

MATERNAL POSITIONS IN ELECTRONIC FETAL MONITORING: IMPACT AND EVALUATION

Trial registration: In addition, clinical trials were registered (ClinicalTrials.gov ID: NCT05863156).

Statistical Analysis: Data analysis was performed using the SPSS 24.0 (IBM Statistics, PASW Inc, Chicago, IL, USA) program. The distribution of data was examined with the Kolmogorov-Smirnov test. Descriptive statistics were presented as numbers, percentages, means, medians, standard deviations, minimum and maximum values. Variables were analyzed using chi-square, ANOVA, and Kruskal-Wallis tests based on their distribution. The Kruskal-Wallis hypothesis test assessed differences between groups in repeated measurements. Scale scores and relationships between positions were evaluated using Simple Linear Regression analysis. The statistical significance threshold was set at $p < 0.05$.

Table 1: Comparison of CGT Positions in terms of Sociodemographic and Obstetric Features

Variables		Right Lateral Side-Lying Position		Semi-Fowler Position		Left Lateral Side-Lying Position		Test Score	p
		n	%	n	%	n	%		
Age ($\bar{X} \pm SD$, 31.62 \pm 4.46)	Below age 18	0	0.0	0	0.0	2	1.6	3.795**	0.391***
	19-34	42	68.9	48	77.4	93	78.2		
	35 and over	19	31.1	14	22.6	24	20.2		
BMI	18 and below (underweight)	-	-	-	-	-	-	2.025**	0.375*
	19-24 (normal)	16	26.2	20	32.3	31	26.1		
	25-29 (overweight)	32	52.5	28	45.2	61	51.3		
	30 and over (obese)	13	21.3	14	22.6	27	22.7		
Civil Status	Officially Married, Partner in a Civil union	59	96.7	62	100	115	96.6	2.025**	0.375*
	Partner in a Civil Union, Not Officially Married	2	3.3	0	0.0	4	3.4		
Education	Primary School	12	20.0	7	11.3	22	18.6	0.310**	0.298*
	Middle School	9	15.0	15	24.2	22	18.6		
	High school	18	30.0	19	30.6	36	30.5		
	Associate Degree	6	10.0	7	11.3	11	9.3		
	Bachelor's Degree	11	18.3	13	21.0	26	22.0		
	Graduate Degree	4	6.7	1	1.6	1	0.8		
Employment	Employed	15	25.0	12	19.4	30	25.6	0.940**	0.628*
	Unemployed	45	75.0	50	80.6	87	74.4		
Place of Residence	Province	42	73.7	56	91.8	87	73.7	7.285**	0.004*
	District	15	26.3	5	8.2	29	24.6		
	Village	0	0.0	0	0.0	2	1.7		
Income Level	Income greater than expenditure	5	8.3	3	4.8	11	9.2	0.465**	0.269*
	Income equal to expenditure	34	56.7	35	56.5	65	54.6		
	Income less than expenditure	21	35.0	24	38.7	43	36.1		
Social Security?	Yes	51	85.0	52	85.2	99	85.3	0.004**	0.998*
	No	9	15.0	9	14.8	17	14.7		
Any medical problem?	Yes	4	6.7	5	8.1	8	6.8	0.085**	0.438*
	No	56	93.3	57	91.9	110	93.2		
Pregnancy	Planned	91	76.5	51	82.3	91	76.5	5.825**	0.054*
	Unplanned	28	23.5	11	17.7	28	23.5		

Wanted Pregnancy?	Yes	54	93.4	59	95.2	114	958	0.086**	0.446*
	No	4	6.6	3	4.8	5	42		
Number of pregnancies	Primipara	12	20.3	21	37.5	39	33.3	4.536**	0.104
	Multipara	47	79.7	35	62.5	78	67.7		
Ending Week of Last Pregnancy	36th week or earlier	31	51.7	39	62.9	66	55.9	1.085**	0.167*
	37th-40th week	29	48.3	23	37.1	49	41.5		
	41st week or later	0	0.0	0	0.0	3	2.5		
Number of living children	None	17	28.8	22	39.3	46	39.3	0.025**	0.467*
	1-3	41	69.5	34	60.7	67	57.3		
	4 or more	1	1.7	0	0.0	4	3.4		
Number of Miscarriages	None	43	72.9	40	72.7	101	86.3	9.306**	0.002*
	1-2	15	25.4	10	18.2	16	13.7		
	3 or more	1	1.7	5	9.1	0	0		
Number of Wanted Miscarriages	None	50	86.2	46	82.1	107	91.5	3.142**	0.051*
	1-3	7	12.1	10	17.9	10	8.5		
	4 or more	1	1.7	0	0.0	0	0.0		
Mode of Delivery in Last Pregnancy	Vaginal delivery	25	45.5	16	32.7	30	28.8	5.440**	0.247*
	Cesarean	21	38.2	19	38.8	47	45.2		
	No delivery	9	16.4	14	28.6	27	26.0		
Position during previous CTG	Left Lateral Side-Lying Position	41	74.5	37	67.3	78	79.6	13.668**	0.006*
	Right Lateral Side-Lying Position	12	21.8	9	16.4	19	19.4		
	Semi-Fowler Position	2	3.6	9	16.4	1	1.0		

