

Table S1. Main characteristics of eligible studies.

Author	Year	Country	Study type	NOS	Diagnosis criteria	Image modality	Arms	Number of samples	Age	Male/Female	Duration	CAS	VA	IOP (mmHg)	Exophthalmos (mm)	VF-MD(dB)	VF-PSD(dB)	
Yunhai Tu	2023	China	Cross-sectional study	8	TAO:EUGOGO criteria. DON:BCVA>0.3(logMAR);VF defect:MD<-2dB;optic disk edema; evident apical crowding in orbital CT; RAPD(+) in unilateral cases.	OCT and OCTA	HC	24 patients(24 eyes)	45.2±7.1	7/17	NA	NA	-0.01±0.03(logMAR)	14.28±1.58	NA	-0.95±1.15	NA	
							non-DON	50 patients(50 eyes)	45.7±8.8	18/32	NA	1.08±0.85	-0.00±0.02(logMAR)	16.70±3.57	17.81±3.10	-1.10±1.20	NA	
							DON	31 patients(31 eyes)	48.1±9.8	9/22	NA	1.43±0.90	0.15±0.07(logMAR)	16.77±3.85	18.85±3.50	-5.26±3.81	NA	
Ping Liu	2023	China	Observational cross-sectional study	8	TAO:EUGOGO criteria. DON:(1)a history of TAO;(2)at least any two of the following abnormal visual functions: unexplained decreased VA(VA <0.8),VF defect:MD<10 dB,RAPD(+),impairment of color vision, p-VEP(delayed P100 latent time or/and reduced P100 amplitude).	OCT	HC	30 patients(60 eyes)	52.97±1.17	16/14	NA	NA	NA	NA	NA	NA	NA	NA
							non-DON	34 patients(68 eyes)	50.62±5.68	17/17	19.83±7.83m	2.3±1.7	0.9±0.2	19.38±4.33	17.79±2.1	-2.89±1.5	2.47±1.69	
							DON	30 patients(60 eyes)	52.55±7.35	16/14	7.7±9.80m	3.4±2.0	0.42±0.29	19.57±4.24	19.54±2.39	-7.25±6.08	4.52±3.15	
Yufei Wu	2022	China	Prospective Study	8	TAO:Bartley criteria. NDON:BCVA ≥ 0.8 decimal; VF defect:-2dB<MD ≤ 0dB; color vision; normal ONH and CT scanning results. EDON:0.6 ≤ BCVA<0.8 decimal;VF defect:-10dB<MD ≤ -2dB. DON:BCVA< 0.6 decimal;VF defect:MD ≤ -10dB;abnormal ONH and CT scanning results.	OCT and OCTA	HC	34 patients(34 eyes)	42.8±11.9	14/20	NA	NA	-0.02±0.04(logMAR)	12.30±2.21	15.17±0.75	NA	NA	NA
							non-DON	24 patients(24 eyes)	41.3±11.9	10/14	2.1±3.3y	1.44±1.40	-0.01±0.03(logMAR)	15.47±2.49	17.38±2.50	-0.27±1.50	2.20±1.04	
							equivocal DON	20 patients(20 eyes)	41.4±10.1	9/11	6.5±10.3y	1.70±1.94	0.03±0.14(logMAR)	15.78±3.75	17.70±3.15	-4.36±1.83	3.84±2.17	
							DON	19 patients(19 eyes)	49.2±9.1	11/8	3.2±4.9y	3.43±1.72	0.51±0.53(logMAR)	20.71±4.85	21.17±2.89	-17.80±6.34	8.36±1.81	
Jiahui Wu	2022	China	Retrospective cross-sectional study	7	TAO:Bartley criteria. DON:decreased VA compared to previous medical records;VF defect:MD<-10 dB;RAPD(+); evidence of apical crowding in CT or MRI.	OCT and OCTA	HC	34 patients(34 eyes)	59.06±1.963	14/20	NA	NA	0.8±0.039	NA	NA	-2.409±0.4732	2.627±0.4097	
							non-DON	25 patients(25 eyes)	53.79±1.696	9/16	NA	4.56±0.16	0.9±0.028	NA	NA	-1.483±0.2778	1.980±0.1513	
							DON	39 patients(39 eyes)	58.87±1.070	17/22	NA	4.87±0.26	0.5±0.046	NA	NA	-8.085±1.219	4.386±0.4740	

