DOI: https://doi.org/10.53350/pjmhs202317479

ORIGINAL ARTICLE

Frequency of Preterm Birth in Females Diagnosed with Urinary Tract Infection during 2nd Trimester

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ABSTRACT

Background: Preterm birth is also associated with infections such as urinary tract infection.
Aim: To find frequency of preterm birth in females diagnosed with urinary tract infection during 2nd trimester.
Study design: Cross sectional study.
Methodology: Total of 338 cases meeting inclusion criteria were enrolled through non-probability consecutive sampling from OPD of Obs and Gynecology department of Jinnah Hospital Lahore for duration of 06 months. Their basic information like age, parity, gestational age at diagnosis of UTI was taken after taking an informed consent. All diagnosed case of UTI was treated with standard protocol and then females were followed up till their delivery. Data was evaluated by using SPSS v.24. Quantitative data was presented as mean ± SD. Qualitative data was presented as frequency and percentage. Chi-square test was applied with P-value ≤0.05 taken as significant.
Results: In this study, mean gestational age at time of UTI diagnosis was 19.93 ± 4.14 weeks with minimum and maximum gestational age as 13 and 27 weeks. According to operational definition, preterm birth was noted in 100(29.59%) of the females while in 238(70.41%) females had term delivery.
Practical Implication: As there was limited local data regarding this common health issue and lack of followed-up specifically to see frequency of preterm birth among pregnant females having UTI at our clinical set-ups thus results of this study helped to identify higher preterm birth rate in future among females presenting with UTI thus proper management can minimize the risk of preterm birth.
Conclusion: It was concluded that a high number of females had preterm birth after diagnosis of UTI. Hence, in future females having UTI need more attention to reduce the risk of preterm birth.
Keywords: Urinary Tract Infection, Pregnancy, Gestational Age, 2nd Trimester and Preterm Birth.

INTRODUCTION

Literature review has shown that ascending infections from the urethra among pregnant females are more common due to structural, physiological and functional urinary tract changes[1]. Incidence of urinary tract infections (UTIs) rises during pregnancy that poses a great therapeutic challenge to medical teams. It has been documented that UTI during pregnancy is linked with serious complications thus affecting both mother and her child significantly[1,2]. Its incidence according to one estimate is about 8% among pregnant women if left untreated than serious complications develop[3]. This disease may present as acute cystitis or pyelonephritis as commonly caused by *Escherichia coli*[4].

According to one estimate, asymptomatic bacteriuria occurs in 2-10% of pregnancies that may convert into acute pyelonephritis.[5] Various adverse events like preeclampsia, preterm birth, intrauterine growth restriction and low birth weight baby occur during pregnancy due to UTI as documented previously[4,5]. According to literature review, it has been documented that high frequency of preterm deliveries occur in women with UTI and poses important independent risk factor for delivery before 37 weeks' gestation[6]. Similar results were reported by another study that concluded women with UTI had high rates of preterm deliveries (31.6%)[7].

According to one previous study, preterm premature rupture of membrane (PPROM) and UTI affects approximately 3% of all pregnancies and is responsible for one-third of all preterm births. In their study, almost 14.3% of pre-term pregnancies were due to above mentioned issues especially UTI[8]. Another study demonstrated that pregnant females having UTIs resulted in preterm birth but the frequency was very low (4.5%). This specially happened among those who developed preterm premature rupture of membrane as well[9].

As there was limited local data regarding this common health issue and lack of followed-up specifically to see frequency of preterm birth among pregnant females having UTI at our clinical set-ups thus results of this study helped to identify higher preterm birth rate in future among females presenting with UTI thus proper management can minimize the risk of preterm birth. By reducing frequency of preterm birth we can reduce neonatal complications and mortality in future.

Thus objective of the study was to find frequency of preterm birth in females diagnosed with urinary tract infection during 2nd trimester in local population.

Received on 07-10-2022
Accepted on 17-03-2023

METHODOLOGY

After approval from ethical committee, this cross sectional study enrolled 338 cases meeting inclusion criteria through non-probability consecutive sampling from OPD of Obs and Gynecology department of Jinnah Hospital Lahore for duration of 06 months. This study enrolled pregnant females having symptoms of UTI. Their basic information like age, parity, gestational age at diagnosis of UTI was taken after taking an informed consent. All diagnosed case of UTI was treated with standard protocol and then females were followed up till their delivery as done in previous study with few modifications.[10] Females having age from 18-40 years with any parity and diagnosed UTI during 2nd trimester 13 to week 27 of pregnancy (on USG) were enrolled. Females having multiple pregnancy (on USG), gestational diabetes, PIH and history of C-section or preterm delivery were excluded from present study.

Statistical analysis: Data was analyzed in SPSS 24. Mean±S.D was found for quantitative data like age, weight, height, BMI and gestational age at diagnosis of UTI. Frequency (%) was used for preterm birth and parity. Data was stratified for age, BMI and gestational age. Post stratified Chi-square test was used taking p-value ≤ 0.05 as significant.

RESULTS

In this study, mean age of females was 29.33±6.73 years. There were 172(50.89%) females who were 18-29 years old and 166(49.11%) females were 30-40 years old (Fig-1).

The mean gestational age at time of UTI diagnosis was 19.93 ± 4.14 weeks with minimum and maximum gestational age

as 13 and 27 weeks as shown in Table-1. The mean weight, height and BMI were 70.48±18.40 kg, 1.63±0.10 and 26.04±3.90.

