RESEARCH ARTICLE

INCIDANCE AND RISK FACTOR FOR PRETERM LABOUR IN AL-BATOOL TEACHING HOSPITAL.

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Manuscript Info	*Abstract*
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Background: The incidence of preterm birth (PTB) continues to rise world-wide. Preterm labour is a multifactorial condition associated with a high risk of neonatal morbidity and mortality, especially at lower gestational ages. Three main conditions explain preterm birth: medically indicated (iatrogenic) preterm birth, preterm premature rupture of membranes (PPROM) and spontaneous (idiopathic) preterm birth.Despite being retrospective, a classification according to gestational age at birth is important for neonatal prognosis. Preterm birth is stratified into mild preterm (32–36 weeks), very preterm (28–31 weeks) and extremely preterm (<28 weeks) with increasing neonatal mortality and morbidity. Recent studies suggested that infection was mostly responsible for extreme preterm birth, while stress and lifestyle accounted for mild preterm birth, and a mixture of both conditions contributed to very preterm birth. It is important to find the causes and risk factors of PTB to treat them adequately for preventing the recurrence. UTI and anemia were the most frequent risk factors
Objective: To assess the incidence and risk factors of PTB.
Patients and method: A total of 50 consecutive inpatient aged 16 to 45 years with PTB. A simply designed questionnaire was used, which contain information about risk factors which is taken from patients during a period from 15th of October 2016 – 15th of January 2017
Result: Approximately 4.5% of PTB occur during the period of our study. There were high incidence rate of UTI (86%), anemia (70%) , last birth preterm (42%) , and others .

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Introduction:-

With its associated morbidity and mortality, preterm delivery is still represents one of the major unsolved problem in obstetrics and gynecology [1].

Preterm labor defined as birth before 37week (259) [2] It is associated with high risk of neonatal morbidity and mortality, especially very preterm. Like cerebral palsy learning disabilities, sensory deficits. The morbidity associated with preterm birth may extend to later life resulting in enormous physical, psychological and economic cost [3] .

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Epidemiology of preterm labor:-
The overall incidence of preterm labor is reported to be 6-15% and about 4-50% of these occur spontaneously, where 25% occur following preterm, pre-labor rupture of membrane (PPROM). Iatrogenic preterm labor due to obstetric intervention to avoid maternal or petal compromise, account for another 25% [4].

Classification:- For purposes related to aetiology, outcome and recurrence risk, preterm birth should divided into 3 gestational period, mildly preterm birth at 32+0 to 36+6 wk (6.1% of preterm birth), very preterm birth at 28+0 – 31+6 wk (incidence 0.9%) and extremely preterm birth at 24+0 to 27+6 wk (0.4%) [5]

Prediction of preterm labor:-
Up to 75% of preterm labor occurs either spontaneously or following PPROM and many attempts have been made to develop methods that may help us to predict the onset of reterm labor so that measures could be taken to prevent its occurrence. These include –
1. Risk markers
2. Home uterine activity monitoring (HUAM)
3. Salivary estriol
4. Screening for bacterial vaginosis (BV)
5. Screening for fetal fibronectin (fFN)
6. Cervical ultrasonography (cervical length assessment)[6]

Risk markers:-
A previous history of preterm labor is the strongest risk marker. It has been estimated that the incidence of preterm labor in subsequent pregnancies after one preterm birth rises to 14.3% and after two preterm births to 28% [7].
Other risk markers include multiple pregnancy, cigarette smoking, cervical incompetence or uterine anomalies, uterine over-distension (polyhydraminos, macrosomia, fibroids), previous cervical surgery [7, 8], using smokeless tobacco [9], bleeding in early pregnancy [10], bacterial vaginosis, poor socioeconomic or educational status, and young or advanced maternal age.

There is now evidence to support an association between severe periodontal disease and spontaneous preterm labor [11]. Short interval between pregnancies (less than 12 months) has been found to increase the risk of recurrent preterm birth [12]. Recently, domestic violence, especially injury due to physical abuse, was found to be significantly associated with both preterm birth and low birth weight [13].

Home uterine activity monitoring (HUAM):-
HUAM is based on the principle of tocodynamometry and created a lot of interest and excitement among obstetricians when it was first introduced. It was tried in women with risk markers for preterm labor. Recently, a large randomized trial involving 2422 patients showed no benefit of HUAM in predicting preterm labor [14].