Agnieszka	2022	Poland	Prospective Study	6	TAO:EUGOGO criteria. DON:orbital imagining with the measurements of particular extraocular muscles(CT or MRI).	OCT	non-DON	39 patients(39 eyes)	50.4±14.7	9/30	NA	NA	NA	NA	NA	NA	NA
							DON	8 patients(8 eyes)	60.5±12.8	4/4	NA	NA	NA	NA	NA	NA	NA
Huan Jian	2021	China	Prospective Study	7	TAO:Bartley criteria. DON:active DON (ADON) or active non-DON (ANDON) group (CAS≥3) and inactive NDON (NDON) group(CAS<3).	OCT	HC	52 patients(52 eyes)	39.88±12.17	20/32	NA	NA	NA	15.44±2.62	NA	NA	NA
						OCT and OCTA	active non-DON	39 patients(39 eyes)	47.13±9.53	13/26	6.00m	NA	NA	20.16±3.00	NA	NA	NA
							inactive non-DON	37 patients(37 eyes)	38.92±11.31	14/23	9.00m	NA	NA	17.48±3.67	NA	NA	NA
							DON	6 patients(6 eyes)	46.67±10.60	6/0	21.00m	NA	NA	30.98±8.18	NA	NA	NA
Jie Guo	2021	China	Prospective Study	7	TAO:EUGOGO criteria. DON: decreased VA, RAPD(+), abnormal colour vision, compatible VF defect, disc swelling or atrophy as well as orbital apex crowding.	OCT	HC	35 patients(70 eyes)	46.4±13.1	13/22	NA	NA	NA	NA	NA	NA	NA
							mild TAO group	35 eyes	NA	NA	NA	0.1±0.3	0.01±0.03(logMAR)	15.3±2.3	15±1.5	-1.1±1.3	NA
							moderate-to-severe TAO group	42 eyes	NA	NA	NA	1.2±1.1	0.04±0.08(logMAR)	17.8±5.2	19±4.3	-1.62±1.5	NA
							DON	68 eyes	NA	NA	NA	2.4±1.2	0.35±0.35(logMAR)	18.8±5.6	20±3.9	-9.7±7.8	NA
Parya Abdolalizadeh	2021	Iran	Prospective comparative cross-sectional study	7	TAO:EUGOGO criteria. DON:-.	OCT	HC	20 patients(39 eyes)	37.60±8.35	7/13	NA	NA	0±0(logMAR)	14.26±2.17	NA	NA	NA
						OCT and OCTA	GD	13 patients(26 eyes)	41.38±9.79	5/8	22.15±13.44m	NA	0.004±0.02(logMAR)	12.65±1.06	NA	-1.93±2.20	2.65±7.78
							mild TAO group	14 patients(28 eyes)	35.57±10.25	2/12	91.36±106.70m	0.79±1.31	0.01±0.04(logMAR)	13.68±1.31	NA	-1.17±1.16	1.90±0.89
							moderate-to-severe TAO group	17 patients(30 eyes)	35.76±11.28	5/12	32.59±31.77m	1.59±2.21	0.02±0.06(logMAR)	16.63±2.65	NA	-1.88±2.25	2.15±0.89
							DON	12 patients(21 eyes)	54.00±8.91	10/2	44.00±40.64m	6.17±2.04	0.26±0.28(logMAR)	22.10±5.71	NA	-8.93±5.56	6.68±3.27

Yufei Wu	2020	China	Prospective Study	8	NDON:BCVA \geq 20/25, VF defect:MD \geq -1 dB); normal color vision; ONH, and CT scans.	HC	38 patients(38 eyes)	45.2 \pm 10.8	19/19	NA	NA	0.00 \pm 0.01(logMAR)	14.4 \pm 2.3	NA	NA	NA	
						OCT and OCTA	non-DON	23 patients(23 eyes)	41.9 \pm 11.7	12/11	4.78 \pm 7.03y	1.08 \pm 1.18	0.00 \pm 0.01(logMAR)	16.1 \pm 3.2	17.94 \pm 1.90	-0.29 \pm 0.54	NA
						DON	21 patients(21 eyes)	47.6 \pm 6.5	11/10	3.20 \pm 3.44y	1.73 \pm 1.12	0.15 \pm 0.37(logMAR)	19.0 \pm 6.9	18.58 \pm 2.38	-6.79 \pm 3.91	NA	
Te Zhang	2019	China	Prospective Study	8	TAO:EUGOGO criteria. DON:VA>0.2(logMAR);VF defect:MD<-10 dB;RAPD(+);abnormal p-VEP;evident apical crowding in orbital CT and/or MRI.	HC	19 patients(23 eyes)	46.7 \pm 13.0	10/9	NA	NA	-0.02 \pm 0.06(logMAR)	14.6 \pm 2.7	NA	NA	NA	
						OCT and OCTA	non-DON	27 patients(41 eyes)	46.6 \pm 9.2	13/14	NA	NA	0.08 \pm 0.09(logMAR)	17.6 \pm 4.9	NA	-4.20 \pm 3.68	3.24 \pm 1.75
						DON	19 patients(30 eyes)	53.9 \pm 9.1	8/11	NA	NA	0.73 \pm 0.50(logMAR)	17.6 \pm 4.9	NA	-14.03 \pm 8.47	7.27 \pm 3.43	
Kyung-Ah Park	2018	Korea	Retrospective Study	7	DON:decreased VA, loss of color vision, RAPD(+), compatible visual field defects, and significant crowding of the orbital apex evident on CT scans.	HC	47 patients(94 eyes)	48 \pm 14	26/21	NA	NA	NA	NA	NA	NA	NA	
						OCT	DON	11 patients(20 eyes)	54 \pm 12	2/9	NA	NA	0.54 \pm 0.46(logMAR)	NA	18 \pm 4	-7.8 \pm 4.5	NA
Kyung-Ah Park	2016	Korea	Retrospective Study	8	DON:decreased VA; color vision loss; RAPD(+); VF defects; and significant crowded orbital apex on CT scanning. Acute DON:within 6 months from the onset of DON). Chronic DON:6 months or more from the onset of DON).	HC	47 patients(94 eyes)	48 \pm 14	26/21	NA	NA	NA	NA	NA	NA	NA	
						OCT	Acute DON	17 patients(30 eyes)	54 \pm 10	7/10	NA	NA	0.405 \pm 0.431(logMAR)	NA	19 \pm 4	-6.7 \pm 5.5	NA
						Chronic DON	13 patients(22 eyes)	55 \pm 14	8/5	NA	NA	0.337 \pm 0.470(logMAR)	NA	18 \pm 4	-4.7 \pm 6.0	NA	