Fig-1: Participants Distribution among different age groups

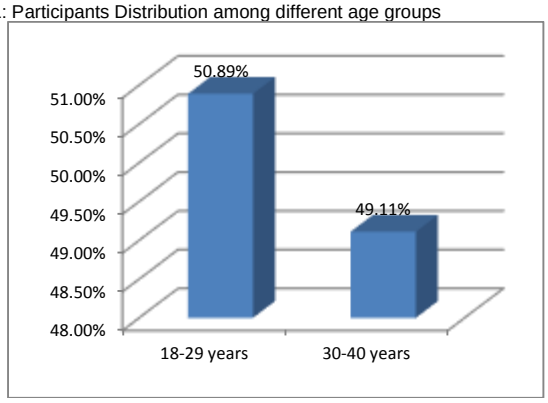
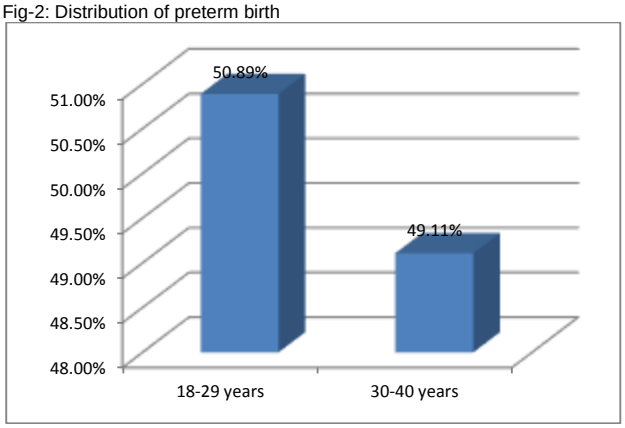


Table-1: Demographic Parameter of Enrolled Participants

Parameters	Mean ± SD
Gestational Age (weeks)	19.93 ± 4.14
BMI (kg/m^2)	26.04±3.90

Preterm birth was noted in 100 (29.59%) of the females while in 238(70.41%) females had term delivery as shown in (Figure-2).

Fig-2: Distribution of preterm birth



In age group 18-29 years, 50(29.1%) had preterm birth and in 30-40 years of age 50(30.1%) females had preterm birth (Table-2). In females with gestational age group 13-22 week 65(27.5%) females had preterm birth and in gestational age group 23-27 weeks 35(34.3%) females had preterm birth (Table -2).

Table-2: Stratification of Preterm birth with BMI, Age & Gestational Age

Parameters		Preterm birth		p-value
		Yes	No	
Gestational Age (weeks)	13-22	65(27.5%)	171(72.5%)	0.211
	23-27	35(34.3%)	67(65.7%)	
Age (years)	18-29	50(29.1%)	122(70.9%)	0.823
	30-40	50(30.1%)	116(69.9%)	
BMI (kg/m^2)	Obese	44(56.4%)	34(43.6%)	0.001*
	Non-obese	56(21.5%)	204(78.5%)	

*****Statistically significant

DISCUSSION

Literature review has shown that ascending infections from the urethra among pregnant females are more common due to structural, physiological and functional urinary tract changes.[1,10] Incidence of urinary tract infections (UTIs) rises during pregnancy that poses a great therapeutic challenge to medical teams. It has been documented that UTI during pregnancy is linked with serious complications thus affecting both mother and her child significantly[1,2]. Its incidence according to one estimate is about 8% among pregnant women if left untreated than serious complications develop[3]. This disease may present as acute cystitis or pyelonephritis as commonly caused by *Escherichia coli*[4].

Our results showed that preterm birth was seen in 100(29.59%) of the females (Fig. 2) while in 238(70.41%) females had term delivery. According to literature review, it has been documented that high frequency of preterm deliveries occur in women with UTI and poses important independent risk factor for delivery before 37 weeks' gestation.[6] Similar results were reported by another study that concluded women with UTI had high rates of preterm deliveries (31.6%)[7]. Thus, our results were in line with many previous studies as documented.

According to one previous study, preterm premature rupture of membrane (PPROM) and UTI affects approximately 3% of all pregnancies and is responsible for one-third of all preterm births. In their study, almost 14.3% of pre-term pregnancies were due to above mentioned issues especially UTI[8]. Another study demonstrated that pregnant females having UTIs resulted in preterm birth but the frequency was very low (4.5%). This specially happened among those who developed preterm premature rupture of membrane as well[9].

One previous study correlated epidemiologic factors with uro-genital infections and preterm birth. Their study concluded that only Fifty-four (8.0%) pregnancies had preterm birth. Their results were paradoxical to our findings as there were 29% preterm births in our enrolled participants[9]. Another study reported that out of the 2014 pregnant women attending clinic in this study, 14.4% were diagnosed with urinary tract infections in the third trimester.[10,11] The prevalence rate of the infections was affected by the age, with pregnant women below 25 years showing higher susceptibility (P= 0.018) compared to pregnant women above 35 years age group. There was a significant association between preterm delivery, low birth weights and urinary tract infections in pregnant women (P<0.01)[11]. Another studies concluded that significant association between UTI and IUGR (p<0.001), pre-eclampsia (p<0.001), Caesarean Delivery (p<0.001) and pre-term deliveries (p<0.001) persisted among pregnant females having UTI but no treatment[12-15].

Limitations of study: Financial constrains and limited resources with no genetic workup and long follow-ups added to limitations. It was a single centre study.

CONCLUSION

It was concluded that a high number of females had preterm birth after diagnosis of UTI. Hence, in future females having UTI need more attention to reduce the risk of preterm birth.

Author's contribution: SR&AAS: Overall supervision and Write up and literature review, **MF&SN:** Literature review help in write-up.

Funding: None

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