatic Bacteriuria Among Pregnant Women Attending Antenatal Clinic in Baquba- Diyala Province. Diyala Journal of Medicine* Vol. 4, Issue 1, April 2013
14. Nawal Salim Al Senani. Asymptomatic Bacteriuria in Pregnant Women *Bahrain Medical Bulletin*, Vol. 33, No. 4, December 2011
15. Kasraeian et al Asymptomatic bacteruria in pregnant women. *Saudi Med J* 2009; Vol. 30.
16. Dan L. Longo , Dennis L. Kasper, Anthony S. Fauci, Stephen L. Hauser, Joseph Loscalzo, *Harrison's Principles of Internal Medicine.* 18th ed. Chapter 288. Urinary Tract Infections, Pyelonephritis, and Prostatitis.
17. Maxine A. Papadakis , Stephen J. McPhee, Michael W. Rabow. *Current diagnosis and treatment 2015* by McGraw-Hill Education.
18. Robert S. Porter MD, Justin L. Kaplan MD. *The Merck Manual of Diagnosis & Therapy.* 19th Edition (2011), pp. 2819.