NOS: Newcastle-Ottawa scale; CAS: clinical activity scores; VA: visual acuity; BCVA: best corrected visual acuity; IOP: intraocular pressure; VF: visual field; VF-MD: visual field mean deviation; VF-PSD: visual field pattern standard deviation; p-VEP: pattern-visual evoked potential; ONH: optic nerve head

HC: healthy control; GD: Graves' disease; TAO: thyroid-associated ophthalmopathy; non-DON: TAO without DON; DON: dysthyroid optic neuropathy

OCT: optical coherence tomography; OCTA: optical coherence tomography angiography; CT: computed tomography; MRI: magnetic resonance imaging

EUGOGO: European Group on Graves' orbitopathy

Table S2. OCT information and parameters of included studies

Author	Year	Device	Objects	Scan area	Arms	Overall parameters(μm)	Section parameters(μm)	Results of overall parameters comparison	Results of section parameters comparison
Yunhai Tu	2023	Optovue	MGCCL	3×3 mm ² cube,a circle of 3 mm in diameter,macular	HC	MGCCL:103.55±6.77	NA		
					non-DON	MGCCL:104.04±7.41	NA	HC vs non-DON:MGCCL:- HC vs DON:MGCCL:↓ non-DON vs DON:MGCCL:↓	NA
					DON	MGCCL:97.53±10.20	NA		
Yufei Wu	2022	Optovue	PRNFL	4.5×4.5 mm ² cube,a circle of 2 and 4 mm in diameter,optic nerve head	HC	NA	PRNFL:SN:51.58±3.83,ST:50.02±4.30,NU:54.99±5.11,NL:56.64±3.97,IT:58.08±3.35,IN:54.14±5.10,TL:54.21±4.52,TU:49.77±3.52		
					non-DON	NA	PRNFL:SN:50.67±3.82,ST:49.62±3.22,NU:55.76±3.60,NL:56.29±3.72,IT:57.71±3.52,IN:53.29±4.06,TL:51.88±3.26,TU:49.31±3.24	HC vs non-DON: PRNFL:SN:-,ST:-,NU:-,NL:↓,IT:↑,IN:-,TL:-,TU:↓	
					equivocal DON	NA	PRNFL:SN:49.86±4.97,ST:47.33±6.24,NU:53.70±4.31,NL:56.80±2.96,IT:56.45±6.91,IN:53.83±2.61,TL:50.00±5.82,TU:46.50±5.64	NA HC vs equivocal DON: PRNFL:SN:-,ST:-,NU:-,NL:-,IT:↑,IN:-,TL:-,TU:↓ non-DON vs equivocal DON: PRNFL:SN:-,ST:-,NU:-,NL:-,IT:-,IN:↓,TL:-,TU:-	
					DON	NA	PRNFL:SN:48.13±7.04,ST:45.94±4.30,NU:52.77±6.93,NL:54.87±4.11,IT:56.97±6.42,IN:50.53±5.72,TL:51.87±5.37,TU:44.61±5.30		
Jiahui Wu	2022	Optovue	PRNFL MGCCL	a circle of 4.5 mm in diameter,optic disc; 6×6 mm ² cube, macular	HC	PRNFL:104.0±1.401 MGCC:99.76±1.335	PRNFL:Superior-hemi:106.1±1.530,Inferior-hemi:101.9±1.433 MGCC:Superior-hemi:100.2±1.733,Inferior-hemi:99.15±1.081		
					non-DON	PRNFL:104.3±1.459 MGCC:100.4±1.521	PRNFL:Superior-hemi:107.3±1.939,Inferior-hemi:101.2±1.428 MGCC:Superior-hemi:100.4±1.386,Inferior-hemi:100.4±1.887	HC vs non-DON:PRNFL:-,MGCC:- HC vs DON:PRNFL:↑,MGCC:↓ non-DON vs DON:PRNFL:↑,MGCC:↓	HC vs non-DON:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:- HC vs DON:PRNFL:Superior-hemi:↑,Inferior-hemi:↑,MGCC:Superior-hemi:↓,Inferior-hemi:↓ non-DON vs DON:PRNFL:Superior-hemi:↑,Inferior-hemi:↑,MGCC:Superior-hemi:↓,Inferior-hemi:↓
					DON	PRNFL:115.7±4.771 MGCC:96.97±1.301	PRNFL:Superior-hemi:120.2±5.219,Inferior-hemi:111.2±4.465 MGCC:Superior-hemi:97.00±1.378,Inferior-hemi:97.05±1.295		
					non-DON	PRNFL:108.2±9.6 MGCC:99.3±17.2	PRNFL:Superior-hemi:107.0±10.2,Inferior-hemi:109.4±11.8 MGCC:Superior-hemi:95.1±6.5,Inferior-hemi:96.5±6.0	non-DON vs DON:PRNFL:↓,MGCC:↓	non-DON vs DON:PRNFL:Superior-hemi:↓,Inferior-hemi:↓,MGCC:Superior-hemi:↓,Inferior-hemi:↓

