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Research Article

**AN ASSESSMENT OF TO ANALYSE THE ONSET OF UTERINE
CONTRACTIONS AND PRE-TERM DELIVERIES IN ORDER
TO DOCUMENT THE DIURNAL INFLUENCE****Dr. Shakil Ahmad, Dr. Muhammad Munib Ramzan, Dr. Hafsa Saeed**
Allied Hospital Faisalabad**Abstract:**

Objective: The aim of this study was the analysis of preterm delivery and uterine contractions' onset for the purpose of recording diurnal influence.

Methodology: We conducted our research at Allied Hospital, Faisalabad and research span over the time period from January to December 2017. We recorded the details like uterine contractions' onset, preterm labour parity's establishment and baby's gender. For the inferential and descriptive statistics analysed the data using SPSS Software.

Results: We recorded a total of 632 preterm deliveries during the period of the research study. In about 38.33 % (340) deliveries, we could record the exact time of uterine contractions' onset. Labour which occurred due to uterine contraction started between two and five o'clock in the morning. A total of 397 deliveries happened from 8 p.m. to 8 a.m., during which 49.2% (311) deliveries happened between 2 a.m. and 8 a.m.

Conclusion: The demonstration of diurnal rhythm is in preterm labours. From 2 a.m. to 5 a.m., the majority of the contractions started and the deliveries mostly occurred from 2 a.m. to 8 a.m.

Keywords: Preterm Labour, Preterm Delivery, Transvaginal Ultrasonographic Scanning (TVUSS), Diurnal Rhythm, Home Uterine Activity Monitoring (HUAM), Fetal Fibronectin (FFN).

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INTRODUCTION:

When the uterine contractions reach adequate frequency and strength to affect the effacement of the cervix and progressive dilation between twenty and thirty-seven gestation weeks, we refer this condition as Preterm Labor [1]. People usually speculate that the time of year and day affects the birth's frequency [2]. Although the methodologies to determine the labour's onset are unexplained yet, it is clear that the peak hours for diurnal rhythms of labour onset are during night hours. A major role of the pituitary/hypothalamus is probable as oxytocin (a labour-inducing hormone) and uterine contractions give signs of strong diurnal rhythms [4]. The major cause of neonatal mortality and morbidity is pre-term labour, which causes complication in about five to ten percent of pregnancies [5]. In developed as well as developing countries, pre-term labour is a leading issue of public health in terms of costs of health care, long-term disability and life loss [6 – 8]. It is difficult to say if it is entirely a process of pathology or a representation of early maturation of psychological process. There is also a suggestion that early preterm labour may represent a mechanism of pathology and late-onset preterm labour is a mechanism of psychology [9]. Delivery and labour times, as in the practice of hospital, are mostly not compatible. It is significant especially in the case of pre-term labour for managing it effectively will result in improvement of neonatal births and reduce the costs of health care. We conducted this research to record the uterine contractions onset timing in the

cases where delivery was the result of pre-term labour. We also recorded the pre-term deliveries timing.

METHODOLOGY:

We conducted our research at Allied Hospital, Faisalabad and research span over the time period from January to December 2017. The aim of this study was the analysis of preterm delivery and uterine contractions' onset for the purpose of recording diurnal influence. We only considered and included the time in our study, which the nursing staff or doctors recorded. We took the nearest hour as the approximate time for 1st uterine contraction. We also documented the time of pre-term labour's onset with the baby's gender and women's parity. For the inferential and descriptive statistics analysed the data using the SPSS Software.

RESULTS:

During the period of study spanning 3 years, we recorded 10,544 deliveries. The hospital admitted 887 women having pre-term labour. Total 632 deliveries took place with 309 baby boys and 323 baby girls. The percentage of primigravida women was about 33.5% (212) whereas multigravida women were 24.8% (157). The availability of a record of the exact time of uterine contractions' onset was only in 38.33 % (340) cases, which indicate early morning as the peak. A total of 397 deliveries happened from 8 p.m. to 8 a.m., amongst which 49.2% (311) deliveries happened between 2 a.m and 8 a.m.

