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Original Research Article

Evaluation of partogram in 100 cases of both primi and multi gravida each, their outcome in labour and perinatal outcome

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ABSTRACT

Background: the objective of this study was to study the utility of partogram in both primi and multi gravida and evaluate its role in preventing prolonged labour; assess the rate of cervical dilatation on admission, and to evaluate the maternal and perinatal outcome by comparing their partogram in labour.

Methods: This observational prospective clinical study involved randomly selected 200 patients in labor divided into 2 groups of 100 each admitted in Khaja Banda Nawaz Institute of Medical Sciences, Gulbarga. Modified WHO partogram was used. Statistical analysis done by Chi square test.

Results: Mean age group in primi was 22.05 years with standard deviation of 2.38 years and in multi mean age group was 25.19 years with standard deviation of 3.09 years. Mean duration of active phase of labor in primi was 2 hrs 12 mins and in multi was 1 hours and 35 mins from time of admission into hospital. Mean duration of second stage of labor in primi was 57 mins and in multi was 35 mins. Out of 100 primi gravida 68% had NVD, 1% had outlet forceps. 13% had vacuum application and 18% underwent LSCS. Out of 100 multigravida 86% had NVD, 1% had outlet forceps, 7% had vacuum application and 6% underwent LSCS. In group A in primi 75% had NVD, 0% had forceps, 5% had vacuum application and 0% LSCS whereas in multi 93% had NVD and 7% had vacuum, NO forceps /LSCS. In group B, in primi 20% had NVD, 4% had forceps, 33% had vacuum application and 43% had LSCS whereas in multi 34% had NVD, 8% had forceps, 8% had vacuum application and 50% LSCS. In group C, in primi 100% had LSCS whereas in multi there were no NVD/Vacuum/ forceps/ LSCS cases. In primi 100% and in multi 96% had no maternal complications. In primi 96% and in multi 97% had no neonatal complications.

Conclusions: The partogram is used to assess the labor progress and identify when intervention is necessary. This study showed that it can be highly effective in reducing complications from prolonged labor for both mother & neonate, in reducing operative intervention and improving their outcome.

Keywords: Multigravida, Maternal and neonatal outcome, Partogram, Primigravida

INTRODUCTION

Labor is a phenomenon characterized by progressive increase in the frequency, intensity and duration of uterine contractions with progressive dilatation and effacement of cervix along with descent of fetus through the birth canal. This physiological process many a time may lead to pathological one and failure to recognize this

would result in prolonged labor with resultant increase in the morbidity and mortality of both the mother and fetus.

The introduction of 'Partogram' has revolutionized obstetrics and has transformed it from a subjective art to an objective science. Partogram is a graphical record of the progress of labor and maternal and fetal condition during labor against a time scale. Plotting cervical

dilatation and descent of presenting part against time allows objective graphic documentation of the progress of labor and simplifies the clinical interpretation of the changes that occur during labor. Any deviation from the normal curve alerts the attendant to possibility of a prolonged/ abnormal labor in advance. It helps not only in recognition but also in characterization and management of abnormal labor.

A systematic approach with careful diagnosis of the onset of labor, regular assessment using partograph and decisive action when required helps in almost complete success

Prolonged labor is commonly due to Cephalo-pelvic disproportion which may result in obstructed labor, Maternal dehydration, Exhaustion, Uterine rupture etc. In Some, Abnormal progress of labor is often due to inefficient uterine contraction. Early detection of Abnormal progress of labor and prevention Of Prolonged labor significantly reduces the maternal and perinatal complications.¹

Partogram is used to assess the progress of labor and to identify when intervention is necessary. Partogram can be highly effective in monitoring and reducing complications from prolonged labor and reduce maternal and fetal mortality rate and operative interference.²

METHODS

A clinical study on efficacy and use of partogram in labor in a tertiary care centre after obtaining patient consent and permission letter from Institutional ethical committee

This was prospective, clinical observational study involved randomly selected 200 patients divided into two groups of 100 each admitted to labour room in Khaja Banda Nawaz Institute of Medical Sciences, Gulbarga after meeting the inclusion and exclusion criteria.

