

## Comparative assessment of antenatal growth charts in estimating head circumference

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### Objective

To assess the difference in head circumference (HC) percentiles using three antenatal growth charts (GCs): Fetal Medicine Foundation (FMF), Mediscan and Hadlock GCs.

### Methods

The study included 440 ultrasound examinations in 296 patients. The HC centiles used in the dataset were obtained from the converter provided on FMF website, Mediscan from Sonocare software and Hadlock V for their respective GCs. Inclusion criteria were singleton pregnancies with low risk assessment for chromosome abnormalities, gestational age between 18 to 40 weeks, availability of a dating scan between 8 to 14 weeks. All the women were of Indian origin. Exclusion criteria were small for gestational age fetus, fetal growth restriction and major structural anomalies. The HC at three gestational age (GA) groups 18 -27.6 weeks, 28 to 33.6 weeks and 34 to 40 weeks was compared between the three GCs i. e. , FMF, Mediscan, Hadlock and statistical significance assessed using t test. A p value of <0.05 was considered significant.

### Results

At GA of 18 -27.6 weeks, major differences between the three GCs were observed from 25 to 99 centiles, 28 -33.6 weeks showed major differences at 25, 75, 97.5 centiles, 34 -40 weeks showed major differences at 25, 50 and 75 centiles.

### Conclusion

The study confirms the difference in the three GCs for HC centiles across the gestational age groups. This difference was also found to be statistically significant. The study emphasizes the need for careful selection of GC that reflects optimal local growth.

GA	Method	N	Percentiles						
			2.5	5	25	50	75	95	97.5
18-27.6 WEEKS	FMF	214	12.00	18.50	43.75	70.00	84.00	97.00	98.00
	MEDISCAN	214	15.38	20.00	37.50	59.00	71.25	87.00	89.25
	HADLOCK	214	4.56	5.00	24.75	41.00	51.00	69.00	73.00
	FMF-HADLOCK	214	6.38	9.93	18.00	26.00	32.00	34.00	35.00
	MEDISCAN-HADLOCK	214	2.38	4.00	11.00	16.00	20.00	24.00	25.00
	MEDISCAN -FMF	214	-21.63	-20.00	-15.00	-11.00	-4.00	6.00	10.25
28-33.6 WEEKS	FMF	118	5.93	7.95	23.00	46.50	67.00	82.10	85.08
	MEDISCAN	118	16.93	21.00	40.25	65.00	82.00	94.05	97.00
	HADLOCK	118	3.98	4.00	17.00	42.00	59.00	81.00	91.00
	FMF-HADLOCK	118	-7.05	-2.05	3.00	5.00	8.00	13.00	14.40
	MEDISCAN-HADLOCK	118	-1.68	6.00	20.00	23.00	27.00	30.00	31.05
	MEDISCAN-FMF	118	-6.08	4.85	12.00	17.00	22.00	26.05	27.03
34- 40 WEEKS	FMF	108	1.73	2.45	17.00	33.00	48.75	89.65	92.00
	MEDISCAN	108	6.45	8.35	42.00	62.00	77.00	99.00	99.00
	HADLOCK	108	1.00	1.00	5.00	21.50	39.75	92.65	98.00
	FMF-HADLOCK	108	-6.00	-4.65	4.00	9.00	13.00	26.55	34.10
	MEDISCAN-HADLOCK	108	0.18	1.45	25.00	36.00	40.00	50.65	55.55
	MEDISCAN-FMF	108	0.45	4.00	16.00	26.00	29.00	31.00	31.28

GA	Difference	P-value
18-27.6 WEEKS	FMF and HADLOCK	<0.001
	MEDISCAN and HADLOCK	<0.001
	MEDISCAN and FMF	<0.001
28-33.6 WEEKS	FMF and HADLOCK	<0.001
	MEDISCAN and HADLOCK	<0.001
	MEDISCAN and FMF	<0.001
34 -40 WEEKS	FMF and HADLOCK	<0.001
	MEDISCAN and HADLOCK	<0.001
	MEDISCAN and FMF	<0.001