Salivary estriol:-
Two prospective trials showed that salivary estriol was more effective in predicting preterm labor than traditional risk assessment. However, this test has very poor sensitivity and specificity and has a very high false positive rate [15]

Screening for bacterial vaginosis (BV):-
Infection is closely associated with PPROM, which accounts for almost one third of preterm labor. Abnormal genital tract flora at 26-32 weeks of gestation was associated with preterm birth with an odds ratio (OR) of 1.4 to 2 [16, 17]. Half of these women with BV are asymptomatic. An association has been found between BV and preterm labor and it has been found to increase the risk of preterm labor by two-fold [18]. Centers for Disease Control and Prevention recommends that women with BV diagnosed during pregnancy be treated with oral metronidazole 250 mg three times per day for seven days [19].

Screening for fetal fibronectin (fFN):-
Fetal fibronectin (fFN) is a basement membrane protein produced by the fetal membranes and functions as an 'adhesion binder'. It facilitates the attachment of the placenta and membranes to the uterine decidua and is normally detectable in cervical secretions until 16-20 weeks of gestation. Appearance of fFN in cervical secretions after 24 weeks of gestation may indicate disruption of the normal adhesion between chorioamnion and the underlying decidua [20]. Many studies have shown an increased risk of preterm birth, if fFN is positive after 24 weeks and

decreased risk if this protein is negative in cervical secretion. The specificity of fFN test for predicting preterm delivery within 1 and 2 weeks was 89%, whereas for delivery within 3 weeks it was 92%. The sensitivity of the test in predicting the onset of preterm labor within 1 week and 3 weeks was 71% and 59%, respectively [21].
It appears that a negative fFN test is useful in ruling out an imminent preterm delivery [20].

Cervical ultrasonography (cervical length assessment):-
It is widely accepted that a cervical length of less than 25 mm between 24-28 weeks may increase the relative risk of preterm delivery. Hence, currently there is no strong evidence to support routine cervical assessment using ultrasound between 24-28 weeks for the purpose of predicting preterm delivery. However, it may have a place in high-risk pregnancies or in combination with fFN assessment [19, 20].

Combination of fFN and cervical ultrasonography:-
Cervical length assessment in conjunction with fFN estimation in cervicovaginal secretions in women with high risk of preterm delivery may be useful. Hence, a combination of cervical length assessment using ultrasound scan and estimation of fFN may help predict the recurrence of preterm delivery in high-risk women [22].

Table 2:-Combination of cervical length assessment and fetal fibronectinfFN in predicting recurrent risk of preterm delivery.

Cervical length	Recurrent risk of preterm delivery	
	fFN Positive	fFN Negative
< 25 mm	65%	25%
26 – 25 mm	45%	14%\
> 35 mm	25%	7%

Patients and methods:-
A prospective clinical study carried out in Al-batool teaching hospital during a period from 15th of October 2016 – 15th of January 2017. During this period, the total number of term deliveries (vaginal or c/s) are obtained.

In addition, all preterm labor in this period also taken, and a designed questionnaire was used, which contain information from patient like, name, age, address, occupation, blood group. In addition to all risk factors of preterm labor include history of preterm birth, twin pregnancy, smoking etc.

An informed oral consent is obtained from the patient after explaining the purpose of this questionnaire.
In addition, investigations done for each patient include complete blood count, general urine exam, ultrasound, c-reactive protein, culture of vaginal and cervical secretion, with recording the results and follow up the patients.

Results:-
In our study, the mean age of the patient was 25.02±3.12. While the mean gestational age was 32.12±3.12. The parity was 2.51±0.5 all these are presented in table 1.

Table 1:- Dermographic parameters of patient

Parameter	Mean±SD
AGE	25.02±3.12
GA	32.12±3.12
Parity	2.51±0.5

Regarding blood group the most common blood group in patient with preterm labor during the period of our study was O^+ (44%) then A^+ (28%) B^+ (12%) AB^+ (8%) O^- (4%) and both A^- and B^- (1%) as show in table 2. Also table 2 show that preterm is higher in those with low education level, e.g. it is about (30%) in those who did not complete the primary education, and lowest in those with higher education (university 18%).