					DON	PRNFL:95.7±5.9 MGCC:83.8±7.9	PRNFL:Superiorr-hemi:98.2±21.4,Inferiorr-hemi:100.4±14.7 MGCC:Superiorr-hemi:84.1±9.4,Inferiorr-hemi:83.6±8.7		
Huan Jian	2021	Optovue	PRNFL	4.5×4.5 mm ² ,optic nerve head	HC	PRNFL:118.01±13.07	PRNFL:S:143.06±19.51,T:83.10±13.54,I:150.73±21.65,N:9 4.10±19.89		
					active non-DON	PRNFL:122.79±15.33	PRNFL:S:149.29±18.86,T:81.18±8.62,I:156.90±30.36,N:10 4.18±19.04	HC vs non-DON:PRNFL:-	HC vs non-DON:PRNFL:S:-,T:-,I:-,N:-
					inactive non-DON	PRNFL: 118.68±11.08	PRNFL:S:141.41±20.90,T:81.95±11.27,I:153.08±18.88,N:9 8.30±14.25	HC vs active non-DON:PRNFL:-	HC vs active non-DON:PRNFL:S:-,T:-,I:-,N:-
					DON	PRNFL:63.47±15.81	PRNFL:S:66.40±26.29,T:62.17±24.86,I:70.67±25.05,N:53. 00±9.06	HC vs DON:PRNFL:↓	HC vs DON:PRNFL:S:↓,T:↓,I:↓,N:↓
Jie Guo	2021	Zeiss	PRNFL GCC+IPL	200 × 200 protocol,optic disc 512 × 128 protocol,macular	HC	PRNFL:100.3±6.3 GCL+IPL:87.1±3.8	PRNFL:S:125.4±12.3,T:71.7±9.9,I:132.6±12.9,N:71.4±8.6 GCL/IPL:S: 88.4±4.1,ST: 85.9±4.3,SN:89.7±4.3,I:84.4±4.8,IT:86.6±4.1,IN:88±4.4		
					mild TAO group	PRNFL:103.2±6.6 GCL+IPL:86.4±5.7	PRNFL:S: 130.7±10.3,T:77.9±11.8,I:134.1±12.3,N:68.3±9.8 GCL/IPL:S:86.7±5.8,ST:85±5.9,SN:89.3±6.1,I:84.4±6.5,IT: 85.8±6.4,IN:87±5.9	HC vs mild TAO group:PRNFL:-,GCL+IPL:-	HC vs mild TAO group:PRNFL:-,GCL+IPL:-
					moderate-to-severe TAO group	PRNFL:97.8±9.2 GCL+IPL:82.8±3.8	PRNFL:S:120.6±16.3,T:72.3±14.5,I:126.7±15.9,N:68.7±9. 4 GCL/IPL:S: 83.1±4.3,ST:81.3±3.9,SN:84.9±4.6,I:80.8±4.8,IT:82.3±4.8,I N:82.9±4.5	HC vs moderate-to-severe TAO group:PRNFL:-,GCL+IPL:↓	HC vs moderate-to-severe TAO group:PRNFL:-,GCL+IPL:↓
					DON	PRNFL:110.6±34.2 GCL+IPL:77.5±10	PRNFL:S:137.2±50.1,T:78.1±21.7,I: 147.2±50.3,N:80.1±28.6 GCL/IPL:S:78.2±10.7,ST:75.9±10.7,SN:80±10.1,I:76.5±9. 7,IT:77.3±11.7,IN:77.8±9.5	HC vs DON:PRNFL:-,GCL+IPL:↓	HC vs DON:PRNFL:-,GCL+IPL:↓
Parya Abdolalizadeh	2021	Optovue	PRNFL MGCC	a circle of 3.45 mm in diameter,optic disc a circle of 6 mm in diameter,macular	HC	PRNFL:101.97±8.93 MGCC:100.61±5.94	PRNFL:Superior-hemi:102.59±10.19,Inferior-hemi:101.44±8.89 MGCC:Superior-hemi:100.03±6.10,Inferior-hemi:101.28±6.42	HC vs GD:PRNFL:-,MGCC:-	HC vs GD:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
					GD	PRNFL:98.19±5.97 MGCC:98.81±6.73	PRNFL:Superior-hemi:100.15±7.00,Inferior-hemi:96.69±6.22 MGCC:Superior-hemi:98.50±6.95,Inferior-hemi:99.19±6.54	HC vs mild TAO:PRNFL:-,MGCC:-	HC vs mild TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
								HC vs moderate-to-severe TAO:PRNFL:-,MGCC:-	HC vs moderate-to-severe TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
								GD vs mild TAO:PRNFL:-,MGCC:-	GD vs mild TAO:PRNFL:-,MGCC:Superior-hemi:-,Inferior-hemi:-
								GD vs moderate-to-severe TAO:PRNFL:-,MGCC:-	GD vs moderate-to-severe TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
								TAO:PRNFL:-,MGCC:-	TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
								HC vs DON:PRNFL:↓,MGCC:↓	HC vs DON:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
								TAO:PRNFL:-,MGCC:-	TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-

