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The Association between Fetal Head Station at the First Diagnosis of the Second Stage of Labor and Delivery Outcomes

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ABSTRACT

Background: The impact of foetal head station at the onset of 2nd stage of labor on the duration of 2nd stage duration is still controversial in spite of multiple studies conducted on evaluation of foetal head station early in labor, but still much less data on the impact of foetal head descend in the 2nd stage. **Objective:** The study aimed to evaluate the correlation between foetal head station diagnosed at the start of second stage of labour and fetomaternal delivery outcomes. **Subjects and methods:** This study was carried out on 100 female participants were in spontaneous labor at 37-42 weeks in emergency room (ER) at Obstetrics and Gynecology Department at Menoufia University Hospitals after obtaining their consent from January 2022 till December 2022. Upon the diagnosis of the second stage of labour, women were divided into three groups according to the foetal head station: above (S<0), at the level of (S=0), and below (S>0). The length of the second stage and the risk of operational delivery were examined and stratified by parity between the groups. All subjects had routine testing (CBC, Coagulation profile, Kidney function tests, Liver function tests), and all females underwent obstetric ultrasounds. **Results:** 46% of the 100 individuals who matched the inclusion criteria were nulliparous, whereas 54% were multiparous. 10.9%, 34.8%, and 54.3% of the nulliparous women had foetal head S<0, S=0, and S>0 following second stage diagnosis. 20.4%, 37%, and 42.6% of the multiparous women were identified as having foetal head S<0, S=0, and S>0, respectively. The length of the second stage was independently and strongly correlated with foetal head station at the time of second stage diagnosis (P<0.001). **Conclusion:** The length of the second stage is strongly and independently correlated with the foetal head station at the first diagnosis of the second stage. Between three groups of multiparous, there was a statistically significant difference in the necessity for the Kristeller manoeuvre, with multiparous females with S0 needing fundal pressure more often.

Keywords: Fetal head station, Head descend, labor, 2nd stage, Nulliparous, Multiparous.

INTRODUCTION

One of the most significant experiences a person can have is giving birth. Despite the intricacy and complexity of contemporary obstetrics, it's critical to keep in mind that every pregnancy has one straightforward goal: to deliver a healthy baby to a healthy mother [1]. Power, passenger, and "passage" are three interconnected and interacting components that influence the mechanics of labour. The second stage begins shortly after the cervix has fully dilated and concludes with the delivery of the foetus [2]. A subjective instrument, digital evaluation of foetal head station during labour is prone to significant disagreement among examiners, particularly during lengthy labour when caput succedaneum and moulding make foetal head position interpretation more challenging [3].

Foetal station is clinically evaluated during the second stage of labour to determine dystocia, measure descent, and decide how to hasten delivery when necessary. A 45° angle between the foetal head's anteroposterior diameter and the maternal pelvis indicates that the skull's base is at or below the level of the ischial spines, which corresponds to the pelvis's minimum diameter, making foetal head rotation evaluation valuable as well [4].

Numerous research have looked at the use of objective transperineal ultrasound (TPU) characteristics to predict the method of delivery during the second stage of labour [5,6].

Commonly, the duration of this second stage is used to manage it [7, 12]. Foetal descent describes the presenting part's downward journey via the birth canal. The midway (0 station) is designated as the plane of the maternal ischial spines. There are generally recognised categorization systems of foetal station (-5 to +5) and (3 to +3) that are based on a quantitative measure in centimeters of the distance of the leading bony edge from the ischial spines [8].

PATIENTS AND METHODS

Study design and grouping

This analytical prospective cross-sectional study included female participants in spontaneous labor at 37-42 weeks in ER at Obstetrics and Gynecology Department at Menoufia University Hospitals through the period from January 2022 to December 2022. Participants were divided into nulliparous and multiparous women who further divided according to foetal head station into 3 groups: **Group I:** S>0, foetal head below the spinal process level (also known as S+1, S+2, or S+3; used as a reference group). **Group II:** S=0, foetal head at the level of the spinal process. **Group III:** Foetal head, level above the spinal process (i.e., S- 1, S- 2, or S- 3).