Table – I: Uterine Contractions

Time (hrs)	Patients
0800 – 1100	19
1100 – 1400	5
1400 – 1700	11
1700 – 2000	9
2000 – 2300	3
2300 – 0200	21
0200 – 0500	148
0500 – the 0800	119

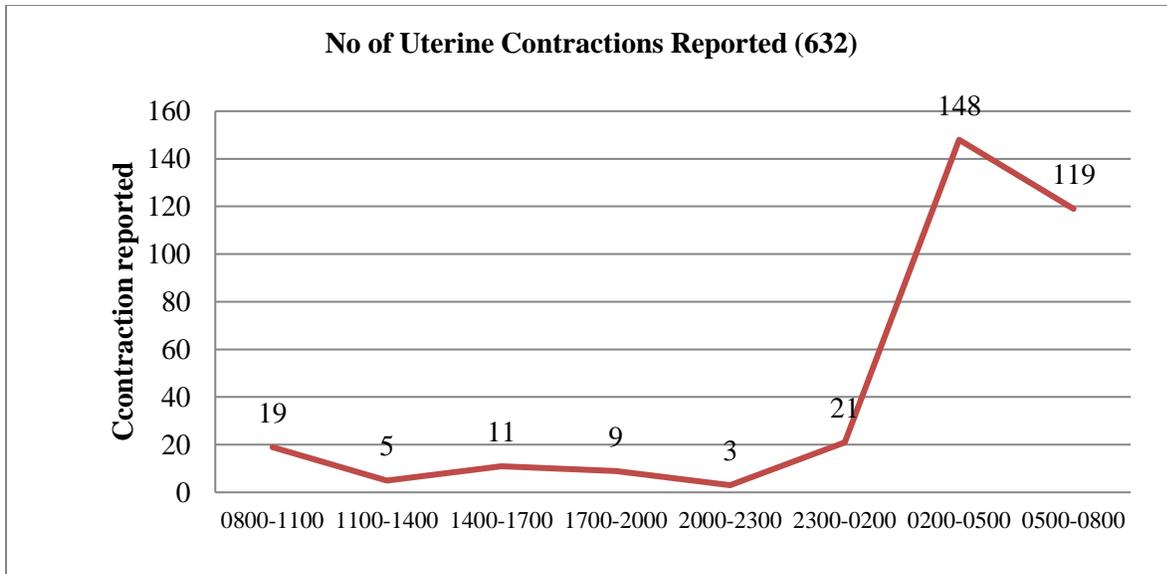


Table – II: Onset of Pre-Term Deliveries

Time (Hrs)	Patients
0800 – 1100	39
1100 – 1400	53
1400 – 1700	98
1700 – 2000	42
2000 – 2300	37
2300 – 0200	51
0200 – 0500	186
0500 – 0800	125