Inclusion criteria

- The Pregnant women in spontaneous or induced labor
- In first stage active phase of labor with cervical dilatation of not more than 7 cms.
- Singleton pregnancy
- > 37 weeks, < 42 weeks period of gestation
- Cephalic presentation.

Exclusion criteria

- Presence suspicion or confirmation of cephalopelvic disproportion
- Cervical dilatation >7 cms
- Premature labor <37 weeks
- Malposition and mal presentations
- Multiple pregnancy

- Ante partum hemorrhage
- Medical disorders in pregnancy like heart disease, diabetic or hypertensive disorders in pregnancy, etc.

Statistical After confirming that the patients fulfill the above criteria and evidence of labor confirmed, the following details were noted.

History

- Name of the patient and other relevant information for establishing the identity of the patient
- Age of the patient
- Address of the patients
- Inpatient number to which patient is admitted
- Date and time of admission to the labor room and date of delivery
- Booked or unbooked status
- History of presentation on admission
- Obstetric history including detailed information about each trimester of present pregnancy, i.e. whether exposed to the radiation or teratogenic drugs in first trimester, whether received tetanus toxoid and received iron / calcium supplementation
- History of previous pregnancy in brief and any complications in the previous pregnancies or any congenital anomalies, consanguineous or non-consanguineous marriage, etc.
- Menstrual history which includes age at menarche, details about her past menstrual cycles and her last menstrual period to calculate the expected date of delivery by Naegele's rule and 1st trimester USG (dating scan)
- Any relevant past history, medical or surgical history, including exposure to tuberculosis and history of diabetes mellitus, hypertension and thyroid diseases
- Personal history including diet, appetite, sleep. Bowel and bladder functions and substance abuse
- Any relevant family history which includes history of congenital anomalies, twins, history of diabetes mellitus and hypertension in family members.

General examination

- Built and nourishment
- Height in cms
- Weight in kgs
- Any skeletal abnormalities of the spine and pelvis
- Breast and thyroid examination to rule out any enlargement
- Pallor
- Icterus
- Cyanosis
- Clubbing
- Lymphadenopathy
- Edema - pedal/ abdominal wall/ generalized.

Vital signs

- Pulse
- Blood pressure
- Temperature.

Systemic examination

- Cardiovascular system
- Respiratory system
- Central nervous system.

Abdominal examination

- Inspection of the abdomen
- Fundal height and abdominal girth in cms determined.

All the Leopold's grips were performed and the following points were noted

- Correspondence of the Fundal height to gestational age
- The uterine contractions were noted for their frequency, intensity and duration
- Cephalic presentation confirmed
- Flexion of the fetal head noted
- Degree of descent of the head in terms of fifths was determined
- Mal-presentation and multiple pregnancy were ruled out
- Fetal heart sounds were heard and rate calculated.

1. Vaginal examination

With strict aseptic condition, vaginal examination was carried out to know the following points:

- *Cervix* - dilatation in cms, effacement in terms of percentage, consistency, position and application of the cervix to the presenting part
- Membrane status was determined. If membranes were absent, color of the liquor was noted. In case of meconium staining a special note was made (thin/thick)
- Presenting part is confirmed to be vertex
- Position of the presenting part was determined
- Station of the vertex was determined
- Rotation of the occiput confirmed by palpation of posterior fontanelle
- Presence or absence of caput, moulding was determined

Pelvic assessment was done noting the following features

- a. Whether sacral promontory is reached or not

- b. Whether sacrum is well curved or not
- c. Whether sacrosacral notch admits two fingers
- d. Whether ischial spines are prominent or not
- e. Whether side walls are parallel or convergent or divergent
- f. Whether sub pubic angle is obtuse or acute
- g. Whether the outlet admits four knuckles.

- Severe cephalopelvic disproportion and contracted pelvis was ruled out
- Mild cephalopelvic disproportion was given a trial of labor
- Examination of urine to assess volume, sugar, albumin and ketones was done.

