

Original Research Article

A Prospective Study on Partographic Observations in a Primigravida with Spontaneous Versus Induced Labour at a Tertiary Care Center

Vijayasree J¹, Kavitha Bhalki², P. Padma³

¹Assistant Professor, Department of Obstetrics and Gynaecology, Govt Medical College, Nalgonda, Telangana, India.

²Assistant Professor, Department of Obstetrics and Gynaecology, Govt Medical College, Nalgonda, Telangana, India.

³Assistant Professor, Department of Obstetrics and Gynaecology, Govt Medical College, Nalgonda, Telangana, India.

Received: 18-04-2021 / Revised: 13-05-2021 / Accepted: 11-06-2021

Abstract

Background: Labour depends on uterine contractions, cervical dilatation and effacement. It also depends on pelvis and fetal weight. Once labour has started it is possible to regulate its duration and progress. This requires careful diagnosis of onset of labour, regular assessment and decisive action. **Aim & Objective:** The aim of present study is to compare the labour progress and delivery outcome among induced versus spontaneous labour in women at term using simplified WHO partogram. **Methodology:** This study was conducted at Government Medical College & Hospital, Nalgonda over a period of 12 months from September 2019 to August 2020. It is a prospective study conducted on 200 antenatal women. 200 women were primigravida, routine history, physical examination, systemic, obstetric examination and routine investigation and ultrasound scan done. **Results:** Out of 200 primigravida 100 were allowed for spontaneous labour and another 100 labour was induced with prostaglandins. Partogram was plotted when women reached 4cm dilatation and all partographic observations noted. The labour progress and delivery outcome was measured by total duration of labour, caesarean section rate, comparison of deliveries in group A,B,C, mean birth weight and APGAR score. Mean total duration in induced group is 3.1hr, in spontaneous is 3hrs, caesarean section rate was high in induced group. Incidence of caesarean section is high in group C (which crossed action line). Most common indication for caesarean section was cephalopelvic disproportion and fetal distress. Most women delivered before the alert line (group A) in both induced and spontaneous group. Mean APGAR at 1min and 5min was similar in both groups. APGAR was low in both groups who crossed action line. Incidence of tachysystole is high in induced group compared to spontaneous group 15% cases in induced labour had APGAR 5-6 whereas 3% in spontaneous has 5-6. Incidence of MSL is 16% in induced labour when compared to 9% in spontaneous labour. Induced labour is comparable to spontaneous labour when it is partographically monitored. **Conclusion:** Partogram is efficient, time saving and gives a clear picture of labour. It facilitates anticipation with reasonable certainty of labour problems and indicates the need for clinical re-evaluation.

Keywords: Partogram, Labour, APGAR, Primigravida, WHO, Pelvis

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

One of the risky journeys that we make in our life is the very first one we take through the birth canal. That is why it is exceedingly important to see that this journey is made safe both for the baby and mother. Labour is a complex process and is characterised by the onset of effective uterine contractions leading to progressive effacement and dilatation of the cervix, resulting in the expulsion of the fetus, placenta and the membranes [1-3]. Sometimes this physiological process may lead to prolonged labour with resultant increase in the morbidity and mortality for both fetus and the mother. Most studies state that the best way to monitor labor is with the help of a partogram, which is a record of the progress of labour and the maternal and fetal condition during labour against a time scale. Plotting cervical dilatation against time allows objective graphic documentation of the progress of labour and simplifies the clinical

interpretation of the dynamic changes that occur during labour. Any deviation from the normal curve alerts the attending person of the possibility of a labour disorder in advance. It helps not only in recognition but also in characterization and management of dysfunctional labour [4]. Labour depends on uterine contractions, cervical dilatation and effacement. It also depends on pelvis and fetal weight. Once labour has started it is possible to regulate its duration and progress. This requires careful diagnosis of onset of labour, regular assessment and decisive action [5]. Prolonged labour is associated with obstructed labour, infections, PPH, uterine rupture and increased maternal and perinatal morbidity and may even end in mortality. Hence, "Do not allow sun to set twice on a laboring woman", is the saying to prevent such tragic events.

Aims and Objectives

The aim of present study is to compare the labour progress and delivery outcome among induced versus spontaneous labour in women at term using simplified WHO partogram.