*p<0.05, **Chi-squared analysis

Table 2. Comparison of CTG Evaluation Parameters according to CTG Position

Variables	CTG Duration	Right Lateral Side-Lying Position (1)		Semi-Fowler Position (2)		Left Lateral Side-Lying Position (3)		Test Score	p	Benfer roni Group
		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD			
Starting time of CTG		11.76	2.14	11.30	1.87	11.76	2.13	0.991**	0.373*	
Ending time of CTG		13.86	13.83	11.61	1.84	12.09	2.14	1.635**	0.197*	
CTG Duration		20.24	1.99	18.46	2.82	20.25	3.07	8.919**	0.000*	2>1, 2>3
Basal Heart Rate	In first 5 minutes	138.13	9.43	143.57	7.93	137.50	10.64	7.542**	0.001*	2>1, 2>3
	6th-10th minutes	139.54	9.63	143.69	8.09	138.16	11.48	5.321**	0.006	2>3
	11th-15th minutes	140.18	9.82	143.87	8.88	139.36	10.70	3.769**	0.025*	2>3
	16th-20th minutes	140.04	9.40	143.35	8.40	139.53	10.47	2.939**	0.055*	
Fetal tachycardia	In first 5 minutes	168.33	10.40	168.75	7.50	175.	5.00	0.700**	0.528*	
	6th-10th minutes	170.00	0.00	172.00	5.70	170.00	0.00	0.205**	0.820*	
	11th-15th minutes	168.00	0.00	170.00	5.4	172.00	4.87	1.409**	0.543*	
	16th-20th minutes	165.00	0.00	170.00	5.00	175.00	7.07	1.063**	0.448*	
Bradycardia	At 5th minute	-	-	-	-	-	-	-	-	
	6th-10th minutes	100.00	-	107.50	10.60	-	-	0.333	0.667*	
	11th-15th minutes	-	-	-	-	-	-	-	-	
	16th-20th minutes	-	-	-	-	-	-	-	-	
Fetal Movement	In first 5 minutes	4.80	4.07	3.72	2.34	7.48	5.22	15.980**	0.000*	3>2, 3>1
	6th-10th minutes	4.54	3.98	3.55	2.71	6.58	5.55	9.100**	0.000*	3>2, 3>1
	11th-15th minutes	4.49	3.72	3.05	2.46	6.49	4.87	13.829**	0.000*	3>2, 3>1
	16th-20th minutes	4.39	3.95	3.05	2.21	6.52	4.33	16.720**	0.000*	3>2, 3>1
Number of Contractions	In first 5 minutes	2.96	3.14	2.74	2.53	2.95	2.88	0.442***	0.802	
	6th-10th minutes	1.93	2.70	1.90	2.63	1.69	2.28	0.151***	0.927*	

	11th-15th minutes	1.09	0.396	0.98	0.23	1.12	0.376	5.835***	0.054*	
	16th-20th minutes	1.16	0.77	1.32	1.05	1.08	.056	1.313***	0.519*	
Intensity of Contraction	In first 5 minutes	26.31	24.34	20.23	22.86	25.06	24.23	1.011***	0.603	
	6th-10th minutes	46.16	23.54	44.98	22.18	46.28	21.60	0.028***	0.986*	
	11th-15th minutes	46.16	23.54	44.98	22.18	46.28	23.54	0.028***	0.986*	
	16th-20th minutes	25.75	10.34	22.26	20.00	24.82	10.54	0.102	0.950*	
Accelerations	In first 5 minutes	1.08	1.03	1.61	1.05	1.11	0.96	5.318**	0.006*	2>1, 2>3
	6th-10th minutes	1.18	1.08	1.51	1.11	1.18	1.08	2.015**	0.136*	
	11th-15th minutes	1.39	1.14	1.74	1.10	1.40	1.08	1.953**	0.144*	
	16th-20th minutes	1.32	1.22	1.70	1.50	1.45	1.12	1.347**	0.262*	
Decelerations	In first 5 minutes	0.06	0.24	0.11	0.46	0.18	0.55	1.895***	0.388*	1>3
	6th-10th minutes	0.04	0.21	0.21	0.68	0.27	0.62	8.075**	0.018*	
	11th-15th minutes	0.08	0.33	0.12	0.38	0.15	0.40	2.255***	0.324*	
	16th-20th minutes	0.04	0.21	0.07	0.26	0.18	0.50	4.439***	0.109*	