					mild TAO group	PRNFL:102.32±4.14 MGCC:99.04±5.88	PRNFL:Superior-hemi:105.18±6.82,Inferior-hemi:99.43±4.06 MGCC:Superior-hemi:98.68±6.42,Inferior-hemi:99.29±6.12	GD vs DON:PRNFL:-,MGCC:↓ mild TAO vs moderate-to-severe TAO:PRNFL:-,MGCC:-	hemi:↓,MGCC:Superior-hemi:↓,Inferior-hemi:↓ GD vs mild TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:-
					moderate-to-severe TAO group	PRNFL:95.97±10.00 MGCC:98.00±7.26	PRNFL:Superior-hemi:98.87±10.69,Inferior-hemi:93.33±10.49 MGCC:Superior-hemi:97.13±7.30,Inferior-hemi:99.00±8.07	moderate-to-severe TAO vs DON:PRNFL:-,MGCC:↓	GD vs moderate-to-severe TAO:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:- GD vs DON:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:↓,Inferior-hemi:↓
					DON	PRNFL:98.86±26.13 MGCC:87.10±11.32	PRNFL:Superior-hemi:101.29±27.80,Inferior-hemi:95.47±24.39 MGCC:Superior-hemi:87.45±11.42,Inferior-hemi:86.60±11.90		mild TAO vs moderate-to-severe TAO:PRNFL:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:-,Inferior-hemi:- mild TAO vs DON:PRNFL:Superior-hemi:↓,Inferior-hemi:↓,MGCC:Superior-hemi:↓,Inferior-hemi:↓ moderate-to-severe TAO vs DON:Superior-hemi:-,Inferior-hemi:-,MGCC:Superior-hemi:↓,Inferior-hemi:↓
Yufei Wu	2020	Optovue	GCL+IPL MGCC	a circle of 8 mm in diameter,macular	HC	GCL+IPL:TAZ:75.4±8.3,C:14.6±4.2 MGCC:TAZ:95.2±10.3,C:21.5±5.0	GCL+IPL:S:79.5±9.6,T:72.0±13.4,I:79.5±9.6,N:74.9±9.8 MGCC:S:100.8±12.0,T:88.9±14.5,I:101.6±13.1,N:94.2±13.2	HC vs non-DON:GCL+IPL:C:↓,TAZ:↓;GCC:C:↓,TAZ:↓	HC vs non-DON:GCL+IPL:S:↓,T:↓,I:↓,N:↓,MGCC:S:↓,T:↓,I:↓
					non-DON	GCL+IPL:TAZ:69.6±10.2,C:12.0±4.1 MGCC:TAZ:87.3±11.8,C:18.2±5.0	GCL+IPL:S:71.6±11.0,T:65.1±10.4,I:71.6±11.0,N:66.8±10.6 MGCC:S:90.6±13.1,T:80.6±11.8,I:92.7±12.5,N:83.1±12.2	HC vs DON:GCL+IPL:GCL+IPL:C:↓,TAZ:↓;GCC:C:↓,TAZ:↓	HC vs DON:GCL+IPL:S:↓,T:↓,I:↓,N:↓,MGCC:S:↓,T:↓,I:↓,N:↓
					DON	GCL+IPL:TAZ:67.1±13.1,C:12.0±3.4 MGCC:TAZ:84.5±13.4,C:18.9±3.7	GCL+IPL:S:69.2±14.2,T:62.7±12.8,I:69.2±14.2,N:64.9±13.2 MGCC:S:87.2±15.0,T:78.0±11.9,I:90.1±14.0,N:81.4±13.2	DON:GCL+IPL:GCL+IPL:C:-,TAZ:-;GCC:C:↓,TAZ:↓	DON:GCL+IPL:S:-,T:-,I:-,N:-,MGCC:S:-,T:-,I:-,N:-
Te Zhang	2019	Optovue	PRNFL MGCC	4.5×4.5 mm ² cube, optic nerve head 3.0×3.0 mm ² cube, macular	HC	PRNFL:104.91±7.99 MGCC:100.30±7.43	NA	HC vs non-DON:PRNFL:-,MGCC:-	NA
					non-DON	PRNFL:101.36±8.64 MGCC:98.46±14.53	NA	non-DON vs DON:PRNFL:-,MGCC:↓	
					DON	PRNFL:98.30±10.77 MGCC:90.52±11.89	NA		
Kyung-Ah Park	2018	Zeiss	PRNFL	200×200 protocol, optic disc	HC	PRNFL:97±8	PRNFL:S:118±14,T:73±12,I:124±15,N:69±12	Preoperative vs Postoperative(1 m):PRNFL:- Preoperative vs Postoperative(6 m):PRNFL:↓	Preoperative vs Postoperative(1 m):PRNFL:S:↓,T:-,I:↓,N:- Preoperative vs Postoperative(6 m):PRNFL:S:↓,T:↓,I:↓,N:-