The Objectives of the study are :

1. To evaluate role of partogram in preventing prolonged labour.

*Correspondence

Dr. Vijayasree J

Assistant Professor, Department of Obstetrics and Gynaecology, Govt Medical College, Nalgonda, Telangana, India.

E-mail: jvs.116@gmail.com

- To evaluate the labour progress and delivery outcome in spontaneous labour versus induced labour at term by comparing their partograms in labour.

Materials and Methods

A Prospective Comparative study conducted on the pregnant women who were admitted in Obstetrics and Gynaecology Department in Government Medical College & Hospital, Nalgonda who were at term and were in labour, over 12 months duration between September 2019 to August 2020.

Methods: The study included all primigravida at term with live singleton fetuses in vertex presentation. The women were included in the study when the cervix was 4cm dilated since the WHO simplified partograph commences at 4cm dilatation. Those with favourable cervix were allowed for spontaneous labour. Those with unfavourable cervix had pre-induction cervical ripening with Misoprostol or Dinoprostone

Department of institute where study will be carried out: Department of Obstetrics and Gynecology, Government Medical College & Hospital, Nalgonda.

Duration of Study: 12 months (September 2019 to August 2020)

Study Design: Prospective Comparative Study

Sample Size: 100 cases of Primigravida with spontaneous labour and 100 cases of Primigravida with induced labour.

Statistical Methods: The mean and standard deviation of age, gestational age, cervical dilatation on admission, APGAR score and total duration of labour was compared between the groups (Spontaneous labour and Induced labour) using Welch Two sample t-test and Pearson's Chi-square test. Mode of delivery, indication for surgery, cephalopelvic disproportion, fetal distress and failure to progress, neonatal outcomes, evaluation of progress in labour using WHO Partograph was compared with the Pearson's chi square test or Welch Two sample t-test. $P < 0.05$ was considered as statistically significant.

Inclusion criteria:

- Primigravida with singleton pregnancy in spontaneous onset or induced labour
- First stage labour with cervical dilatation 4-5 cms
- Pregnancy more than 37 wks gestational age
- Cephalic presentation

Exclusion Criteria:

- Antepartum hemorrhage
- Breech presentation
- Cervical dilatation > 7 cm
- Premature labour < 37 wks
- Medical disorders complicating pregnancy

Study Subjects: Primigravida with live singleton in vertex position delivered at Govt Medical College & Hospital.

Data Collection: Study was done in Primigravida with live singleton in vertex position attending OPD / Inpatient in Govt Medical College & Hospital, Nalgonda. Informed written consent was taken from the patients fulfilling the Inclusion / Exclusion criteria. History regarding age, parity, duration of gestation, menstrual history, obstetric history and history of any complications in present pregnancy was noted. General clinical examination was done. Symphysis-fundal height was measured. Uterine size, presentation and adequacy of amniotic fluid clinically, was noted. Fetal heart rate was counted. Relevant investigations were done. Non stress test and BPP was done. An ultrasound examination was done for fetal well being and amniotic fluid index was measured. Women with favourable cervix were allowed to go into spontaneous labour and those with unfavourable cervix were induced with misoprostol or Dinoprostone. The women were included in the study when the cervix was 4cm dilated as WHO simplified partogram starts with cervical dilatation of 4cm. Labour was monitored using simplified WHO partogram. Total duration of labour and mode of delivery was assessed. Perinatal outcome was assessed by birth weight, APGAR score.

Period of Study: September 2019 to August 2020

Outcome: Maternal-Vaginal/ Instrumental Delivery, Cesarean section Fetal-Birth weight, APGAR at 1 min, 5min

Ethical Justification/ Conflict of Interest

This study mainly involves comparison of labour progress in spontaneous and induced labour at term by means of simplified WHO partogram. This study did not include any experimentation. Nobody received any benefits for personal or professional use from a commercial party directly or indirectly to the subject of this article.

Results

During the study period of 12 months from September 2019 to August 2020, all the primigravidas at term admitted in Govt Medical College & Hospital for safe confinement were included in this study. The patients who underwent Emergency Cesarean section for indications like fetal distress or non progression of labour before 4cm cervical dilatation were excluded from the study. Totally 200 primigravidas who strictly met the inclusion criteria were included in the study. Among 200 patients, 100 patients were in spontaneous labour group and 100 patients were in induction group. Women having mild Cephalopelvic disproportion were also included in both the comparison groups. Patients who came in spontaneous labour with cervical dilatation 4 - 7 cm at the time of admission to Labour ward were included in Spontaneous labour group. Remaining 100 patients were induced with Dinoprostone gel or Vaginal Misoprostol tablets depending on the favorability of cervix.