All examinations to determine the cervical dilatation and fetal station were carried out during a contraction. Since the true estimate of cervical dilatation is difficult to achieve with a flaccid cervix, it is probably best to measure dilatation during a height of uterine contraction at all times. The same applies for fetal station. While this may prove somewhat more uncomfortable for the patient, the benefits in useful information may make it acceptable especially in those cases in which problems in labor progression occurs.

To nullify inter observer variations all the examinations to determine dilatation and station were done by the author only. Examinations were carried out four hourly throughout the duration of labor. However, modifications were made to account the rapidly progressing labor, especially during the maximum slope of dilatation, wherein, examinations were done much more frequently. All the relevant findings were charted serially on a partogram and a continuous partogram was obtained.

The partogram used in this study is the Modified WHO partogram. Retaining the action line in the space drawn four hour to the right of and parallel to the alert line.

The 4 hours difference between the alert line and action line has been recommended by WHO. As per the WHO policy "A lag time of four hours between a slowing of labor and the need for intervention is unlikely to compromise the fetus or the mother and avoids unnecessary interventions".

The onset of the recording i.e. zero hour was taken to be the admission time of the patient. Since most of the patients at this hospital were unable to define the time when regular uterine contractions began i.e. the onset of labor. This appears to be the problem of the under developed countries.

When the cervical dilatation reached ≥ 4 cms i.e. when the active phase began, the next square was marked and a line was drawn at a slope of 1 cm/ hour. This slope signified the lower limit of the mean maximum of cervical dilatation. This line was called the Alert line.

Similarly, the action line was drawn 4 hrs parallel to and to the right of the alert line.³

Components of Partograph

- a. Patient identification: date of admission, time of admission
- b. State of membranes, duration of rupture
- c. Fetal heart rate: recorded every 30 minutes
- d. Colour of liquor: It is marked as
'I' for intact membranes
'C' for clear liquor
'M' for Meconium stained liquor
- e. Cervical dilatation and descent of the head
- f. Time:
 - Recorded at hourly interval. Zero time for spontaneous labour is the time of admission in the labour ward, and for induced labour is the time of induction
 - 2 squares represent 1 hr duration with minimum of 1 cm cervical dilatation
- g. Uterine contraction: The squares in the vertical columns are shaded according to duration (in seconds) and intensity (No. of contractions in 10 mins)

	= weak (<20 sec)
	= Moderate (20-40 sec)
	= Strong (>40 sec)
- h. Oxytocin: Concentration in upper box and dose (mIU/min) in lower box
- i. Drugs and fluids
- j. Blood pressure (recorded in vertical line) at every 2 hrs and pulse at every 30 mins
- k. Temperature record
- l. Urine analysis

Dilatation of the cervix at a rate of 1cm/hr in primi & 1.5cm in multigravida beyond 4 cms dilatation (active phases of labour) is considered satisfactory

- When the partogram continued to be normal, no intervention was done
- When the partogram suggested that progress was slow, Amniotomy was performed
- If the dilatation curve crosses the alert line, the patient was immediately reassessed in view of CPD, if significant, the labor was terminated with c-section
- In protracted dilatation, no intervention was carried out but strictly monitored. However, if the dilatation curve after a slow progress were to cease for at least two hours, a diagnosis of arrest of dilatation was made.
- In the absence of cephalopelvic disproportion, oxytocin drip was started to obtain ideal contractions and further progress watched

- In cases of fetal distress in labor was diagnosed, immediately it was terminated by operative intervention
- Disorders in 1st stage active phase of labor:
 1. *Protracted active phase*: Rate of cervical dilatation is <1.2 cm/hr in primi and <1.5 cm/hr in multigravida
 2. *Arrest disorder*:
 - a. Arrest of dilatation is defined as when no cervical dilatation occur after 2 hours in active phase of labor, also called 'primary arrest'
 - b. Secondary arrest is defined when the active phase of labor (cervical dilatation) commences normally but stops or slows significantly for 2 hours or more prior to full dilatation of cervix.
- Disorders in 2nd stage of labor:
 1. Protraction of descent - descent of presenting part (station) is < 1cm/hr in primi and < 2 cms in multigravida
 2. Arrest of descent - no progress in descent over a period of atleast 2 hours
- For the purpose of analysing the above data, partogram interpretation is put into 3 groups/zones depending on progress of cervical dilatation, namely Group A, Group B and Group C.
 1. Group A - patients who delivered before the partogram touched the alert line, considered as normal progress of labour
 2. Group B - patients who delivered when the partogram lies between the alert and the action line, considered abnormal and reassessment of progress of labor is done carefully and augmentation either by oxytocin or assisted delivery are done depending on the condition
 3. Group C - patients who delivered after the action line was crossed.

