

Maternal outcomes in low risk nulliparous women admitted in latent and active phase of labour

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Abstract

To determine and compare the frequency of maternal outcomes in terms of augmentation of labour and cesarean section in low risk nulliparous women admitted in latent phase and active phase of labour. 130 nulliparous pregnant women in labour fulfilling the selection criteria were included in study at the time of admission in hospital and followed up till delivery and discharge. The study group was stratified in latent and active phase of labour and analysed accordingly. Maternal outcomes were assessed in each woman and recorded in the structured proforma. Frequency of active phase of labour was calculated as 46.92% and latent phase as 53.08%. Comparison of maternal outcome in both groups shows that 29.51% cases of active phase and 56.52% cases of latent phase had caesarean delivery ($p=0.002$). 70.49% cases of active phase and 49.18% cases of latent phase had vaginal delivery ($p=0.002$). Augmentation through oxytocin was recorded in 16.39% in active phase and 31.88% in latent phase ($p=0.04$). The frequency of maternal outcomes in terms of augmentation and cesarean section in low risk nulliparous women admitted in latent phase is significantly higher when compared to those admitted in active phase of labour.

Keywords: Labour, active phase, latent phase, augmentation, maternal outcomes

How to Cite: Jabeen, K. (2021). Maternal outcomes in low risk nulliparous women admitted in latent and active phase of labour. *Konselor*, 10(2). doi:<https://doi.org/10.24036/02021102111911-0-00>



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Introduction

Labour is defined as uterine contractions of sufficient frequency duration and intensity to bring about dilatation and effacement of cervix during childbirth. Women are usually admitted in labour room in latent phase which may last from 8 hours to as much as 18 hours in nulliparous women. It is a sensitive period which may in turn influence both active and expulsive phase of labour. Many at times, women know they should stay at home for as long as possible during the latent phase of labour but they sometimes found this difficult. Therefore it is important to differentiate between latent and active phase because women admitted in latent phase tend to spend more time in labour ward. The previous research shows contradictory results as some studies show that women admitted in latent phase experience more interventions like amniotomy augmentation need for caesarean section, postpartum hemorrhage and prolonged hospital stay. While other studies show no significant difference in rates for amniotomy, augmentation, mode of delivery and postpartum hemorrhage between latent and active phase.

Hence the timing of admission may have consequences for progress of labour because the hospital environment may affect the progress in latent phase. There is, however, no hospital policy or study available in Pakistan or agreed consensus upon when to admit the women to improve the maternal outcome. This study was done to determine the effect of latent and active phase admissions in low risk nulliparous women.

Method

The research was initiated after seeking approval from Institutional Research Forum & Ethical committee of RMC. Using a reference study⁵, proportionate sampling was done. The confidence level was kept 95%, P= 28%⁵, Precision= 8%. Hence n= 130. So a total of 130 patients were included.

The study population included nulliparous pregnant women in first stage of labour (including primigravida as well as those with history of miscarriages) with singleton pregnancy between 37 and 41 completed weeks of gestation. All of them had spontaneous onset of labour with established uterine contractions at the time of admission. Women who had any known medical disorder or any risk factor or indication for admission other than labour were excluded. Eligible women were provided information regarding the purpose and procedure of study and written informed consent was taken. All the selected women were included in study at the time of presentation for admission in hospital and followed up till delivery and then at discharge from the hospital. In the meanwhile, all the maternal outcomes specified in the study objective were assessed and recorded in the structured proforma attached as Annex 1. The labour was monitored through standard modified WHO partograph. The study group was stratified in latent and active phase of labour and analysed accordingly.

Data was entered and analyzed using SPSS version 17. For all the categorical variables like mode of delivery, latent and active phase, augmentation through oxytocin given or not; frequencies and percentages were calculated. For continuous variables like age, gestational age, duration of stay in hospital, mean and standard deviations were calculated. For comparison of statistically significant difference in means of duration of hospital stay in latent phase and active phase of labour, independent samples t test was applied at 5% level of significance. A p-value of ≤ 0.05 was considered as significant. For comparison of proportions of women in latent and active phase with need for caesarean section and need for augmentation, chi squared test at 5% level of significance was applied. P-value of less than 0.05 was significant. Effect modifiers as age and gestational age were controlled by stratification. Post Stratification Chi square test was applied for qualitative and independent sample t test for quantitative variables. P-value of less than 0.05 was significant.

Results and Discussion

A total of 130 cases fulfilling the inclusion/exclusion criteria were enrolled in the study. Age distribution of the patients was done where 81.54%(n=106) were between 18-30 years of age while 18.46%(n=24) were between 31-35 years of age, mean+SD was calculated as 27.58+3.86 years. Gestational age was calculated as 67.69%(n=88) were between 37-39 weeks while 32.31%(n=42) were between 39+41 weeks of gestation, mean+SD was calculated as 38.86+1.19 weeks. Frequency of active and latent phase of labour was calculated as 46.92%(n=61) for active phase of labour and 53.08%(n=69) had latent phase of labour.