					Preoperative	PRNFL:97±10	PRNFL:S:120±24,T:76±10,I:125±18,N:69±9		
					Postoperative(1 m)	PRNFL:95±8	PRNFL:S:116±18,T:77±11,I:120±17,N:68±9		
					Postoperative(6 m)	PRNFL:90±8	PRNFL:S:111±14,T:67±13,I:115±18,N:66±7		
Kyung-Ah Park	2016	Zeiss	PRNFL	200 × 200 protocol, optic disc	HC	PRNFL:96±8	PRNFL:S:118±14,T:73±12,I:124±15,N:69±12		
					Acute DON	PRNFL:101±11	PRNFL:S:125±22,T:76±8,I:130±18,N:73±11	HC vs Acute DON:PRNFL:↑ HC vs Chronic DON:PRNFL:- Acute DON vs Chronic DON:PRNFL:↓	HC vs Acute DON:PRNFL:S:↑,T:-,I:↑,N:- HC vs Chronic DON:PRNFL:S:-,T:↓,I:-,N:↑ Acute DON vs Chronic DON:PRNFL:S:↓,T:↓,I:-,N:-
					Chronic DON	PRNFL:96±11	PRNFL:S:117±19,T:66±12,I:128±18 μ,N:75±19		

MGCCCL: macular ganglion cell complex; PRNFL: peripapillary retinal nerve fiber layer; GCL+IPL: ganglion cell layer and inner plexiform layer

HC: healthy control; GD: Graves' disease; TAO: thyroid-associated ophthalmopathy; non-DON: TAO without DON; DON: dysthyroid optic neuropathy

S: superior; T: temporal; I: inferior; N: nasal; Superior-hemi: superior hemifield; Inferior-hemi: inferior hemifield; ST=superior temporal; SN=superior nasal; TU=temporal upper; TL=temporal lower; IT=inferior temporal; IN=inferior nasal; NL=nasal lower; NU=nasal upper; TAZ: total annular zone; C: central region

NA: data not reported; -:no significant difference; ↓: significant decrease; ↑: significant increase

Table S3. OCTA information and parameters of included studies

Author	Year	Device	Objects	Scan area	Arms	Overall parameters (%)	Section parameters(%)	Results of comparison	Results of section parameters comparison
Yunhai Tu	2023	Optovue	M-SRCL M-DRCL	3.0×3.0 mm ² cube,a circle of 3.0 mm in diameter,macular	HC	M-SRCL:46.59±1.72 M-DRCL:50.07±2.54	NA	HC vs non-DON:M-SRCL:↓,M- DRCL:- HC vs DON:M-SRCL:↓,M-DRCL:- NA non-DON vs DON:M-SRCL:↓,M- DRCL:-	
					non-DON	M-SRCL:45.01±2.65 M-DRCL:49.21±3.01	NA		
					DON	M-SRCL:41.90±3.35 M-DRCL:48.74±3.46	NA		
Yufei Wu	2022	Optovue	ONH-VD RPC-VD	4.5×4.5 mm ² cube,a circle of 2.0 mm and 4.0 mm in diameter,optic nerve head	HC	ONH-VD:57.43±2.68 RPC-VD:50.66±2.50	ONH-VD:Inside disc:61.70±3.65,Peripapillary:59.74±2.61,Superior- hemi:60.21±3.05,Inferior-hemi:59.28±2.43 RPC-VD:Inside disc:52.07±4.67,Peripapillary:53.24±2.61,Superior- hemi:53.29±2.99,Inferior-hemi:53.17±2.57	HC vs non-DON:ONH-VD:↓,RPC- VD:- HC vs equivocal DON:ONH- VD:↓,RPC-VD:↓ non-DON vs equivocal DON:ONH- VD:↓,RPC-VD:-	HC vs non-DON:ONH-VD:Inside disc:-,Peripapillary:-,Superior-hemi:-,Inferior-hemi:-,RPC- VD:Inside disc:↓,Peripapillary:-,Superior-hemi:-,Inferior-hemi:- HC vs equivocal DON:ONH-VD:Inside disc:-,Peripapillary:-,Superior-hemi:↓,Inferior- hemi:-,RPC-VD:Inside disc:↓,Peripapillary:↓,Superior-hemi:↓,Inferior-hemi:↓ non-DON vs equivocal DON:ONH-VD:Inside disc:-,Peripapillary:-,Superior-hemi:-,Inferior- hemi:-,RPC-VD:Inside disc:-,Peripapillary:↓,Superior-hemi:-,Inferior-hemi:-
					non-DON	ONH-VD:56.86±1.81 RPC-VD:50.14±1.77	ONH-VD:Inside disc:59.92±4.39,Peripapillary:59.41±2.05,Superior- hemi:59.59±2.03,Inferior-hemi:59.18±2.30 RPC-VD:Inside disc:49.67±5.03,Peripapillary:53.04±2.53,Superior- hemi:53.02±2.63,Inferior-hemi:52.75±2.27		
					equivocal	ONH-VD:56.22±3.42 RPC-VD:49.20±3.28	ONH-VD:Inside disc:60.69±3.97,Peripapillary:58.23±3.71,Superior- hemi:58.55±3.65,Inferior-hemi:57.89±3.90 RPC-VD:Inside disc:49.40±4.74,Peripapillary:51.38±3.71,Superior- hemi:51.47±3.62,Inferior-hemi:51.27±4.07		
					DON	ONH-VD:53.98±3.90 RPC-VD:47.42±3.70	ONH-VD:Inside disc:57.28±5.17,Peripapillary:56.55±4.69,Superior- hemi:56.76±4.54,Inferior-hemi:56.26±4.99 RPC-VD:Inside disc:47.13±5.67,Peripapillary:50.20±4.58,Superior- hemi:50.29±4.75,Inferior-hemi:50.12±4.66		
							RPC-VD:Inside disc:50.02±0.7654,Peripapillary:53.24±0.3914,Superior- hemi:53.07±0.4316,Inferior- hemi:53.45±0.4310,S:53.50±0.5557,T:56.18±0.6052,I:55.50±0.4800, N:48.97±0.5827 RPC-VD:Inside disc:48.28±1.528,Peripapillary:52.27±0.5562,Superior- hemi:52.29±0.5126,Inferior- hemi:52.24±0.6808,S:52.84±0.7111,T:54.16±0.6896,I:55.16±0.8863, N:48.52±0.7074		
Jiahui Wu	2022	Optovue	RPC-VD	6×6 mm ² cube,optic disc	HC	RPC-VD: 50.33±0.3173	HC vs non-DON:RPC-VD:↓ HC vs DON:RPC-VD:↓ non-DON vs DON:RPC-VD:↓	HC vs non-DON:RPC-VD:Inside disc:↓,Peripapillary:-,Superior-hemi:↓,Inferior- hemi:↓,S:-,T:↓,I:-,N:- HC vs DON:RPC-VD:Inside disc:↓,Peripapillary:↓,Superior-hemi:↓,Inferior- hemi:↓,S:-,T:↓,I:↓,N:↓ non-DON vs DON:RPC-VD:Inside disc:↓,Peripapillary:↓,Superior-hemi:↓,Inferior- hemi:↓,S:↓,T:↓,I:↓,N:↓	
					non-DON	RPC-VD: 49.16±0.5463			