Table 1: Comparison of variables between induced and spontaneous type of delivery

Variable	Type	Mean	Std. Deviation	P value
Age (years)	Induced	22.470	2.2404	0.042*
	Spontaneous	21.850	2.0468	
Fetal heart rate just before delivery per min	Induced	124.300	14.4868	0.022*
	Spontaneous	128.700	12.2816	
Cervical dilatation at the start of partograph (cm)	Induced	4.310	.5449	0.806
	Spontaneous	4.330	.6039	
Total duration of labour (hours)	Induced	3.1177	2.12212	0.794
	Spontaneous	3.0384	2.17470	
Birth weight (kgs)	Induced	2.8928	.29754	0.001*
	Spontaneous	2.7095	.28021	

Mean age for induced labour is 22.4yrs and mean age for spontaneous labour is 21.8yrs. P Value is 0.042 which is statistically significant. Mean fetal heart rate just before delivery per min in induced labour group is 124.3 and in spontaneous labour group is 128.7. P Value is 0.022 which is statistically significant. Mean cervical dilatation at the start of partograph in induced group is 4.3cm and in spontaneous group is 4.3cm. P value is 0.806 which is

statistically insignificant. Mean total duration of labour in induced group is 3.1hrs in spontaneous group is 3.0hrs. P Value is 0.7 which is statistically insignificant. Mean birthweight for induced group is 2.8kg and in spontaneous group is 2.7kg. P Value 0.001 which is statistically significant.

Table 2: Colour of Liquor at time of delivery* type

Colour of liquor		Type		Total
		Induced	Spontaneous	
Blood stained	Count	2	0	2
	%	2.0%	0.0%	1.0%
Clear	Count	82	91	173
	%	82.0%	91.0%	86.5%
Meconium stained	Count	16	9	25
	%	16.0%	9.0%	12.5%
Total	Count	100	100	200
	%	100.0%	100.0%	100.0%

Out of 100 women in induced labour group 2 (2%) had blood stained liquor, 82 (82%) had clear liquor, 16 (16%) had meconium stained liquor.

Out of 100 women in spontaneous labour group 91 (91%) had clear liquor, 9 (9%) had meconium stained liquor. Chi square = 4.428, P value = 0.109 (Not significant)

Table 3: Cervical Dilatation at the start of Partograph (CM)* Type

Cervical dilatation		Type		Total
		Induced	Spontaneous	
4	Count	73	74	147
	%	73.0%	74.0%	73.5%
5	Count	23	19	42
	%	23.0%	19.0%	21.0%
6	Count	4	7	11
	%	4.0%	7.0%	5.5%
Total	Count	100	100	200
	%	100.0%	100.0%	100.0%

Out of 100 women induced labour group, cervical dilatation at start of partograph was 4cm in 73 cases (73%), 5cm in 23 cases (23%) and 6cm in 4 cases (4%).

Out of 100 women spontaneous labour group, cervical dilatation at start of partograph was 4cm in 74 cases (74%), 5cm in 19 cases (19%) and 6cm in 7 cases (7%).

Table 4: Comparison of no. of deliveries in group A, B, C in induced and spontaneous labour

Group		Type		Total
		Induced	Spontaneous	
A	Count	51	67	118
	%	51.0%	67.0%	59.0%
B	Count	31	22	53
	%	31.0%	22.0%	26.5%
C	Count	18	11	29
	%	18.0%	11.0%	14.5%
Total	Count	100	100	200
	%	100.0%	100.0%	100.0%

Out of 100 women in induced group 51 cases (51%) delivered before alert line (Group A), 31 cases (31%) delivered between alert and action line (Group B) AND 18 cases (18%) delivered after crossing action line.

Out of 100 women in spontaneous group 67 cases (67%) delivered before alert line (Group A), 22 cases (22%) delivered between alert and action line (Group B) AND 11 cases (11%) delivered after crossing action line.

Table 5: Comparison of incidence of tachysystole in induced and spontaneous group

Tachysystole		Type		Total
		Induced	Spontaneous	
No	Count	78	95	173
	%	78.0%	95.0%	86.5%
Yes	Count	22	5	27
	%	22.0%	5.0%	13.5%
Total	Count	100	100	200
	%	100.0%	100.0%	100.0%

In present study out of 100 women in induced group 22 (22%) had tachysystole and out of 100 women in spontaneous group 5 (5%) had tachysystole.

