

Table 2. Published studies examining correlation of preterm birth or related characteristics to optic nerve parameters in children and infants

Study	Hellstrom ¹⁸		Hellstrom ¹⁹		Wikstrand ²¹		Wang, X ²⁰	Samarawickrama ⁶	Akerblom ⁴		Wang, J ⁵		Kandasamy ¹¹	Tong (Current Study)		
	Children		Children		Children		Children	Children	Children		Children		Infants	Infants		
	Fundus photo		Fundus photo		Fundus photo		TDOCT	TDOCT	TDOCT		SDOCT		Retcam	Portable SDOCT		
Study Population	39 preterm	39 term	50* preterm	100** term	53 preterm	203** term	1765 preterm & term [†]	2134 preterm & term ^{†, ††}	62 preterm	54 term	25 preterm	54 term	35 term	44 preterm	51 term	
Mean age (SD), yrs	4.8	6.1	--	--	5.4	--	6.7 (0.4)	12.7	8.6 (1.7)	10.1 (3.1)	10.6 (3.7)	9.8 (3.2)	38.9 (1.4) ^{†††}	39.0 (1.8) ^{†††}	39.2 (1.1) ^{†††}	
Age Range, yrs	3.1-9.1	2.9-9.1	5.1-9.3	2.9-19.6	4.8-6.1	3-19	--	--	5-16	5-16	--	--	--	37-42 ^{†††}	37-42 ^{†††}	
Correlation with Preterm Birth	Disc Diam (mm)	--	--	--	--	--	--	--	--	--	--	--	--	V:1.326	V:1.313 p= 0.633	
	Disc Area (mm ²)	2.80	2.86 p≥ 0.05	2.35	2.67 p< 0.001	2.2	2.4 p< 0.001	--	--	--	--	--	--	--	--	--
	Cup Diam (mm)	--	--	--	--	--	--	--	--	--	--	--	--	V: 0.908	V: 0.700 p<0.001	
	Cup Area (mm ²)	0.34	0.34 p≥ 0.05	0.36	0.41 p= 0.57	0.4	0.3 p= 0.0027	--	--	--	--	--	--	--	--	--
	C:D	--	--	--	--	--	--	--	--	--	--	--	--	V: 0.68	V: 0.53 p< 0.001	
	Neuronal Rim (mm ²)	--	--	2.03	2.24 p< 0.001	1.7	2.1 p< 0.001	--	--	--	--	--	--	--	--	--
	Cup Depth (mm)	--	--	--	--	--	--	--	--	--	--	--	--	0.423	0.398 p= 0.544	
	RNFL*** (µm)	--	--	--	--	--	--	No, values not reported	--	Yes, thinner OD: p=0.016 OS: p=0.029	Yes, thinner 98.5 vs 107, p= 0.001	--	--	--	--	--
Correlation with Low Birth Weight	Disc Diam (mm)	--	--	--	--	--	--	V:1.848 p= 0.29 H:1.585 p= 0.29	V: 1.878 H: 1.608 p= 0.29	--	--	--	--	No, p _v = 0.218 ^{††††}	--	
	Disc Area (mm ²)	--	--	--	No, values not specified	--	--	2.32 p=0.64	2.34	--	--	1.31	1.24 p= 0.3	--	--	
	Cup Diam (mm)	--	--	--	--	--	--	V:0.713 p= 0.11 H: 0.681 p= 0.139	V: 0.653 H: 0.627	--	--	--	--	Slope _v = -0.30, R ² _v = 0.07, p _v = 0.080 ^{††††}	--	
	Cup Area (mm ²)	--	--	--	r= -0.37, p= 0.0083	--	--	0.45 p= 0.17	0.41	--	--	--	--	--	--	--
	C:D	--	--	--	--	--	--	V:0.39 p= 0.03 H:0.43 p= 0.04	V: 0.35 H:0.43	--	--	--	--	No, p _v = 0.125 ^{††††}	--	

	Neuronal Rim (mm ²)	--	--	r= 0.35, p= 0.010	--	--	--	--	--	--
	Cup Depth (mm)	--	--	--	--	--	--	--	--	No, p _v = 0.312 ^{†††}
	RNFL ^{***} (μm)	--	--	--	100.4 104.1 p=0.006	--	Yes^{†††}, thinner OD: p= 0.050 OS: p= 0.28	--	--	--
Correlation with Small Head Circumference	Disc Diam (mm)	--	--	--	--	--	--	--	--	Yes, larger r_v= -0.14.4, p_v= 0.036
	Disc Area (mm ²)	--	--	No, values not reported	--	Q: smaller, 2.26 vs 2.32 vs 2.37 vs 2.40 p< 0.001	--	--	--	--
	Cup Diam (mm)	--	--	--	--	--	--	--	--	No, r _v = -21.0, p _v = 0.106
	Cup Area (mm ²)	--	--	No, values not reported	--	Q: no diff, 0.51 vs 0.48 vs 0.50 vs 0.47 p= 0.25	--	--	--	--
	C:D	--	--	--	--	VQ: larger, 0.41 vs 0.39 vs 0.39 vs 0.37 p= 0.01	--	--	--	No, r _v = -0.01, p _v = 0.335
	Neuronal Rim (mm ²)	--	--	No, values not reported	--	--	--	--	--	--
	Cup Depth (mm)	--	--	--	--	--	--	--	--	Yes, larger r_v= -18.5, p_v= 0.033
	RNFL ^{***} (μm)	--	--	--	Yes, thinner p=0.001	--	--	--	--	--
Lower VA	RNFL ^{***} (μm)	--	--	--	--	--	Yes, thinner r= 0.42 p= 0.026	--	--	--

*some preterm subjects were carried over from prior Hellstrom study¹⁸

**term controls from previously published studies

***average peripapillary retinal nerve fiber layer

number not specified in publication

†† comparison based on birth weight <2500 grams vs >2500 grams

††† weeks postmenstrual age

†††† analysis of preterm cohort only

TDOCT, time-domain optical coherence tomography; SDOCT, spectral-domain optical coherence tomography; Diam, diameter; yrs, years; SD, standard deviation; p, p-value; r, correlation coefficient

R², coefficient of determination; V, vertical; H, horizontal; Q, quartiles; OD, right eye; OS, left eye; VA, visual acuity