

Labour Characteristics Among the Nepalese Indo-Aryan and Tibeto – Burman Ethnic Groups

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ABSTRACT

Introduction: The study was done to analyze the duration of active phase of first stage of labour and second stage of labour in the Indoaryan and Tibetoburman ethnic population.

Methods: A total of 200 patients, 100 from each ethnic groups, Indoaryans and Tibetoburmans, who underwent delivery at Tribhuvan University Teaching Hospital from April 2007 to April 2008 were analyzed. The active phase of first stage of labour and second stage of labour were compared in the two groups. The factors affecting the duration of labour were studied by correlating these factors with duration of labour.

Results : Duration of labour was found shorter in Tibetoburmans compared to Indoaryans (155.65 ± 77.56 mins in Indoaryans Vs 134.70 ± 89.182 mins in Tibetoburmans). In primigravidas, mean duration of active phase of first stage of labour was significantly shorter in Tibetoburmans (135.19 ± 53.367 mins) compared to Indoaryans (189.41 ± 65.830 mins) but the mean duration of second stage of labour was not significantly shorter. In multigravidas, the mean duration of active phase of first stage of labour was shorter in Indoaryans (120.51 ± 73.663 mins) than in Tibetoburmans (134.17 ± 116.885 mins) but was not statistically significant. But the mean duration of second stage of labour was significantly shorter in Tibetoburmans (26.85 ± 26.534 mins) as compared to Indoaryans (33.73 ± 11.595 mins).

Conclusion : Significantly shorter duration of labour is seen in Tibetoburmans as compared to the Indoaryans.

Key words : Duration of labour, ethnicity.

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INTRODUCTION

Labour is divided into three stages. First stage of labour is initiated with effacement and dilatation of cervix. In primigravida, duration of first stage of labour is 12 hours and in multigravida it is 6 hours.¹ The first stage is again divided into latent phase of 6-8 hours and mean active phase of 4.9 hours.² Second stage begins with full dilatation of cervix and ends with delivery of fetus. The average duration is 1- 1.5 hours in nulliparas and 30 minutes to 1 hour in multiparas. Third stage begins after expulsion of the fetus and ends with complete expulsion of the placenta and membranes. Its average duration is 5-15 minutes.³

Emanuel Friedman first described the comprehensive method of evaluating labour in clinical practice using a square-ruled graph paper with 10 divisions along the ordinate to represent the cervical dilatation in centimeters; each corresponding division along the abscissa denoting time in hours.⁴ A typical sigmoid curve for each individual's labour was noted. The curve was divided into two stages. The first stage was further subdivided into two phases. This approach gave clinician a simple, graphic, objective, and scientific way to quantify and evaluate individual progress in labour.

Census of Nepal has identified 60 different ethnic groups and subgroups within the population. Major ethnic groups in Nepal are -- Brahman, Chhetri, Newar, Gurung, Magar, Tharu, Tamang, Muslim, Kami, and Yadav. The different ethnic groups and subgroups can be divided into two major racial divisions i.e. Indo-Aryans and Tibeto-Burmans. Indo-Aryan is the largest ethnic group including Brahman, Chhetri, Tharu, Rajbansi, Darai, Kumal, Majhi. Tibeto-Burman include Newar, Gurung, Magar, Rai, Limbu, Sherpa, Thakali, Tamang, Jirel, and Thami.⁵

Etiologic factors for difference in duration of labour between ethnic groups include pelvic anatomy, fetal position, fetal and maternal size, maternal habitus (food habit, life style) etc.⁶ Understanding the differences in labour among different ethnic groups is important to make knowledgeable decisions about labour progress. It is also important to use any set of parameters for any ethnic groups as guidelines which may help in decreasing the number of unnecessary obstetric interventions and the costs associated with it. This study may help to generate large study in future which perhaps may help to establish new norms.

METHODS

A hospital based, descriptive, longitudinal comparative study was conducted in Department of Obstetrics and Gynaecology, Tribhuvan University Teaching Hospital over a period of twelve months from April 2007 to April 2008. A total of 200 cases that were admitted with term pregnancy of 37-42 weeks, with singleton pregnancy, cephalic presentation and who did not receive an epidural or caudal block for painless labour were included with 100 patients in each group, Indoaryans and Tibetoburmans. The main study factors were the duration of labour in the different ethnicity.

General physical and systemic (including p/v examination) were done and dilatation of the cervix was noted. Partograph was plotted at 4 cm cervical dilatation. Next p/v examination was done after 2 hours or repeated earlier if the patient had urge to bear down and if there was increased intensity of contractions. To confirm the beginning of second stage, p/v examination was repeated hourly, depending upon the cervical dilatation. Findings were plotted in partograph. Duration of first stage of labour and second stage of labour were noted. Maternal and fetal complications were also recorded.