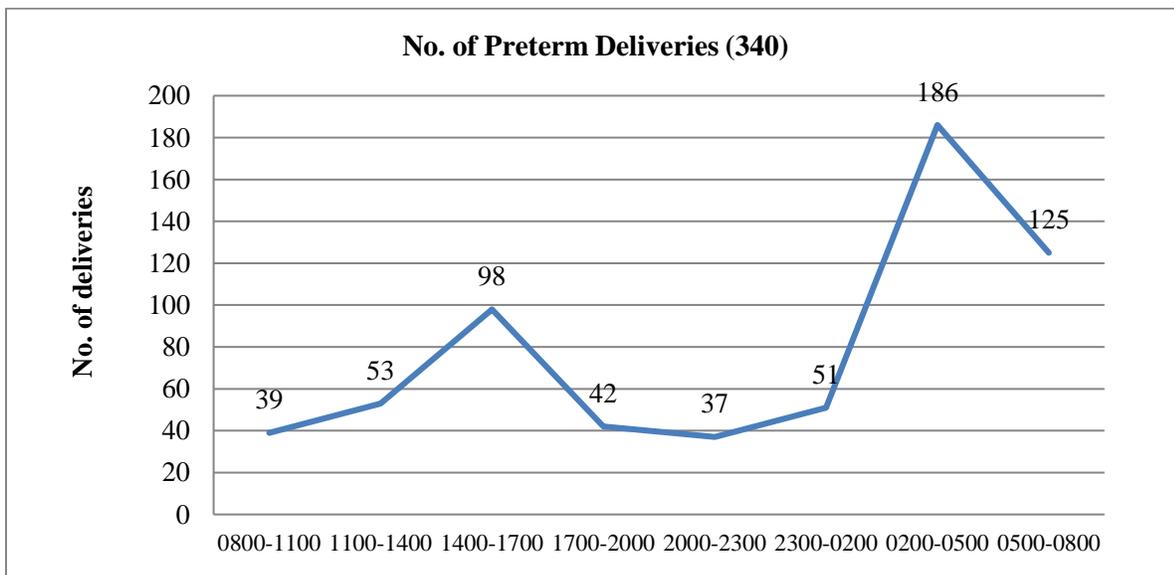
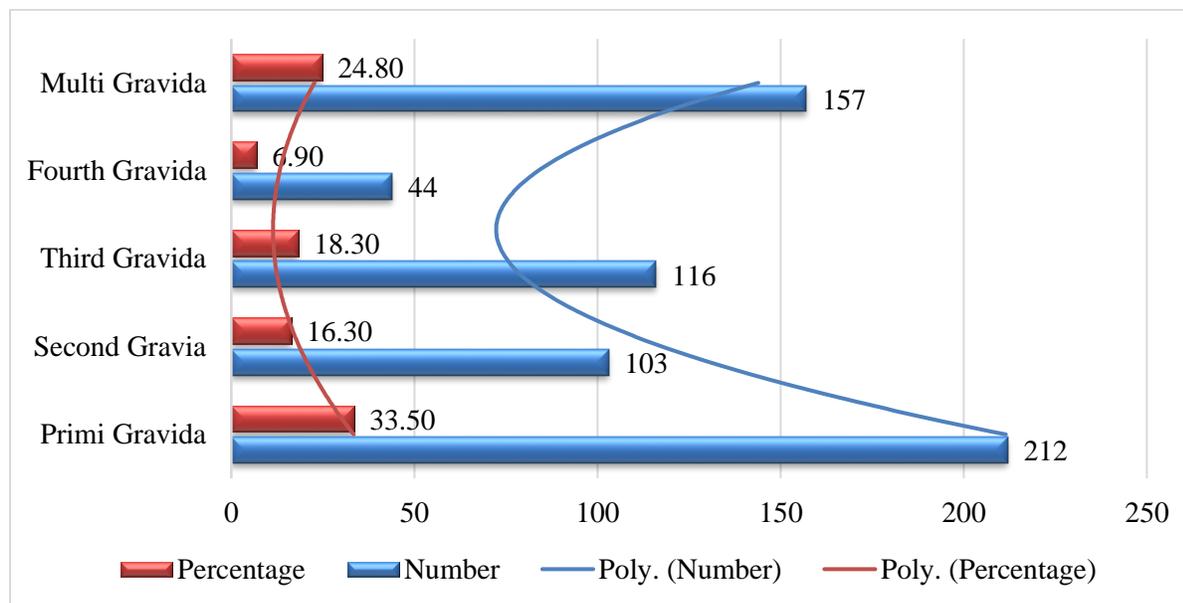


Table – III: Parity of Patients with Pre-Term Labor (632)

Parity	Number	Percentage
Primi Gravida	212	33.50
Second Gravida	103	16.30
Third Gravida	116	18.30
Fourth Gravida	44	6.90
Multi Gravida	157	24.80

**DISCUSSION:**

We found in our research results that there is not only a variation in diurnal of preterm labour but also the deliveries occurred mostly at the times when paramedical and medical staff was least available i.e. late hours of the night or early in the morning. In order to decrease the disadvantageous infant and neonatal outcome and to raise the survival and life quality, it is very important to prevent the incidence of pre-term labour and treat it in a better way in the cases where it occurs. Therefore, it is necessary to ensure the provision of resources and proper treatment facilities during the times of late night hours and early in the morning in order to manage the pre-term deliveries properly. The increased and sometimes unbearable mortality and morbidity of neonates is the result of the inability of developing countries like Pakistan in coping with the costs facilities to manage the pre-term born neonates. In the analysis of (425) pre-term labour cases, Lindow et al [9] report that the number of the women going into labour in the night time is significantly higher than that in the daytime ($p < 0.0001$). There was not any difference in the baby's gender, multiple or