Sample size estimation

Estimated in the faculty of medicine at Menoufia University's public health and community medicine department and academic research department. Based on a review of the prior literature, **Ashwal *et al.*** [8] who discovered that both nulliparous and multiparous women are at an increased risk for operative delivery

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when the foetal head station is present at the first diagnosis of the second stage ($P < 0.001$). Sample was computed with 80% power and 95% confidence.
There must be 100 people in the sample. As a drop-out rate (10% of the projected sample size), a total of 10 females were added to the sample (Sample size: 110 participants).

Inclusion criteria: After receiving their written agreement, all women who were in spontaneous labour and had a singleton viable gestation at term (37–42 weeks' gestation) in the emergency room of the Obstetrics and Gynaecology Department at Menoufia University Hospitals were eligible.

Exclusion criteria: Stillbirth and congenital anomalies. Pregnancy terminations. Epidural anaesthesia. Deliveries in which, at admission, the cervical dilatation was 10 cm. or those that came after an induced or protracted (> 25 hours) labour. All females with medical disorders that need shortening second stage eg; cardiac pt. hypertensive pt. to decrease stress from bearing down in labor. Approved documented fetal macrosomia as fetal weight >3.9 kg detected by ultrasound.

Methods:

All research participants had extensive information collection on their demographics, medical histories, pregnancy histories, and delivery details.

- Full clinical examination: (general examination, including measurements of body weight, height, and BMI, as well as vital signs).
- Laboratory investigations: as (complete blood count, coagulation profile, liver function tests, and kidney function tests).
- Ultrasound evaluation: Obstetrics US using convex transducer with frequency of 2.5-10 MHz (Mindray 2200 digital Ultrasonic imaging system, China). For assessment of fetal biometry & wellbeing, presentation, amniotic fluid & placental location.

During first stage

We used WHO partograph for recording the labour events. All measurements for all patients were done by the same Obstetricians. During the active phase, each parturient was assessed every1 hour, unless indicated earlier. All labor events were recorded on the WHO. Approved Partogram. Maternal and foetal states were monitored closely during progression of 1st stage.

Monitoring of maternal status was done by frequent assessment of vital signs, uterine contractions and cervical dilatation. Fetal status was monitored by intermittent auscultation of fetal heart sound. Every 15 minutes during 1st stage, the results were plotted on the partogram. Oxytocin was used for augmentation of contractions throughout 1st stage if needed.

During second stage

Unless otherwise stated, the parturient's evaluation interval is reduced to at least 0.5 hours. At the first diagnosis of 2nd stage of labour we recorded foetal head station using a scale from -3 to +3 & accordingly we divided the participants into 3 groups: Group I: S>0, fetal head below the spinal process level (i.e., S+1, S+2, or S+3, this group was used as a reference group). Group II: S=0, fetal head at the spinal process level. Group III: S<0, fetal head above the spinal process level (i.e., S- 1, S- 2, or S- 3). We evaluated the foetal head position in addition to the foetal head station.
For multiparous women without an epidural anaesthesia, a lengthy second stage of labour was one lasting more than an hour, and for nulliparous women without an epidural anaesthesia, it was two hours. From the start of 2nd stage we recorded regularly maternal vital signs & closely monitored fetal heart rate by auscultation every 5 minutes using the Sonicaid.
Also we continued using oxytocin infusion for augmentation of uterine contraction .we assigned our patients according to usage of manual fundal pressure (kristeller manoeuver) and mode of delivery.

Ethical consideration: Menoufia University Faculty of Medicine's Ethics Committee gave its approval to the study plan. Before the study began, all subjects provided their written permission. All participants received an explanation of the study's procedures, and they all had the option to withdraw at any time and without cause. The Helsinki Declaration was followed throughout the study's conduct. Informed written consent from all participants.

Statistical Analysis

SPSS version 26.0 was used to analyse the data on an IBM compatible computer. Chi square and Fisher's exact tests were used to analyse the qualitative data, which was presented as numbers and percentage. Shapiro-Wilks test was used to determine the normality of quantitative data, assuming normality at $P > 0.05$. When quantitative data was not normally distributed, it was represented as mean, standard deviation, and range using the Student's "t" test, Mann-Whitney U test, and Kruskall-Wallis test. $P \leq 0.05$ was considered significance.