TABLE 2

Parameter		No	%	X^2	P
Blood Group	A+	14	28.00%	53.32	<0.001***
	A-	1	2.00%		
	B+	6	12.00%		
	B-	1	2.00%		
	AB+	4	8.00%		
	O+	22	44.00%		
	O-	2	4.00%		
Education	Illitrate	10	20%	25.63	0.016*
	Incomplete Primary	15	30%		
	Primary	12	24%		
	Secondary	4	8%		
	University	9	18%		

Regarding the type of preterm delivery the most common type is mild preterm (58%) while very preterm (38%) extremely preterm (4%) as shown in table 3.

Table 3:-Types of preterm labor

GA	NO	%	X^2	P
24-27+6	2	4.00%	32.44	0.007**
28-31+6	19	38.00%		
32-36+6	29	58.00%		

Regarding risk factor of preterm delivery the most common risk factor in our study was urinary tract infection (86%) followed by anemia (70%) fig.1
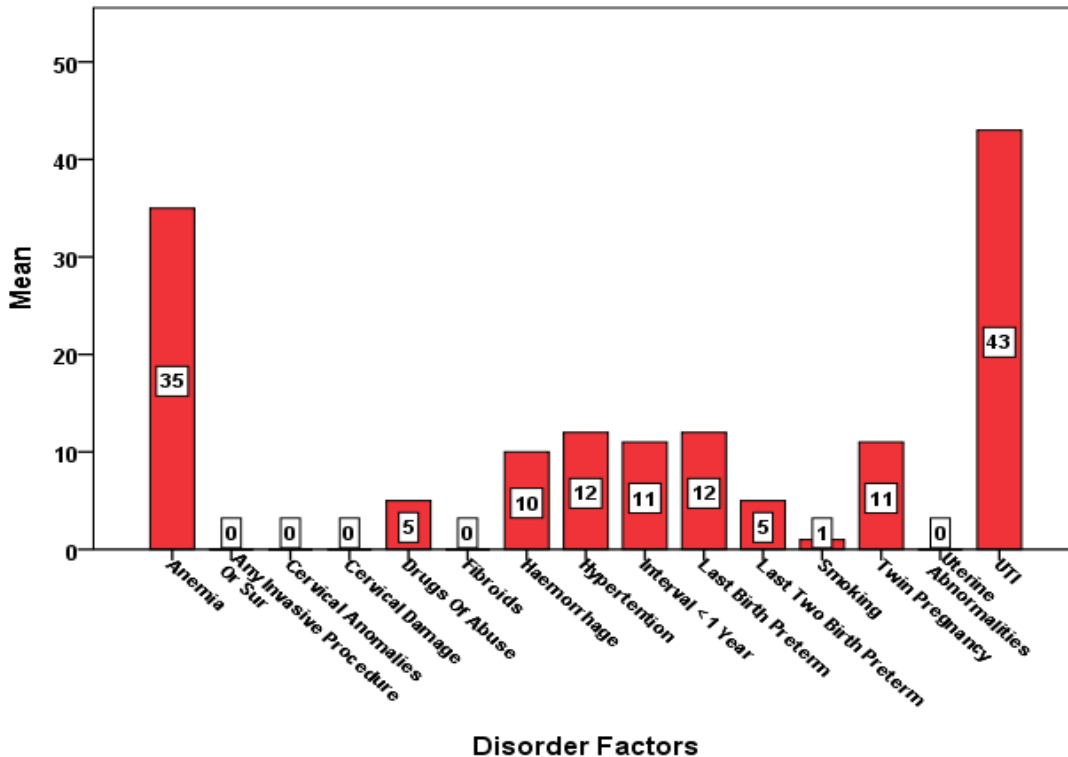