Immediate intervention and termination of pregnancy by caesarean section is considered to avoid fetal and maternal complications leading to severe morbidity and mortality.⁴⁻⁸

After delivery, labor notes were written as follows:

- Date and time of delivery was noted
- Mode of delivery
- Whether spontaneous or induced labor
- Acceleration with oxytocin
- Forceps delivery - type of forceps and indication for application
- Vacuum delivery - indication for application
- Cesarean section - indication Note on type of episiotomy
- Duration of each stage of labor and total duration of labor

- Placenta and membranes complete/healthy /unhealthy/abnormalities
- Amount of blood loss
- Note for the baby's condition made
- Sex/weight of the baby
- Gestational age according to maturity scoring
- AGA / SGA / preterm
- Condition at birth is noted 1 minute and 5 minute APGAR scores
- External obvious congenital anomalies ruled out
- Condition of the mother noted two hours after delivery
- Temperature, blood pressure, pulse, condition of the uterus and amount of bleeding per vagina noted
- Maternal complications if any noted
- Neonatal complications if any noted

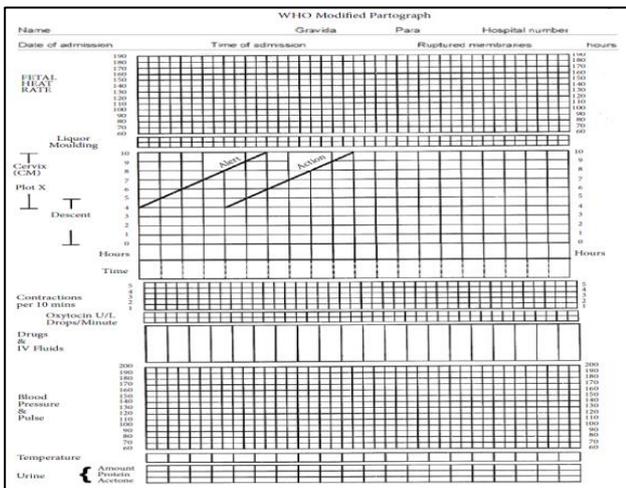


Figure 1: Modified WHO Partogram.

Statistical analysis

Chi square test was used for statistical analysis. The data were entered into master chart and necessary statistical tables. In order to compare between the primigravida and multigravida group, Chi-square test was applied and difference in the value was tested to be significant or not after calculating the P value. P value < 0.05 is taken as significant. Other statistical data used are the mean and the standard deviation. All the statistical calculations were made using Microsoft Excel 2016.

RESULTS

Table 1: Age group distributions.

Age group	Primi gravida (%)	Multi gravida (%)	Total
15 to 20	33 (33%)	5 (5%)	19%
21 to 25	58 (58%)	55 (55%)	57%
26 to 30	8 (8%)	37 (37%)	23%
31 to 35	1 (1%)	3 (3%)	2%
Total	100	100	200

Chi square - 40.40; df - 3; P value < 0.01; significant.

The age group in the present study was between 19 - 35 years. Statistically significant difference was observed between primi and multi.

Minimum age was 19 years and maximum 35 years with mean age of 23 years with standard deviation of 3.17.

Chi square test resulted in significant p Value (P< 0.05), there by rejecting null hypothesis. Which implies Age group and type of gravida are dependent and correlated.

Table 2: Descriptive statistics.

Age in years	No.	Minimum	Maximum	Mean	Std. Deviation
Primi	100	19	33	22.05	2.38
Multi	100	19	35	25.19	3.09
Total	200	19	35	23.62	3.17

In both Primi and multi gravida chi square test resulted in significant p Value (P< 0.05), there by rejecting the null hypothesis. Which implies there is correlation between type of labor and mode of delivery.