RESULTS

Demographic data and clinical criteria:

The mean age was 22.26 ± 2.89 and 29.22 ± 3.58 years in nulliparous and multiparous females respectively. The mean BMI was 30.28 ± 4.22 and 31.1 ± 3.69 kg/m^2 in nulliparous and multiparous females respectively. There was statistically significant difference in height between 3 groups in multiparous females as those with foetal head station S <0 were taller than other ones. Also, there was statistically significant difference among nulliparous women as regards gestational age of delivery as females with fetal head station below ischeal spine S>0 had higher gestational age at delivery (Table 1).

Table (1): Demographic and obstetric characteristics among the studied group of patients

	Nulliparous (n =46)					Multiparous (n =54)				
Variables	Overall	S<0 (n =5)	S=0 (n =16)	S>0 (n =25)	P-value	Overall	S<0 (n =11)	S=0 (n =20)	S>0 (n =23)	P-value
Age (years)	22.26±2.89	22.8±5.72	21.63±2.33	22.56±2.52	0.595	29.22±3.58	30.64±3.59	29.7±3.36	28.13±3.58	0.121
Height (cm)	162.5±4.44	163.2±3.42	161.69±4.56	162.88±4.62	0.300	163.26±3.58	166±3.07	161.55±3.05	163.43±3.47	**0.003***
BMI (kg/m^2)	30.28±4.22	29.5±3.73	29.41±4.85	31±3.9	0.314	31.1±3.69	30.81±3.1	31.92±3.66	30.52±3.98	0.455
Obesity (BMI ≥ 30 kg/m^2)	22 (47.8%)	2 (40%)	7 (43.8%)	13 (52%)	0.817	33 (61.1%)	6 (54.5%)	14 (70%)	13 (56.5%)	0.586
Gestational age at delivery (weeks)	38.72±1.38	37.4±0.55	38.44±1.21	39.16±1.4	**0.007***	39.2±1.11	38.82±1.33	39.2±1.06	39.39±1.03	0.375

Labor records at admission time among the studied groups of patients:

Regarding cervical dilation at admission, the manner of membrane rupture, the time between admission and the second stage of labour, and foetal head position, there was no statistically significant difference between any of the groups. There was significant difference regarding fetal head station at admission time in both multipara and nullipara, and there was statistically significant difference regarding need for oxytocin as the females with fetal head station above ischeal spine S<0 were in need of oxytocin more than other groups in both nulliparous and multiparous females (Table 2).

Table (2): Labor records at admission time among the studied groups of patients

	Nulliparous (n =46)					Multiparous (n =54)				
	Overall	S<0 (n =5)	S=0 (n =16)	S>0 (n =25)	P-value	Overall	S<0 (n =11)	S=0 (n =20)	S>0 (n =23)	P-value
Cervical dilatation at admission (cm)	5.96±1.33	6±1.58	6.13±1.31	5.84±1.34	0.777	6.43±1.18	6.36±1.21	6.55±1.28	6.35±1.11	0.842
Rupture of membrane										
Spontaneous	41 (98.1%)	5 (100%)	13 (81.3%)	23 (92%)	0.397	49 (90.7%)	9 (81.8%)	19 (95%)	21 (91.3%)	
Induced	5 (10.9%)	0	3 (18.7%)	2 (8%)		5 (9.3%)	2 (18.2%)	1 (5%)	2 (8.7%)	0.476
Need for oxytocin										
Yes	27 (58.7%)	5 (100%)	11 (68.8%)	11 (44%)	**0.041***	23 (42.6%)	9 (81.8%)	9 (45%)	5 (21.7%)	**0.004***
No	19 (41.3%)	0	5 (31.3%)	14 (56%)		31 (57.4%)	2 (18.2%)	11 (55%)	18 (78.3%)	
Fetal head station at admission time										
S<0	5 (10.9%)	5 (100%)	0	0		17(31.5%)	11 (100%)	6 (30%)	0	
S=0	22 (47.8%)	0	16 (100%)	6 (24%)	**<0.001***	19 (35.2%)	0	14 (70%)	5 (21.7%)	**<0.001***
S>0	19 (41.3%)	0	0	19 (76%)		18 (33.3%)	0	0	18 (78.3 %)	
The interval time between admission and second stage of labor (minutes)	214.76±54.88	224±66.93	206.63±54.7	218.12±54.4	0.754	130.3±29.99	143.64±31.31	128.15±31.63	125.78±27.24	0.251

Association of Fetal head station at second stage onset, need of fundal pressure and the mode of delivery among the studied groups of patients:
Regarding the requirement for the Kristeller manoeuvre, there was no statistically significant difference between any of the three nulliparous groups. However, there was a statistically significant difference between the three groups of multiparous in terms of the necessity for the Kristeller manoeuvre, with the multiparous females with S<0 needing fundal pressure more frequently. All females in our study group had spontaneous vaginal delivery (Table 3).