Table 6: Comparison of mode of delivery in induced and spontaneous group.

Mode of delivery		Type		Total
		Induced	Spontaneous	
SPVD	Count	43	61	104
	%	43.0%	61.0%	52.0%
Vacuum assisted	Count	6	6	12
	%	6.0%	6.0%	6.0%
Outlet forceps	Count	13	8	21

	%	13.0%	8.0%	10.5%
EM LSCS	Count	38	25	63
	%	38.0%	25.0%	31.5%
Total	Count	100	100	200
	%	100.0%	100.0%	100.0%

In present study out of 100 women in induced labour group 43(43%) had spontaneous vaginal delivery,6(6%) had vacuum assisted delivery,13(13%) had outlet forceps delivery,38(38%) had EM.LSCS

In present study out of 100 women in Spontaneous labour group 61(61%) had spontaneous vaginal delivery,6(6%) had vacuum assisted delivery,8(8%) had outlet forceps delivery,25(25%) had EM.LSCS

Table 7: Comparison of mode of delivery in group A,B,C in induced and spontaneous group

Type		Mode of delivery				Total
		SPVD	Vacuum assisted	Outlet forceps	EM LSCS	
Induced	Group	A	29	2	5	15
		B	12	3	5	11
		C	2	1	3	12
	Total	43	6	13	38	100
Spontaneous	Group	A	48	2	4	13
		B	11	3	3	5
		C	2	1	1	7
	Total	61	6	8	25	100
Total	Group	A	77	4	9	28
		B	23	6	8	16
		C	4	2	4	19
	Total	104	12	21	63	200

In present study out of 43 SPVD in Induced group 29 delivered in group A.12 delivered in group B 2 delivered in group C.Out of 6 vacuum assisted deliveries in induced group 2 delivered in group A3 delivered in group B 1delivered in group C.Out of 13 Outlet forceps deliveries in induced group 5 delivered in group A.5 delivered in group B 3delivered in group C.Out of 38 EM.LSCS deliveries in induced group 15 delivered in group A.11 delivered in group B 12 delivered in group C.In present study out of 61 SPVD in Spontaneous group 48 delivered in group A

11 delivered in group B 2 delivered in group C
Out of 6 vacuum assisted deliveries in induced group 2 delivered in group A.3 delivered in group B 1delivered in group C
Out of 8 Outlet forceps deliveries in induced group 4 delivered in group A
3 delivered in group B 1 delivered in group C
Out of 25 EM.LSCS deliveries in induced group 13 delivered in group A5 delivered in group B
7 delivered in group C

Table 8: Indication for instrumental delivery or LSCS in induced and spontaneous labour

Indication		Type		Total
		Induced	Spontaneous	
Abrupton	Count	1	0	1
	%	1.8%	0.0%	1.0%
Cephalopelvic disproportion	Count	11	8	19
	%	19.3%	20.5%	19.8%
Failure to progress	Count	9	6	15
	%	15.8%	15.4%	15.6%
Failure to progress + fetal distress	Count	2	0	2
	%	3.5%	0.0%	2.1%
Failure to progress + MSL	Count	1	0	1
	%	1.8%	0.0%	1.0%
Fetal distress	Count	11	9	20
	%	19.3%	23.1%	20.8%
MSL	Count	3	2	5
	%	5.3%	5.1%	5.2%
MSL + fetal distress	Count	9	5	14
	%	15.8%	12.8%	14.6%
NPOL + fetal distress	Count	0	1	1
	%	0.0%	2.6%	1.0%
Poor maternal efforts	Count	10	8	18
	%	17.5%	20.5%	18.8%
Total	Count	57	39	96
	%	100.0%	100.0%	100.0%

Table 9: Comparison of APGAR score in induced and spontaneous labour

APGAR		Type		Total
		Induced	Spontaneous	
<=4	Count	1	1	2
	%	1.0%	1.0%	1.0%
5 to 6	Count	15	3	18
	%	15.0%	3.0%	9.0%
7 to 8	Count	84	96	180
	%	84.0%	96.0%	90.0%
Total	Count	100	100	200
	%	100.0%	100.0%	100.0%