In the Table 3 it is also found that statistically 86% and 88% of Primi and multi gravida (respectively) NVD cases are spontaneous in onset.

Table 3: Distribution according to type of labor (Primi gravid) and mode of delivery.

Primi gravid	Spontaneous	Induced	Total
NVD	59 (71%)	9 (52%)	68 (68%)
Vaccum	12 (14%)	1 (6%)	13 (13%)
Forceps	1 (1%)	0 (0%)	1 (1%)
LSCS	11 (13%)	7 (41%)	18 (18%)
Total	83 (83%)	17 (17%)	100

Chi square - 7.8; df-3; P value < 0.05; significant.

Table 4: Distribution according to type of labor (Multi gravid) and mode of delivery.

Multi gravida			
Mode of delivery	Spontaneous	Induced	Total
NVD	76 (86%)	10 (83%)	86 (86%)
Vaccum	7 (8%)	(0%)	7 (7%)
forceps	(0%)	1 (8%)	1 (1%)
LSCS	5 (6%)	1 (8%)	6 (6%)
Total	88 (88%)	12 (12%)	100

Chi square - 8.4; df-3; P value <0.05; significant

Table 5: Outcome of labor in relation to cervical dilatation at admission (Primi gravid).

Cervical dilatation on admission – Primi gravida			
Mode of delivery	4 to 5 cms	6 to 7 cms	Total
NVD	35 (60%)	33 (79%)	68 (68%)
Vaccum	6 (10%)	7 (17%)	13 (13%)
Forceps	1 (2%)	0 (0%)	1 (1%)
LSCS	16 (28%)	2 (5%)	18 (18%)
Total	58 (58%)	42 (42%)	100

Chi square - 9.7; df-3; P value < 0.05; significant

Table 6: Outcome of labor in relation to cervical dilatation at admission (Multi gravid).

Cervical dilatation on admission - Multi gravida			
Mode of delivery	4 to 5 cms	6 to 7 cms	Total
NVD	44 (82%)	42 (89%)	86 (86%)
Vaccum	4 (8%)	3 (7%)	7 (7%)
Forceps	1 (2%)	0 (0%)	1 (1%)
LSCS	4 (8%)	2 (4%)	6 (6%)
Total	53 (53%)	47 (47%)	100

Chi square - 3.076; P value > 0.3; not significant

Chi square test resulted in significant p Value (P< 0.05) in Primi but not in Multi gravida. This implies there is correlation between Cervical dilatation on admission and mode of delivery in Primigravida cases but not in Multi gravida cases.

Chi square test resulted in significant p Value (P < 0.01) in both Primi and multi gravida. Rejecting the null. This implies there is correlation between Vertex station on admission and Mode of delivery in Primi and multi gravida cases.

Table 7: Outcome of labor in relation to vertex station on admission (Primi gravid).

Vertex station on admission – Primi gravida					
Mode of delivery	-3	-2	-1	0	Total
NVD	1 (8%)	21 (57%)	27 (90%)	19 (95%)	68 (68%)
Vaccum	3 (23%)	6 (16%)	3 (10%)	1 (5%)	13 (13%)
forceps	0 (0%)	1 (3%)	0 (0%)	0 (0%)	1 (1%)
LSCS	9 (69%)	9 (24%)	0 (0%)	0 (0%)	18 (18%)
Total	13 (13%)	37 (37%)	30 (30%)	20 (20%)	100

Chi square – 44.90; df-9; P value < 0.01; Significant

Table 8: Outcome of labor in relation to vertex station on admission (Multi gravid).

Vertex station on admission - Multi gravida					
Mode of delivery	-3	-2	-1	0	Total
NVD	2 (33%)	21 (80%)	44 (90%)	19 (100%)	86 (86%)
Vaccum	0 (0%)	2 (8%)	5 (10%)	0 (0%)	7 (7%)
forceps	0 (0%)	1 (4%)	0 (0%)	0 (0%)	1 (1%)
LSCS	4 (67%)	2 (8%)	0 (0%)	0 (0%)	6 (6%)
Total	6 (6%)	26 (26%)	49 (49%)	19 (19%)	100

Chi square - 36.59; df-9; P value < 0.01; Significant

Table 9: Outcome of labor in relation to partogram group (Primi gravida).