Table (3): Association of Fetal head station at second stage onset , need of fundal pressure and the mode of delivery among the studied groups of patients *significant

Kristeller maneuver (fundal pressure)	**Nulliparous (n =46)**					**Multiparous (n =54)**				
	Over all	S<0 (n =5)	S=0 (n =16)	S>0 (n =25)	P-value	Over all	S<0 (n =11)	S=0 (n =20)	S>0 (n =23)	P-value
Yes	30(65.2%)	4 (80%)	8 (50%)	18 (72%)	0.270	10(18.5%)	5(45.5%)	5(25%)	0	
No	16(34.8%)	1 (20%)	8 (50%)	7 (28%)		44(81.5%)	6(54.5%)	15(75%)	23(100%)	**0.004***
Mode of delivery										
SVD	46(100%)	5(100%)	16(100%)	25(100%)	….	54(100%)	11(100%)	20(100%)	23(100%)	…..
Operative VD	0	0	0	0		0	0	0	0	
CS	0	0	0	0		0	0	0	0	

Relation between foetal head station at the 2nd stage onset & 2nd stage duration among the studied groups:
Multiparous females had statistically significant shorter 2nd stage duration than nulliparous females. Also females in both groups whose head station below ischeal spine S>0 had statistically significant shorter 2nd stage duration other than women with head station above ischeal spine or at the level of it (S<0 or S=0) (Table 4).

Table (4): Relation between foetal head station at the 2nd stage onset & 2nd stage duration among the studied groups

Duration of second stage (minutes)	**Nulliparous (n =46)**					**Multiparous (n =54)**				
	Overall	S<0 (n =5)	S=0 (n =16)	S>0 (n =25)	P-value	Over all	S<0 (n =11)	S=0 (n =20)	S>0 (n =23)	P-value
Mean± SD	56±16.57	85.8±3.77	66.88±6.97	43.08±6.66		16±23.4.99	23.64±3.38	16.35±1.69	12.04±2.12	
Median (IQR)	52.5 (70.25-42)	86 (82.5-89	67 (60-72.75)	43 (38.5-47.5	**<0.0001***	19 (13-19)	23 (21-26)	16 (17.75-15)	13 (10-14)	**<0.0001***
95th percentile	87.3	95	88.9	55.7		26.5	32.6	19.95	15	

Secondary maternal and fetal outcomes among the studied groups:
Regarding maternal problems, there was no statistically significant difference between the study groups in level of hemoglobin before and after delivery. . there's significant difference in neonatal complications in the nulliparous group as 2 neonates had admitted to NICU (Table 5).

Table (5): Secondary maternal and fetal outcomes among the studied groups.

	Nulliparous (n =46)					**Multiparous (n =54)**				
		S<0 (n =5)	S=0 (n =16)	S>0 (n =25)	P-value		S<0 (n =11)	S=0 (n =20)	S>0 (n =23)	P-value
Maternal complications										
Perineal tear	5 (10.9%)	1 (20%)	1 (6.3%)	3 (12%)		2 (3.7%)	1 (9.1%)	1 (5%)	0	
Mild PPH	2 (4.3%)	0	1 (6.3%)	1 (4%)	0.813	4 (7.4%)	0	2 (10%)	2 (8.7%)	
Paraurethral tear	3 (6.5%)	1 (20%)	1 (6.3%)	1 (4%)		1 (1.9%)	1 (9.1%)	0	0	0.335
No complications	36 (78.3%)	3 (60%)	13 (81.3%)	20 (80%)		47 (87%)	9 (81.8%)	17 (85%)	21 (91.3%)	
Hb before labor	11.46±0.91	11.26±0.96	11.47±0.83	11.49±0.98	0.878	11.64±1.06	11.85±1.25	11.37±0.86	11.78±1.13	0.345
Hb after labor	10.81±0.89	10.66±0.88	10.72±0.85	10.90±0.94	0.772	11.19±1.55	12.01±2.74	10.78±0.88	11.14±1.11	0.106
Fetal complications										
NICU admission	2 (4.3%)	2 (40%)	0	0	**<0.0001***	1 (1.9%)	0	1 (5%)	0	0.421