Analysis on demographic profile of the cases were done and compared in two ethnic groups also taking Age, Parity, Gestational age and Birth weight as variables and comparisons were done in two strata, primigravida and multigravida. Test for significance between two groups were done by calculating p-value (<0.05).

RESULTS

Among the Indoaryans, the maximum were Brahman (71%) and the least were Rajbanshi and Sunuwar (1%). Among the Tibetoburmans, the maximum were Newar (79%) and the least were Tamang and Sherpa (1%). The maximum numbers of patients in the Indoaryans group were in the age group of 26-30 years (55%) whereas the maximum numbers of patients in Tibetoburmans group were in the age group of 21-25 years (Figure 1). Mean age of Indoaryans was 24.96 years and Tibetoburmans was 25.46 years.

In both the groups most were primigravida (51% in Indoaryans and 55% in Tibetoburmese). The gestational age in both population is given in table below.

		Indoaryans		Tibetoburmans	
		Count	%	Count	%
G A (wks)	37 to 37+6	12	12.0	10	10.0
	38 to 38+6	39	39.0	23	23.0
	39 to 39+6	24	24.0	45	45.0
	40 to 40+6	21	21.0	20	20.0
	41 to 41+6	4	4.0	2	2.0
Total		100	100.0	100	100.
Mean ± SD		38.66 ± 1.066		38.81 ± 0.940	

Table 1: Comparison of Gestational Age (p = 0.292)

Mean baby weight of Indoaryans was 3.080 kg (SD ± 0.36) and that of Tibetoburmans was 2.937 kg (SD ± 0.28) with p value 0.002. The minimum duration of active first stage of labour in Indoaryans was 45 minutes and in the Tibetoburmese was 40 minutes. The maximum duration of active first stage of labour in Indoaryans was 6 hours 30 minutes and in Tibetoburmans 5 hours 30 minutes.

The minimum duration of Second Stage of Labour in Indoaryans was 6 minutes and 4 minutes in Tibetoburmans.. The maximum duration of second stage of labour in Indoaryans was 1hour 25 minutes and in Tibetoburmans 2 hours 20 minutes.

The minimum duration of third stage of labour in Indoaryans was 2 minutes and in Tibetoburmans was 3 minutes. The maximum duration of third stage of labour in Indoaryans was 9 minutes and in Tibetoburmans was 8 minutes

		Indoaryans		Tibetoburmans		p value
		No	%	No	%	
F irst Stage - A c t i v e Phase (hour)	<1	11	11.0	11	11.0%	0.078
	1-2	23	23.0	41	41.0%	
	2-3	39	39.0	31	31.0%	
	3-4	18	18.0	10	10.0%	
	>5	9	9.0	7	7.0%	
Total		100	100.0	100	100.0%	
Mean ± SD (mins)		155.65 ± 77.576		134.70 ± 89.182		0.078
S e c o n d stage of labour(mins)	≤15	12	12.0	31	31.0%	0.005
	15-30	41	41.0	59	59.0%	
	31-45	45	45.0	7	7.0%	
	>45	2	2.0	3	3.0%	
Total		100	100.0	100	100.0%	
Mean ± SD (mins)		30.01 ± 11.445		23.37 ± 20.308		0.005
T h i r d stage of labour(mins)	2-4	36	36.0	35	35.0%	0.135
	5-7	51	51.0	61	61.0%	
	8-10	13	13.0	4	4.0%	
Total		100	100.0	100	100.0%	
Mean ± SD (mins)		5.25 ± 1.648		4.94 ± 1.246		0.135

Table2: Duration of labour in the two ethnic groups.

The minimum duration of active first stage in Indoaryans was 1 hour 15 minutes and in Tibetoburmans 50 minutes among primigravda and the maximum duration of active first stage of labour in Indoaryans was 6 hours and in Tibetoburmans 4 hours 15 minutes. The minimum duration of second stage of labour was 11 minutes in both Tibetoburmans and Indoaryans among primigravida and the maximum duration of second stage of labour in Indoaryans was 1 hour 25 minutes and in Tibetoburmans 2 hour 20 minutes. The minimum duration of third stage of labour in Indoaryans was 2 minutes and in Tibetoburmans 3 minutes among primigravda whereas the maximum duration of third stage of labour was 8 minutes in both Tibetoburmans and Indoaryans.