Partogram group - Primi gravid				
Mode of delivery	A	B	C	Total
NVD	62 (95%)	6 (20%)	0 (0%)	68 (68%)
Vaccum	3 (5%)	10 (33%)	0 (0%)	13 (13%)
Forceps	0 (0%)	1 (4%)	0 (0%)	1 (1%)
LSCS	0 (0%)	13 (43%)	5 (100%)	18 (18%)
Total	65 (65%)	30 (30%)	5 (5%)	100 (100%)

Chi square - 77.84; df - 6 ; P value < 0.01 ; significant

Table 10: Outcome of labor in relation to partogram group (Multi gravida).

Partogram group - Multi gravid			
Mode of delivery	A	B	Total
NVD	82 (93%)	4 (34%)	86 (86%)
Vaccum	6 (7%)	1 (8%)	7 (7%)
Forceps	0 (0%)	1 (8%)	1 (1%)
LSCS	0 (0%)	6 (50%)	6 (6%)
Total	88 (88%)	12 (12%)	100 (100%)

Chi square - 55.76;df -3; P value < 0.01 ; significant

In Primi and multi gravida admissions with "0" vertex station 95% and 100% of them had normal vaginal delivery respectively.

Chi square test resulted in significant p Value (P < 0.01) in both primi and multi gravida, rejecting the null hypothesis. This implies Partogram group and Mode of delivery are interdependent.

As high as 95%, 93% of Primigravida, multigravida (respectively) NVD cases belong to Partogram Group "A". 5% of Primigravida cases are delivered in LSCS mode of delivery, whereas there were no case of multigravida that belonged to partogram group C.

Table 11: Distribution of patients according to the duration of first stage of labor.

Time in hours	Primi gravida (%)	Multi gravida (%)	Total
0 to 1 hrs	17 (17%)	29 (29%)	46 (23%)
1 to 2 hrs	33 (33%)	51 (51%)	84 (42%)
2 to 3 hrs	28 (28%)	12 (12%)	40 (20%)
3 to 4 hrs	21 (21%)	8 (8%)	29 (14%)
>4 hrs	1 (1%)	0 (0%)	1 (1%)
Total	100 (50%)	100 (50%)	200 (100%)

Chi square - 20.21; df-4; P value < 0.01; significant

Table 12: Duration of first stage of labor in hrs (hrs'' min').

	Patient count	Minimum	Maximum	Mean	Std. Deviation
Primi	100	30'	4'' 30'	2'' 12'	1'' 2'
Multi	100	20'	3'' 40'	1'' 35'	49'
Total	200	20'	4'' 30'	1'' 53'	59'

Chi square test resulted in significant p Value (P < 0.01), rejecting the null hypothesis which states "First stage of labor and type of Gravida are independent".

Mean duration of first stage of labor is 2 hours 12 mins from the time of admission in primigravida and 1 hours 35 mins in multigravida with standard deviation of 1 hours 2 mins in primigravida and 49 mins in Multigravida.

Table 13: Distribution of patients according to the duration of second stage of labor.

Time in minutes	Primi gravida	Multi gravida	Total
< 30	21	67	88
30 to 60 mins	56	27	83
> 60 mins	23	6	29
Total	100	100	200

Chi square - 44.14; df-2; P value < 0.01; significant

Table 14: Duration of second stage of labor in minutes.

	Patient count	Minimum	Maximum	Mean	Std. Deviation
Primi	100	30	120	57.73	24.44
Multi	100	15	120	35.78	19.34
Total	200	15	120	46.28	24.47

Since Chi square test resulted in significant p Value (P < 0.01), Rejecting the null hypothesis which states "Second stage of labor and type of gravida". Mean duration of

second stage of labor is 57 mins in primigravida, 35 mins in multigravida with standard deviation 24 mins in primigravida and 19 mins in Multigravida.

Table 15: Apgar score at 1' minute.