					DON	RPC-VD: 48.24±0.4978	RPC-VD:Inside disc:47.83±0.9849,Peripapillary:51.50±0.5399, Superior-hemi:51.23±0.6456,Inferior-hemi:51.73±0.4911, S:52.24±0.6658,T:53.27±0.8564,I:54.36±0.6228,N:47.42±0.7761		
					Before Treatment	RPC-VD: 48.28±1.147	RPC-VD:Inside disc:51.50±1.679,Peripapillary:51.77±1.450, Superior-hemi:51.59±1.282,Inferior-hemi:51.59±1.630		
					After Treatment	RPC-VD: 47.58±1.144	RPC-VD:Inside disc:50.79±1.867,Peripapillary:50.85±1.095, Superior-hemi:50.17±1.167,Inferior-hemi:50.34±1.317		
Huan Jian	2021	Optovue	RPC-VD	4.5×4.5 mm ² cube,optic nerve head	HC	RPC-VD:54.26±2.30	RPC-VD:S:54.50±3.37,T:56.49±2.98,I:55.77±3.48,N:50.35±4.00		
					active non-DON	RPC-VD:53.31±2.93	RPC-VD:S:53.68±3.89,T:55.36±3.57,I:55.54±4.43,N:48.64±3.85	HC vs non-DON:RPC-VD:- HC vs active non-DON:RPC-VD:-	HC vs non-DON:RPC-VD:S:-,T:-,I:-,N:- HC vs active non-DON:RPC-VD:S:-,T:-,I:-,N:-
					inactive non-DON	RPC-VD:52.69±2.48	RPC-VD:S: 53.03±3.49,T:54.65±3.72,I:54.73±3.56,N:48.35±3.69	HC vs DON:PRNFL:RPC-VD:↓	HC vs DON:PRNFL:RPC-VD:S:↓,T:↓,I:↓,N:↓
					DON	RPC-VD: 32.18±5.48	RPC-VD:S:27.80±8.93,T:37.83±6.37,I:30.83±7.25,N: 30.67±6.74		
Parya Abdolalizadeh	2021	Optovue	ONH-VD RPC-VD	4.5×4.5 mm ² cube,optic disc	HC	ONH-VD:50.47±1.93 RPC-VD:NA	ONH-VD:Inside disc:47.26±5.09,Peripapillary:53.25±3.06 RPC-VD:Superior-hemi:53.11±3.07,Inferior-hemi:53.79±2.24, S:52.54±4.66,T:55.46±3.50,I:56.00±2.62,N:50.41±3.06	HC vs GD:ONH-VD:- HC vs mild TAO:ONH-VD:- HC vs moderate-to-severe TAO:ONH-VD:- HC vs DON:ONH-VD:↓	HC vs GD:ONH-VD:Inside disc:-,Peripapillary:-,RPC-VD:Superior-hemi:-,Inferior-hemi:-,S:-,T:-,I:-,N:- HC vs mild TAO:ONH-VD:Inside disc:-,Peripapillary:-,RPC-VD:Superior-hemi:-,Inferior-hemi:-,S:-,T:-,I:-,N:- HC vs moderate-to-severe TAO:ONH-VD:Inside disc:-,Peripapillary:↓,RPC-VD:Superior-hemi:-,Inferior-hemi:-,S:-,T:-,I:-,N:-
					GD	ONH-VD:50.68±2.61 RPC-VD:NA	ONH-VD:Inside disc:48.70±4.99,Peripapillary:55.42±5.92 RPC-VD:Superior-hemi:54.43±2.60,Inferior-hemi:53.98±2.35, S:54.08±4.18,T:52.77±4.45,I:55.50±3.19,N:55.42±5.93	GD vs mild TAO:ONH-VD:- GD vs moderate-to-severe TAO:ONH-VD:↓	HC vs DON:ONH-VD:Inside disc:-,Peripapillary:↓,RPC-VD:Superior-hemi:↓,Inferior-hemi:↓,S:↓,T:↓,I:↓,N:-