Comparison of maternal outcome in both groups was done, it showed that 29.51%(n=18) cases of active phase and 56.52%(n=39) cases of latent phase had caesarean delivery, p-value was calculated as 0.002, vaginal delivery was recorded in 70.49%(n=43) in active phase and 49.18%(n=30) had latent phase of labour, p-value was calculated as 0.002, augmentation through oxytocin was needed in 16.39%(n=10) in active phase and 31.88%(n=22) in latent phase, p value was calculated as 0.04. (Table No. 1). Comparison of duration of hospital stay in both groups found 1.62+0.58 hours in active and 3.72+0.97 hours in latent phase, p value calculated as 0.001.

Effect modifiers as age and gestational age were controlled by stratification. Post Stratification Chi square test was applied for qualitative and independent sample t test for quantitative variables. P-value of less than 0.05 was significant (Table 2 and Table 3).

Labour is a physiologic process involving expulsion of products of conception (i.e., the fetus, membranes, umbilical cord, and placenta) outside from the uterus as a result of gradual effacement and dilatation of the uterine cervix and rhythmic uterine contractions of sufficient frequency, intensity, and duration.

The first stage of labour encompasses onset of labour to complete dilatation of cervix which is subdivided into latent and active phase. NICE recommends the latent phase as the period of time, not necessarily continuous, when there are painful uterine contractions that bring about some cervical effacement and dilatation up to 4cm, whereas active labour starts when there are regular painful contractions and progressive dilatation from 4cm to full dilatation of cervix.

Table 1 <Comparison of Maternal Outcome in both Groups (n=130)>

Maternal outcome	Active phase (n=61)		Latent phase (n=69)		P value
	No. of patients	%	No. of patients	%	
Caesarean delivery	18	29.51	39	56.52	0.002
Vaginal delivery	43	70.49	30	49.18	
Augmentation through oxytocin	10	16.39	22	31.88	0.04
Total duration of hospital stay	Mean	SD	Mean	SD	P value
	1.62	0.58	3.72	0.97	0.001

Table 2 <Stratification for Augmentation through Oxytocin with Regards to Age (n=130)>

Group	Augmentation	Spontaneous	P value
18-30 years			
Active	7	42	0.06
Latent	17	41	
31-35 years			
Active	3	9	0.38
Latent	5	7	

Table 3 <Stratification for Cesarean Delivery with Regards to Age (n=130)>

Group	Cesarean delivery	Vaginal delivery	P value
18-30 years			
Active	15	34	0.02
Latent	30	27	
31-35 years			
Active	3	9	0.01
Latent	9	3	

When evaluating labour progress, it is extremely important to understand that progress in latent phase is slower and less predictable. If admitted in latent phase, the women may need to stay in hospital long time before the admission is actually needed. This, increases the anxiety in patient and her family along with an increased risk for unnecessary augmentation of labour and misdiagnosis of 'prolonged labour' leading to unnecessary interventions.

The need to minimize medical or surgical interventions among pregnant women in labour is a challenge in most of clinical settings. This has led to never-ending debate among scholars between natural childbirth and the techno-medical model of childbirth.

In our study, mean age of the patients was calculated as 27.58+3.86 years, frequency of active and latent phase of labour was calculated as 46.92%(n=61) for active phase of labour and 53.08%(n=69) had latent phase of labour, comparison of maternal outcome in both groups was done, that shows 29.51%(n=18) cases of active phase and 56.52%(n=39) cases of latent phase had caesarean delivery, p value calculated as 0.002, vaginal delivery was recorded in 70.49%(n=43) in active phase and 49.18%(n=30) in latent phase of labour, p value calculated as 0.002, augmentation through oxytocin was recorded in 16.39%(n=10) in active phase and 31.88%(n=22) in latent phase, p value calculated as 0.04.

We compared our results with previous studies showing that women admitted in latent phase experience more interventions like amniotomy (55% vs. 39% p<0.05)⁴ and augmentation (33% vs. 20% p<0.05)³. These women are also at increased risk of need for caesarean section (62.9% vs. 28% p<0.05)⁵, (65% vs. 16% p<0.002)⁶, postpartum hemorrhage⁷ and prolonged hospital stay in hours (mean \pm SD 3.0 \pm 1.6 vs. 1.8 \pm 1.4)⁵, compared to women in active phase. These findings are in agreement with our results.

On the contrary, there are some studies which show no significant difference in rates for amniotomy, augmentation (62% vs. 56% p=0.5%)⁵, mode of delivery and postpartum hemorrhage (2% vs. 2%)⁸ between latent and active phase, our findings are in contrast with some of these observations.

Our study demonstrates that women who were admitted in latent phase of labour had increased obstetric interventions compared to those in active phase of labour, the findings which are similar to the previous studies. The most frequent interventions were augmentation with oxytocin which was high in women admitted in latent phase than active phase of labour¹⁵. This was similar to other studies done in Iraq (58.3% vs 41.5% $p < 0.001$) and Columbus (80.4% vs 48.9%, $p=0.002$).¹⁶ However, these findings are different from the study done in Iran which found that the rate of oxytocin augmentation was similar in both groups.

According to our study, the cases admitted with latent phase of labour are significantly at higher risk of interventions. However, after validation from other studies, our results may be used as guidelines in absence of any hospital policy or study available in Pakistan or agreed consensus upon when to admit the low risk nulliparous women to improve the maternal outcome.

Conclusion

We concluded that the frequency of maternal outcomes in terms of augmentation of labour and cesarean section in low risk nulliparous women admitted in latent phase and active phase of labour is significantly higher when compared with those of active phase of labour.

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