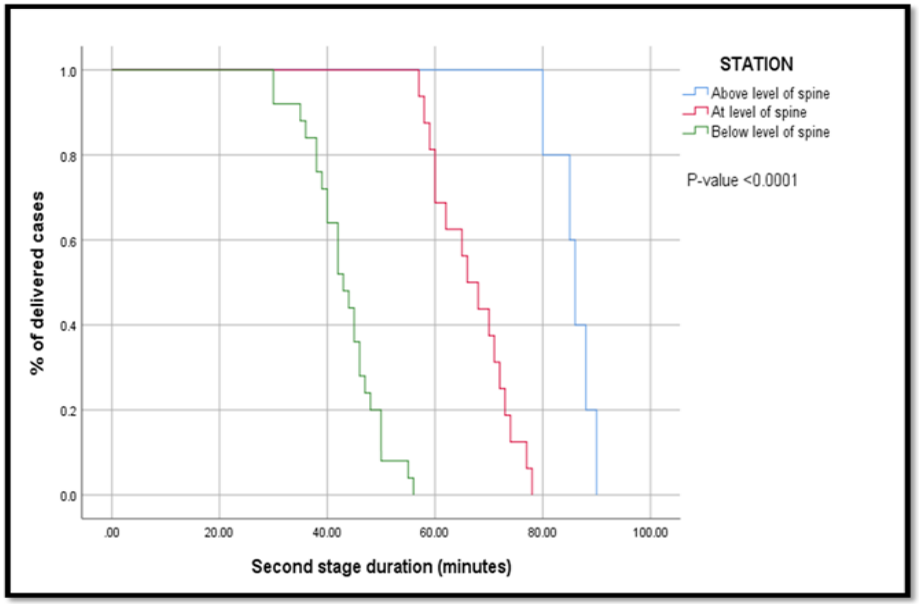

Figure (1): Survival analysis of nullipara women delivered from the second stage onset to delivery.

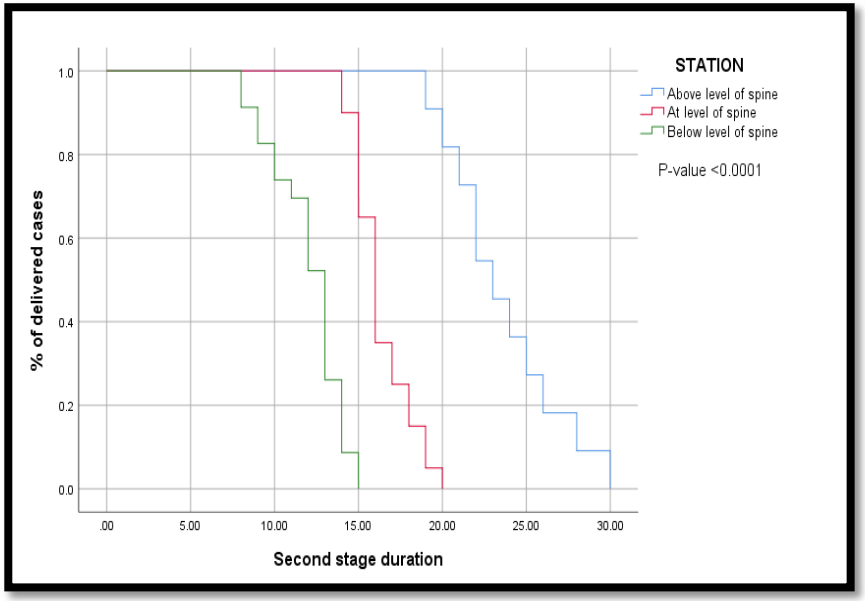

Figure (2): Survival analysis of multipara women delivered from the second stage onset to delivery.