In present study out of 100 induced labour cases

APGAR <=4 in 1 (1%)

APGAR 5 TO 6 in 15(15%)

APGAR 7 TO 8 In 84(84%)

In present study out of 100 spontaneous labour cases

APGAR <=4 in 1 (1%)

APGAR 5 TO 6 in 3(3%)

APGAR 7 TO 8 In 96(96%)

Discussion

Partogram plays a key role in labour monitoring. It helps in identifying abnormal patterns in labour and the time for prompt intervention. Induction can have a significant impact on the birth experiences of women, such as increased risk of emergency caesarean section and poor fetal outcome. It has been observed that failed induction is more common among primigravidas. Furthermore, primigravidas have been described as group at risk in labour. Therefore, their labour should be monitored very carefully. There is scarcity of literature comparing spontaneous versus induced labour among primigravida women. It is pertinent to compare the outcome

of labour among these groups using World Health Organization (WHO) partograph. The present study includes 200 primigravidas at term admitted to labour room in Government Hospital, Nalgonda, for safe confinement. In these, 100 women were in spontaneous labour and remaining 100 women were induced. This study is to compare the labour progression and fetomaternal outcome using simplified WHO partogram among women in both the groups in whom labour had been established, in active phase with cervical dilatation of at least 4cm. There was significant difference in the mean age, fetal heart rate just before delivery and birthweight and no significant difference in cervical dilatation before start of partograph and total duration of labour.

Observation From Our Study And Comparison With Other Studies Total Duration Of Labour: In our study, mean total duration of labour in induced group is 3.1hrs and in spontaneous group is 3.0hrs which was found to be statistically not significant (p value = 0.794). This shows that labour in induced and spontaneous is comparable if partographically monitored.

Table 10: Comparison Of Total Duration Of Labour In Various Studies

Mean Duration of Labour (hours)	Our Study	Ernest O. Orji et al[6]	Anamika Singh & Smitha B Rao et al[7]	Pramila Yadav et al[8]
Induced	3.117	6.507	6.507	5.43
Spontaneous	3.038	6.080	6.080	5.41
p value	0.794	0.131	0.15	0.865

Similar study by Ernest O.Orji et al[6], Anamika Singh & Smitha B.Rao et al[7], Pramila Yadav et al[8] showed no significant difference in mean total duration of labour in both induced and spontaneous groups. This correlates with my study.

Mode Of Delivery: In our study, 38% (38 women) were delivered by caesarean section and 13% (13 women) by outlet forceps and 6 (6%) by vacuum assisted and 43%(43) spontaneously in induced group. Whereas, 25%(25 women) were delivered by caesarean section and 8(8%) by outlet forceps and 6(6%) by vacuum assisted and 61%(61) spontaneously in spontaneous group.

Table 11: Comparison of Caesarean Section Rate in Various Studies

Caesarean Section	Our Study	Ernest O.Orji et al[6]	Anamika Singh & Smitha B Rao et al[7]	Pramila Yadav et al[8]
Induced	38%	35.3%	44%	25%
Spontaneous	25%	11.03%	21%	12%

All the given studies, Ernest O.Orji et al[6], Anamika Singh et al, Smitha B Rao et al[7], Pramila Yadav et al[8] show that rate of caesarean section is high in induced labour, which support my study.

Indication for Caesarean Section

In our study it was found out that fetal distress is the main cause for caesarean section in both the comparison groups. Similar study Ernest O.Orji[6] showed cephalopelvic disproportion to be the main indication for caesarean section in both the comparison groups.

Table 12: Comparison of Mean Birth Weight in Different Studies

Mean birth weight in kgs	Our study	Anamika Singh & Smitha B Rao et al[7]	Pramila Yadav et al[8]
Induced	2.8	2.99	2.98
Spontaneous	2.7	3.01	3.0

Table 13: Comparison of % of Tachysystole in Different Studies

% of tachysystole	Our study	Pramila Yadav et al[8]
Induced	22%	1%
Spontaneous	5%	0%

Tachysystole is seen in 22% of induced cases and 5% of spontaneous labour cases. Tachysystole is more common in induced labour

compared to spontaneous labour which correlate my study with different studies

Table 14: Comparison of no. of deliveries in group A, group B, group C, in comparison with other studies