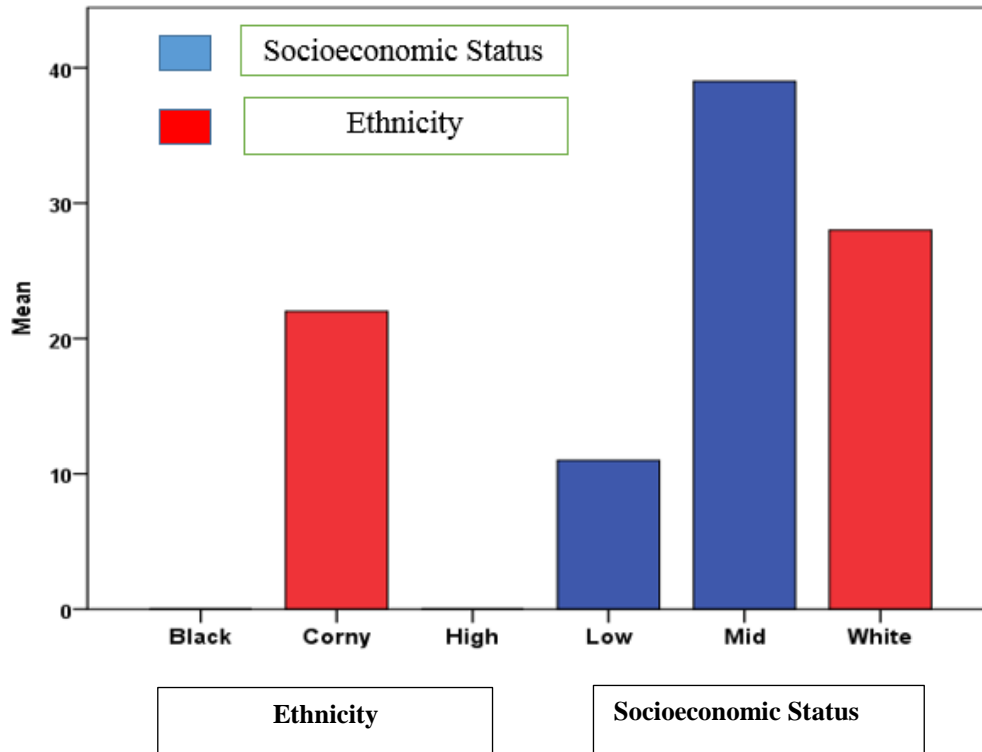**Figure 1:-** Show the incidence of risk factor according to number of cases

Figure 2:-Show the relationship between Ethnicity and Socioeconomic and their effect on PTL according to number of cases

Discussion:-

Preterm is an obstetric problem that continue to rise worldwide [24]. In our study the overall incidence of preterm labour was 4.5%, this agrees with Edwin Chandraharan, Sabaratnam Arullkumaran [25] and Ekkehard SchleuBner [26] they reported that the incidence of preterm labour range between 5 – 9%.

Regarding the clinical type of preterm labour, in our study mild preterm labour has a higher incidence 58 % followed by very preterm labour 38%, while extreme preterm labour 4%.This finding agrees with Jean – Marie Moutquim [27] who that majority of preterm labour are mild and only 10 % are very preterm labour whileonly 5% are extremely .Also agrees with Gustaff Albert Dekker [28] who found the same finding to our study.

Regarding risk factors of preterm labour we found that infection (UTI) is the most commen risk factor followed by anemia, this agrees with Jean – Marie Moutquim [27] and Gustaff Albert Dekker [28] who reported that infection was responsible for preterm labour.

Other risk factors like anemia, hemorrhage, multiple pregnancy, and hypertension also have a high rate of incidence as a causative role in our study and this agrees with Jean – Marie Moutquim [27] and Gustaff Albert Dekker [28].

In our study no role for utrine anomalies, cervical damage or cervical anomalies and this agrees with Jean – Marie Moutquim [27] and Gustaff Albert Dekker [28] and this may be due to short period of this study and that such cases may be referred to tertiary centers in the capital.

Conclusion:-

Preterm birth is not as uncommon as previously suggested. It is a dramatic event for the infant born too early, causing distress for child and parents while also burdening both parents and society. The ineffectiveness of interventions directed towards known risk factors highlights the lack of understanding of plausible causal pathways,

and that UTI, anemia, last birth preterm, hypertension, and twin pregnancy are the most common risk factors. The goal of all attempts to prevent and treat premature labor is to improve newborn infants' chances of surviving with as few complications as possible.

Recommendation:-

1. More educations about risk factors of PTB.
2. Advice the patient who have clinical feature of PTB to make the investigation includes a full blood count, urinalysis, culture of vaginal and cervical secretions, C - reactive protein estimation and ultrasound.
3. Advice patient who at risk of PTB to get rest and avoids strenuous physical workload, psychosocial stress or stressful life events,
4. More advices to improve nutritional state.
5. Routeinly checking about hypertension
6. For women with stressful jobs, physicians may recommend a lower workload or even a temporary cessation of work to lower the risk of preterm birth.

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