DISCUSSION

The current study showed that 46% of females were nullipara while 54% among them were multipara, the mean age was 22.26 ± 2.89 and 29.22 ± 3.58 years in nulliparous and multiparous females respectively. The mean BMI was 30.28 ± 4.22 and 31.1 ± 3.69 kg/m^2 in nulliparous and multiparous females respectively. There was statistically significant difference in height between 3 groups in multiparous females as those with foetal head station S <0 were taller than other ones. Also, there was statistically significant difference among nulliparous women as regards gestational age of delivery as females with fetal head station below ischeal spine S>0 had higher gestational age at delivery.

This is consistent with a research conducted by **Elgarhy *et al.*** [9] on 100 girls whose ages varied from 21 to 30 years old. The gestational age varied from 38.0–40.0 weeks with a mean of 38.99 ± 0.822 years and a mean age of 25.36 ± 2.96 years. Additionally, the range of body mass indices was 21.1-28.0, with a mean of 24.16 ± 1.88. Also the study by **Barbera *et al.*** [10] who found that median age of the study group was 29 (19 -43), GA was 39+4(37+0to42+0) and 42 % were nulliparous and 58 % were multiparous as documented by our study**.** But, **Ashwel *et al.*** [8] found that the mean age of study group was 30.5 ± 4.5 vs 33.5 ± 4.7 in nulliparous and multiparous females respectively. And mean BMI was 22.0 ± 3.6 vs 23.3 ± 4.6 in nullipara and multipara respectively. Also, the study by **Ludvigsen and Skjeldestad** [7] found that there were 42% of the study group were nullipara and 58% multipara with gestational age 37 - 42 weeks of gestation and birth weight 2500 - 4000 gm.

According to the current study, there was no statistically significant difference between any of the groups in terms of foetal head position, cervical dilatation at admission, technique of membrane rupture, or time between admission and second stage of labour. There was significant difference regarding fetal head station at admission time in both multipara and nullipara, and there was statistically significant difference regarding need for oxytocin as the females with fetal head station above ischeal spine S<0 were in need of oxytocin more than other groups in both nulliparous and multiparous female, which agree with **Ashwel *et al.*** [8]**.** Also, the study by **Segel *et al.*** [11] reported that nulliparous with higher head station was in more need for augmentation of labor by oxytocin. In contrast, **Ludvigsen and Skjeldestad** [7] found that the need for oxytocin was lower in nulliparous females with head station above ischeal spine. Also, **Barbera *et al.*** [10] reported that there was difference in head station between 1st and 2nd stage as the fetal head station changed from -2to 0 to +1 to +2 at the beginning of 2nd stage.

This study showed that, there was no statistically significant difference in all nulliparous three groups regarding the need for Kristeller maneuver. But there was statistically significant difference between 3 groups of multiparous as regards need for Kristeller maneuver as multiparous females with S<0 were more in need for fundal pressure. All females in our study group had spontaneous vaginal delivery. This is consistent with **Ahlberg *et al.*** [12] who found that uterine fundal pressure was used in 52 nulliparous females vs 16 multiparous females with fetal head station above ischeal spine. In line with our study, **Peyman *et al.*** [13] found that 52% of females in both nulliparous and multiparous groups received fundal pressure with head station S<0. Also, nulliparous women needed fundal pressure than multiparous ones.

Also, our study found that multiparous females had statistically significant shorter 2nd stage duration than nulliparous females. Also, females in both groups whose head station below ischeal spine s>0 had statistically significant shorter 2nd stage duration other than women with head station above ischeal spine or at the level of it (s<0 or s=0). There was a significant negative correlation between fetal head station and duration of second stage of labor (r =-0.325, p-value 0.001). This means that the lower the level of fetal head (+1, +2), the shorter the duration. This is consistent with the study of **Ludvigsen and Skjeldestad** [7] they noted that the median time for the second stage of labour in nulliparous and parous women was 71 minutes and 14 minutes, respectively, indicating that nulliparous women have longer second stage length than multiparous women. Additionally, **Ashwel *et al.*** [8] discovered that multiparas, independent of the foetal position, had a second stage duration that was often shorter than nulliparas. This is in line with earlier research by **Graseck *et al.*** [14] who discovered that multiparous women had foetal descent rates that were quicker at all stations other than the +2 to +3 station. The median duration to drop from one station point to another ranged from 0.1 to 1.6 hours, while for nulliparous women who delivered vaginally, the 95th percentiles covered more than 12 hours at the same high station. Demonstrating how multiparous women move through the second stage of labour faster than nulliparous women, while maintaining a higher foetal station throughout labour. The study by **Shivamurthy *et al.*** [15] found that the mean total labour time at higher stations, with foetal heads at -3, -2, and -1, was 16.6 hours, 16 hours, 13.2 hours, and 12.9 hours, respectively. In station 0, the mean time spent working was 10.5 hours. The longer the head stations, the longer the second stage of labour lasted. The difference between the mean total labour time with a free-floating foetal head and a -3 station and a foetal head at 0 station was significant. Also, the primigravida with higher head stations are more susceptible to complications of labour and arrest of progress and operative vaginal delivery. Also the same results are documented by **ArunaRekha *et al.*** [16]**.**