singleton births. The percentage of women in their study, who went into labour at night-time between 12:00 midnight and 6:00 a.m., was about 42. Our studies confirm these findings with 49.2 % (311) women having deliveries from 2:00 a.m. and 8:00 a.m. Another research by Fraser WD et al [10] reports a noticeable diurnal variation in times of hospital admission in women who had premature membrane ruptures or spontaneous labour onset. An analysis was done on (4,755) nulliparous women having single pregnancies in cephalic presentation at term specified that the frequency of preterm membrane rupture or labour was nearly double in the night times as in the evening. Most of the deliveries occurred during the late morning and afternoon [10]. Lerchl et al [11] published an interesting research, which indicated that the birthdays of about 3,000,000 babies were on weekdays, who were born from the period of 1969 to 2005. Weekend births show quite a noticeable and systematic spread decrease in number. The declining trend is fundamentally the result of a decrease in births on Saturdays (up to 14.5 %), while the much of the missing rate of births on weekends is because of very fewer births on Sundays (up to 21.7

%). The abovementioned percentages for the year 2005 mean that 3728 fewer babies are born on weekends. The declining births on weekends, as the researchers mentioned in their study, are the result of lessening of elective labour induction and C-sections, which reached to 20.5 % and 29.2 % respectively in Switzerland as in 2004. Goldstick et al [12], while probing the diurnal rhythms of urgent operative deliveries (operative vaginal delivery and C-section), reported an interesting study that diurnal rhythm is found strong with frequencies highest during normal working hours. The urgent C-section deliveries rate increased noticeably from 8:00 a.m. to 2:00 p.m. They deduced from this study that this is probably due to the difference in definition of urgency with respect to time and is manmade. Not only management of the pre-term delivery but also the diagnosis is important. Most of the reports show that only thirty to forty per cent of the cases of spontaneous preterm labour had a premature delivery, which suggests a low positive value of prediction of clinical diagnosis [13]. TVUSS indicates a premature birth's high sensitivity, ninety to hundred per cent for premature birth before thirty-three to thirty-five weeks, keeping the deliberate cut-off length at 30 mm. The sensitivity in cervico vaginal FFN is about eighty per cent. The premature birth prediction can get a significant help from the addition of TVUSS and FFN assessment [14]. The basis of HUAM is toco dynamometry principle. At the time of the introduction of this principle, it had created a great deal of excitement and interest amongst obstetricians [6]. Researchers studied uterine contractions, which happened prior to labour using this unit, which recorded the hourly frequencies of these contractions from twenty-four weeks and onwards [15]. These studies confirm that there is a strong diurnal variation to non-labor uterine contractions and its increase is directly proportional to the increase in age of gestation. The peak of uterine contractions is at early morning hours. The researchers recorded that uterine activity decreased with rest and increased with sexual intercourse. Vercoustre L [16] reported a similar nocturnal increase in non-labour uterine activity. A trial, which comprised of around 2,422 random patients, indicated that HUAM is not beneficial in the prediction of pre-term labour [17]. As the pregnancy advances, the increase in prostoglin receptors and oxytocin in myometrium causes myometrial activity and sensitivity increase. With the increase in gestational age, it is normal that the prostaglandins produce from decidual tissue on rising and gap of junctions develop. Over the last four decades, it is unfortunate that the change in pre-term labour has occurred very little. It is still uncertain whether the effective measures to manage the preterm labour exist

[6, 18]. There has been a wide acceptance of the fact that the improvement in management and prevention of incidence will result in the best outcome of neonates as well as it will greatly affect the society in terms of costs of healthcare in a long run [1]. This study brings the issue of management of the premature deliveries into the spotlight as the onset of most of the labours, which result in births, happen at unusual hours when the facilities of healthcare are least available in hospitals. Authorities can address this issue by providing training to the staff to remain vigilant and manage pre-term labour at unusual hours.

CONCLUSION:

The demonstration of diurnal rhythm is in preterm labours. From 2 a.m. to 5 a.m., the majority of the contractions started and the deliveries mostly occurred from 2 a.m. to 8 a.m.

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