The minimum duration of active first stage of labour in Indoaryans was 45 minutes and in Tibetoburmans 40 minutes among multigravida whereas the maximum duration of active first stage of labour in Indoaryans was 6 hours 30 minutes and in Tibetoburmans 5 hours 30 minutes. The minimum duration of second stage of labour was 6 minutes in Indoaryans and 4 minutes in Tibetoburmans among multigravida. The maximum duration of second stage of labour in Indoaryans was 43 minutes and in Tibetoburmans 33 minutes. In multigravida, the second stage of labour was significantly shorter in Tibetoburmans compared to Indoaryans. The minimum duration of third stage of labour was 3 minutes in both Tibetoburmans and Indoaryans among multigravida and the maximum duration of third stage of labour was 9 minutes in Indoaryans and 7 minutes in Tibetoburmans.

		Indoaryans		Tibetoburmans		p value
		No.	%	No.	%	
F irst Stage - A c t i v e phase(hour)	<1	11	22.4	8	16.7	0.492
	1-2	19	38.8	22	45.8	
	2-3	11	22.4	12	25.0	
	3-4	6	12.2	0	0	
	>5	2	4.1	6	12.5	
Total		49	100.0	48	100.0	
Mean ± SD (mins)		120.51 ± 73.663		134.17 ± 116.885		0.492
S e c o n d Stage of Labour (mins)	≤15	10	20.4	15	31.3	0.001
	15-30	23	46.9	31	64.6	
	31-45	16	32.7	2	4.2	
Total		49	100.0	48	100.0	
Mean ± SD (mins)		26.14 ± 10.008		19.60 ± 8.766		0.001
T h i r d Stage of Labour (mins)	2-4	21	42.9	13	27.1	0.423
	5-7	21	42.9	35	72.9	
	8-10	7	14.3	0	0	
Total		49	100.0	48	100.0	
Mean ± SD (mins)		5.29 ± 1.860		5.04 ± 0.988		0.423

Table 3: Duration of labour in Multigravida in the two ethnic groups

DISCUSSION

Similar studies have been done elsewhere and reported. A retrospective study ⁷ from Malaysia showed that the mean gestational age of Malay, Chinese and Indian were 38.9 weeks, 38.7 weeks and 39.2 weeks respectively which were not significantly different. In the present study also, gestational age was compared in two ethnic groups. The gestational age ranged from 37 to 41 weeks, with a mean gestational age of 38.66 weeks in Indoaryans and 38.81 weeks in Tibetoburmans. There was no significant difference ($p=0.292$) in gestational age in the two ethnic groups.

The mean birth weight of Indoaryans was 3080 grams and Tibetoburmans was 2937 grams in the current study making Indoaryan babies significantly larger than the Tibetoburman babies ($p < 0.002$). However a study done in Western Nepal in 2002 ⁸ showed that the mean birth weight of Indoaryans was 2683.07 grams, Tibetoburmans 3041.1 grams, Newars 2923.81 grams and lower caste 2672.44 grams. The difference observed in the current study could be because Newar caste was included as Tibetoburmans whereas they were kept separately in the previous study. In searching through literatures, many similar studies have been done which have found that Hindu babies are lighter than the Muslim babies, and Asian babies are lighter than the Whites and Blacks.

In this study although the mean duration of active first stage of labour was shorter in the Tibetoburmans (134.70 mins) than Indoaryans (155.65 mins), it was not statistically significant ($p=0.078$). However, the mean duration of second stage of labour was significantly shorter ($p < 0.005$) in Tibetoburmans (23.37 mins) than in the Indoaryans (30.01 mins). In similar studies, Chinese parturients showed significantly shorter duration of first stage ($p < 0.0001$) compared to parity matched patients of differing ethnicity. Second stage labour in Chinese parturients was also shorter, but did not differ significantly ($p=0.185$).⁹ A retrospective cohort study comparing duration of labour among four ethnic groups: Black, Asian, Whites and Latin showed that duration of first stage of labour did not differ significantly among groups, but Black women had shorter second stage of labour.¹⁰

The study showed that the mean duration of active first stage of labour was significantly shorter ($p < 0.001$) in Tibetoburman primigravida. But the mean duration of second stage of labour was not significantly shorter

($p=0.092$) in Tibetoburmans. In multigravida, the mean duration of active first stage of labour was insignificantly shorter ($p=0.492$) in Indoaryans. But the mean duration of second stage of labour was significantly shorter ($p < 0.001$) in Tibetoburmans. Difference in duration of labour between two ethnic groups could be due to difference in pelvic anatomy, fetal position, fetal and maternal size, maternal habitus (food habit, life style) etc.⁶

CONCLUSION

The study has shown that significantly shorter duration of labour is seen in Tibetoburman ethnic group as compared to the Indoaryans. Indoaryan babies have significantly larger birth weight compared to the Tibetoburmans. However, a larger scale study needs to be carried out to further validate the results of the present study.

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