Additionally, our study found no statistically significant difference between the investigated group and unstudied group in terms of maternal complications and level of hemoglobin before and after delivery.. there was significant difference in neonatal complications among nulliparous as 2 neonates had admitted to NICU.

Ashwel *et al.* [8] reported that females with higher head stations above ischial spines has less opportunity to deliver vaginally and are more susceptible to operative vaginal delivery and CS, which oppose our study where all our participants had spontaneous vaginal delivery regardless head station. Also, the study by **Dira *et al.*** [17] reported that regarding foetal head positions, the manner of delivery for primigravida did not significantly differ. The majority of women who delivered vaginally had head stations that were similar to those of women who used CS, but with a trend towards more advanced stations. In contrast **El garhy *et al.*** [9] found that 25.0% of patients experienced no difficulties, while the remaining 75.0% did, including 49% of perineal rips, 4% of postpartum haemorrhages, and 22.0% requiring surgical delivery. The prevalence of problems in neonates was shown to be 57.0% in instances with no issues and 43% in cases with complications. Also, the study by **ArunaRekha *et al.*** [16] found that females with higher head stations at the 1st diagnosis of 2nd stage are more susceptible to operative delivery and CS.

Our study's findings on haemoglobin levels during and after labour are in line with those of **Mremi *et al.*** [18], who discovered that women who gave birth vaginally opposed to those who underwent caesarean sections had a lower risk of post-partum anaemia (COR = 0.2; 95% CI 0.084-0.418). Also, the women who was anemic before delivery are more susceptible to postpartum anemia. Also, in the line with our study, **Yefet *et al.*** [19] recorded that the average Hb drop in women without PPH was 1 g/dl. It was also noted that the Hb fall peaked in the first 6–12 hours postpartum and plateaued in the next 24–48 hours. Our research looked at the physiological patterns of Hb and HCT after vaginal birth in individuals without PPH, as well as those with occult or overt PPH. Also, the study by **Miller *et al.*** [20] found that Hb levels averaged 12.3 (1.2) g/dl prior to birth and 10.8 (1.4) g/dl following delivery, respectively.

In contrary, **Anger *et al.*** [21] noted a clinically significant 2 g/dL decrease in haemoglobin from pre- to post-delivery haemoglobin. A poor predictor of pre- to post-delivery changes in haemoglobin and postpartum haemoglobin has also been demonstrated for postpartum blood loss. Although there was a statistically significant link between blood loss and haemoglobin results (e.g., the change in haemoglobin rose as the amount of blood loss increased).

LIMITATIONS OF THE STUDY

There were a number of restrictions on this study including a limited sample size, additional research with a bigger sample size might support our findings. We are unable to determine if foetal head station affects mode of delivery because all of our individuals had SVD. This is unicenter study, we expect that multicenter study may strengthen our findings.

CONCLUSION

The duration of the second stage of labour is influenced by the foetal head station at the beginning of the stage; the higher the stations, the longer the second stage's duration. Regardless of foetal head station at the start of the second stage, multiparas had a shorter second stage than nulliparas. Due to the fact that all of our subjects experienced SVD regardless of foetal head station at the second stage commencement, this doesn't change the manner of delivery. The result of birth or any foetal or maternal difficulties are unaffected by the foetal head station at the beginning of the second stage. Between three groups of multiparous, there was a statistically significant difference in the necessity for the Kristeller manoeuvre, with multiparous females were needing more fundal pressure.

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Competing interests: Nil.

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