	Our study Induced	Sponta-Neous	Anamika Singh & Smitha B Rao et al [7] Induced	Sponta-Neous	Pramila Yadav et al [8] Induced	Sponta-Neous
A (Women who delivered before alert line)	51(51%)	67(67%)	78(57.4%)	75(55.1%)		
B (Women who delivered between alert and action line)	31(31%)	22(22%)	13(11.3%)	38(33%)		
C (Women who delivered after action line)	18(18%)	11(11%)	45(31.3%)	23(11.9%)	21(35%)	10(16.7%)

Comparison of deliveries in different groups show that most deliveries occur in group A i.e. before the alert line in Anamika Singh & Smitha B Rao et al [7] which correlate with my study

APGAR at 1 minute and 5 minutes

In our study mean APGAR at 1 minute and 5 minutes were found to be similar in both the comparison groups. APGAR at 1 minute and 5 minutes were comparatively low in both the groups who crossed action line.

Table 15: Comparison of APGAR in various studies

	Mean APGAR	Our Study	Gupta Suchika et al
Induced	APGAR 1	7.38	7.86
	APGAR 5	8.38	8.45
Spontaneous	APGAR 1	7.77	7.38
	APGAR 5	8.77	8.09

In a similar study Gupta Suchika et al [9], it was found that the difference in APGAR at 1 minute and 5 minutes in the comparison group is statistically significant which supports my study.

Conclusion

From the analysis and evaluation of our study, the following conclusions were made. Partogram is efficient, time saving and gives a clear picture of labour. It facilitates anticipation with reasonable certainty of labour problems and indicates the need for clinical re-evaluation. It also identifies the cases, which may require intensive intrapartum monitoring and possible intervention either operative or non-operative. Induced labour monitored with modified WHO partogram is comparative to spontaneous labour with no increased adverse fetal outcome. Partographically monitored induced labour may increase the chances of caesarean section, but it does not adversely affect the neonatal outcome. Therefore, induction of labour can be safe among primigravida if labour is partographically monitored.

Limitations Of Our Study

The present study has its own limitations as

1. It includes only 200 women due to non availability of cases and time constraint
2. Our study is a hospital based study which is not strictly representative of the whole population
3. The diagnosis of fetal distress was made depending on fetal heart tracings in contraction stress test. Fetal acidosis was not proved by fetal scalp blood sampling or other methods, because of non availability.

Acknowledgment

The author is thankful to Department of OBG for providing all the facilities to carry out this work

References

1. Sir Sabaratnam Arulkumaran, Gita Arjun, Leonie K Penna. The Management of Labour textbook. third edition. chapter 1 Physiopharmacology of Labour, 2012, 1.

2. O'Driscoll K, Jackson RJ, Gallagher JT. Prevention of prolonged labour. BMJ. 1969; 2:477- 800.
3. Pates JA, Satin AJ. Active Management of Labor. Obstet Gynecol Clin N Am. 2005; 32:221-230.
4. Friedman E. The graphic analysis of labor. Am J Obstet Gynecol. 1954; 68:1568.
5. Philpott RH. Graphic records in labour. Br Med J. 1972; 4:163.
6. Ernest O Orji, Taofeek O Olabode. Comparative study of labour progress and delivery outcome among induced versus spontaneous labour in nulliparous women using modified WHO partograph. NJOG. 2008;3(1):24-28.
7. Anamika Singh, Smitha B. Rao, Bhavana Sherigar, Reena D'souza, Soumya R., Vismaya Kaveri. Comparison of progress of labour and maternal outcome among induced versus spontaneous labour in nulliparous women using modified WHO partograph. International Journal of Reproduction, Contraception, Obstetrics and Gynecology Singh A et al. Int J Reprod Contracept Obstet Gynecol. 2018;7(2):415-418.
8. Pramila Yadav, Megha Sharma. Comparison of spontaneous labour with induced labour in nulliparous women using modified WHO partograph, International Journal of Reproduction, Contraception, Obstetrics and Gynecology. Int J Reprod Contracept Obstet Gynecol. 2016;5(11):4005-4008
9. Gupta Suchika, Shekhawat Usha, Mital Premalata, Meena Madhu. To Study the Fetomaternal Outcome and Progress of Labour among Induced versus Spontaneous Labour in Nulliparous Women (Using Modified WHO Partograph); Sch.J.App.Med. Sci. 2014; 2(5A):1577-1580.

Conflict of Interest: Nil

Source of support: Nil