Apgar score	Primi gravida	Multi gravida	Total
5	-	2	2
6	2	10	12
7	32	35	67
8	66	53	119
Total	100	100	200

Chi square - 8.9 ; P value < 0.05; significant

Table 16: Apgar score at 5' minute.

	Primi gravida	Multi gravida	Total
7	1		1
8	3		3
9	46	50	96
10	50	50	100
Total	100	100	200

Chi square - 4.16; df-3; P value > 0.1; not significant

Chi square test resulted in significant p Value ($P < 0.01$), rejecting the null hypothesis. This implies Apgar score at 1, 5 minutes and type of gravida are dependent.

Table 17: Maternal complications.

	Primi gravida	Multi gravid	Total
Nil	100	96	196
PPH	0	4	4
Total	100	100	200

Chi square - 4.08; df-1; P value < 0.05; significant

From the above table, it is observed that there is no significant statistical difference in between the primi gravida and multi gravida in relation to the maternal complications. Maximum number of patients i.e. 98% had no complications. Only 2% had PPH.

Table 18: Neonatal complications.

	Primi gravida	Multi gravida	Total
NIL	96	97	193
Birth asphyxia	2	0	2
Meconium staining	2	3	5
Total	100	100	200

Chi square - 2.2 ; P value > 0.1 ; not significant

It is observed that there is no significant statistical difference in between the primigravida and multigravida in relation to the neonatal complications. Maximum number of patients i.e. 97% had no complications. Only 2.5% had meconium staining who needed stomach wash after delivery. Only 1.5% had birth asphyxia.

DISCUSSION

The age group in the present study was between 19 - 35 years with mean age of 22.05 yrs in primi and 25.19

years in multi with standard deviation of 2.38 years and 3.09 years respectively. Among the type of labor, spontaneous labor was 85% compared to induce labor which was 15% in total.

It correlates with Shinde et al, Lakshmi devi et al and Sanyal et al, with 77% NVD, 11% instrumental, and 12% LSCS.⁹⁻¹¹

Duration of labour in first and second stage of labour Compared with Shinde et al correlates with the present study with second stage normal average duration of 45 mins and second stage abnormal average duration of 1hrs 56 mins.

Distribution of patients according to the partogram pattern compared between Ernest orji, Shinde et al, Lakshmi devi et al, Sanyal et al and Penumedu KM et al study.^{12,13}

Present study correlates with Sanyal et al to an extent with 77% of patients in group A, 21% in group B and 3% in group C. Improvement in Group C is seen in this study mainly because of active intervention once the partograph crosses the alert line.

Outcome of labour in relation to partogram pattern of primi in the present study correlates with sanyal, Penumedu and Shinde. It is also observed that maintaining a partogram during labour and following its progress, it is possible to predict with reasonable accuracy the likely outcome of the labour.

Thus a patient in group A had a good prognosis for vaginal delivery. All the patients in group B required intensive monitoring with active management of labour. Even group B patients had a high percentage of vaginal delivery. There were no NVD or instrumental Patients belonging to the group C, should be categorized as 'at risk' and aggressive intervention is called for.

Apgar score at 5 min correlates with Ernest orji study with mean of 9.45 in primigravida and 9.5 in Multi gravida with 0.61 and 0.51 standard deviations respectively.

Maternal complications in present study correlates with study with NILL maternal complications at 98% and with Shinde et al, Sanyal et al with average PPH complication at 2.6%.¹⁴ Maternal complications among the patients were minimal and this can be attributed to the effective use of the partogram during the labour

Perinatal outcome of the presnt study correlates to shinde et al and Kenchaveeriah et al study with no perinatal complications of 96%.¹⁵ Perinatal complications among the patients when compared with other studies (Shinde et al, ernest orji) were also minimal and this can be attributed to the effective use of the partogram during the labour.

CONCLUSION

Thus correct usage of partogram in patients in labour helps in monitoring the labor outcome, to identify when intervention is necessary and to provide appropriate management improving maternal and perinatal health there by reducing complications leading to overall morbidity and mortality. It also helps in reducing unnecessary operative intervention.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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