*p<0.005, ** Anova test, ***Kruskal Wallis Test

Table 3: Intergroup Comparison of Vital Signs During CTG

		Right Lateral Side-Lying Position (1) $\bar{X} \pm SD$	Semi- Fowler Position (2) $\bar{X} \pm SD$	Left Lateral Side- Lying Position (3) $\bar{X} \pm SD$	Test Score	p	Benfe rroni Grou p	Benferr oni Time
Blood Pressure (Systolic)	Before CTG (1)	113.67±10.06	108.16±10.56	112.80±11.21	$F_{Group}=7.964$			
	At the mome nt of CTG (2)	110.37±9.41	107.00±8.57	108.89±11.00	$F_{Time}=13.014$	0.000*	2>3, 2>1	1>3, 1>2
	After CTG (3)	115.91±10.76	100.08±8.15	113.56±12.28	$F_{Group \times Time}=2.649$	0.000*		
Blood Pressure (Diastolic)	Before CTG (1)	71.00±9.06	66.83±6.83	69.20±9.90	$F_{Group}=6.829$	0.000*		
	At the mome nt of CTG (2)	67.00±9.60	64.29±7.26	66.56±11.70	$F_{Time}=9.940$	0.000*	1>3, 1>2	2>3>1
	After CTG (3)	70.41±10.18	64.64±7.29	71.10±11.36	$F_{Group \times Time}=2.049$	0.090*		
Pulse	Before CTG (1)	94.70±10.84	97.77±11.03	93.37±12.28	$F_{Group}=5.461$	0.005*		
	At the mome nt of CTG (2)	92.24±10.60	95.88±10.51	89.84±11.29	$F_{Time}=10.315$	0.000*	2>1, 2>3	3>2, 2>1
	After CTG (3)	92.06±10.53	96.20±9.31	91.77±10.23	$F_{Group \times Time}=0.822$	0.512*		
Body Temperat ure	Before CTG (1)	36.32±0.46	36.29±0.15	36.49±0.49	$F_{Group}=11.776$	0.000*		
	At the mome nt of CTG (2)	36.40±0.50	36.26±0.17	36.60±0.51	$F_{Time}=3.975$	0.023*	3>2, 3>1	1>2>3
	After CTG (3)	36.41±0.49	36.24±0.14	36.58±0.51	$F_{Group \times Time}=3.232$	0.015*		

p<0.05, **Kruskal-Wallis Hypothesis Test

Table 4. Comparison of Effect of Body Mass Index on CTG Position and Vital Signs

	Group	\bar{X}	SD	F	p	Bonferroni
Systolic Blood Pressure	Right Lateral Side-Lying Position (1)	115.91	10.76	26.785**	0.002*	2>3, 1>3
	Semi-Fowler Position (2)	107.08	8.15			
	Left Lateral Side-Lying Position (3)	113.56	12.28			
BMI				2.734**	0.157	
Group*BMI¹				0.323**	0.862	
Diastolic Blood Pressure	Right Lateral Side-Lying Position (1)	70.41	10.18	14.054**	0.010*	2>3, 2>1
	Semi-Fowler Position (2)	64.64	7.29			
	Left Lateral Side-Lying Position (3)	71.10	11.36			
BMI				2.193**	0.214	
Group*BMI				0.518**	0.722	
Pulse	Right Lateral Side-Lying Position (1)	92.06	10.53	6.002**	0.053	-
	Semi-Fowler Position (2)	96.20	9.31			
	Left Lateral Side-Lying Position (3)	91.77	10.23			
BMI				0.461**	0.658	
Group*BMI				0.733**	0.570	
Body Temperature	Right Lateral Side-Lying Position (1)	36.41	0.49	88.070**	0.000*	2>3
	Semi-Fowler Position (2)	36.24	0.14			
	Left Lateral Side-Lying Position (3)	36.58	0.51			
BMI				3.572**	0.072	
Group*BMI				0.076**	0.989	

*p<0.05 ** Ancova, ¹BMI: Body Mass Index

Table 5. Effect of CTG Position on General Comfort Questionnaire Score

Dependent Variable	Independent Variable	β	Standard Error	Beta	t	p	F	Model (p)	R2
General Comfort Questionnaire Score	(Constant)	3.398	0.168	-	20.168	0.000*			
	Right Lateral Side-Lying Position	-.163	0.094	-.112	-1.742	0.083	3.034	0.083	0.012
	(Constant)	2.506	0.163	-	15.335	0.000*			
	Semi-Fowler Position	0.349	0.911	0.240	3.834	0.000*	14.700	0.000*	0.058
	(Constant)	3.329	0.129	-	25.786	0.000*			
	Left Lateral Side-Lying Position	0.143	0.081	0.113	-1.758	0.080	3.090	0.080	0.013

*p<0.05 ** Simple Linear Regression