					mild TAO group	ONH-VD:50.20±1.85 RPC-VD:NA	ONH-VD:Inside disc:49.27±3.80,Peripapillary:52.46±2.20 RPC-VD:Superior-hemi:52.60±2.33,Inferior-hemi:52.34±2.38, S:51.89±3.33,T:51.54±4.06,I:53.53±3.77,N:52.79±4.46	GD vs DON:ONH-VD:↓ mild TAO vs moderate-to-severe TAO:ONH-VD:- mild TAO vs DON:ONH-VD:↓ moderate-to-severe TAO vs DON:ONH-VD:↓	GD vs mild TAO:ONH-VD:Inside disc:-,Peripapillary:-,RPC-VD:Superior-hemi:-,Inferior-hemi:-,S:-,T:-,I:-,N:- GD vs moderate-to-severe TAO:ONH-VD:Inside disc:-,Peripapillary:-,RPC-VD:Superior-hemi:-,Inferior-hemi:↓,S:↓,T:-,I:↓,N:↓ GD vs DON:ONH-VD:Inside disc:-,Peripapillary:↓,RPC-VD:Superior-hemi:↓,Inferior-hemi:↓,S:↓,T:↓,I:↓,N:↓ mild TAO vs moderate-to-severe TAO:ONH-VD:Inside disc:-,Peripapillary:-,RPC-VD:Superior-hemi:-,Inferior-hemi:-,S:-,T:-,I:-,N:- mild TAO vs DON:ONH-VD:Inside disc:-,Peripapillary:↓,RPC-VD:Superior-hemi:↓,Inferior-hemi:↓,S:↓,T:↓,I:↓,N:↓ moderate-to-severe TAO vs DON:ONH-VD:Inside disc:-,Peripapillary:-,RPC-VD:Superior-hemi:-,Inferior-hemi:-,S:↓,T:↓,I:-,N:-
					moderate-to-severe TAO group	ONH-VD:47.86±5.14 RPC-VD:NA	ONH-VD:Inside disc:49.37±4.98,Peripapillary:50.03±6.51 RPC-VD:Superior-hemi:50.95±5.70,Inferior-hemi:49.00±7.64, S:50.27±7.04,T:47.67±10.40,I:51.23±8.45,N:50.37±9.17		
					DON	ONH-VD:45.38±5.62 RPC-VD:NA	ONH-VD:Inside disc:47.23±7.57,Peripapillary:47.16±6.60 RPC-VD:Superior-hemi:47.45±6.27,Inferior-hemi:46.83±7.23, S:45.19±8.67,T:46.33±7.62,I:48.86±9.58,N:47.95±8.38		
Yufei Wu	2020	Optovue	M-SRCL M-DRCL	3.0×3.0 mm ² cube,macular	HC	M-SRCL:63.7±3.3 M-DRCL:73.9±4.8	SRCL:S:63.4±3.9,T:64.0±3.5,I:63.7±3.6,N:63.6±4.3 DRCL:S:75.0±4.6,T:73.4±4.7,I:75.0±4.9,N:72.4±5.7	HC vs non-DON:M-SRCL:↓;M-DRCL:↓ HC vs DON:M-SRCL:↓;M-DRCL:↓ non-DON vs DON:M-SRCL:-;M-DRCL:	
					non-DON	M-SRCL:60.0±3.5 M-DRCL:70.2±4.4	SRCL:S:60.3±4.3,T:61.2±4.2,I:59.7±4.0,N:59.0±4.0 DRCL:S:71.2±4.1,T:69.4±5.1,I:71.5±4.9,N:68.8±4.6		HC vs non-DON:S:↓,T:↓,I:↓,N:↓;M-DRCL:S:↓,T:↓,I:↓,N:↓ HC vs DON:M-SRCL:S:↓,T:↓,I:↓,N:↓;M-DRCL:S:↓,T:↓,I:↓,N:↓ non-DON vs DON:M-SRCL:S:-,T:-,I:-,N:-;M-DRCL:S:↓,T:↓,I:↓,N:↓
					DON	M-SRCL:59.8±4.5 M-DRCL:66.4±7.7	SRCL:S:60.0±5.3,T:60.3±5.0,I:59.5±5.6,N:59.5±4.5 DRCL:S:68.0±8.1,T:65.1±9.2,I:67.7±7.0,N:64.8±7.9		
Te Zhang	2019	Optovue	ONH-VD RPC-VD M-VD	4.5×4.5 mm ² cube,optic nerve head 3.0×3.0 mm ² cube,macular	HC	ONH-VD:56.70±2.36 RPC-VD:54.73±2.78 M-VD:47.12±2.52	ONH-VD: Inside disc:53.62±4.77,Peripapillary:61.15±3.57, N:58.51±4.73,T:62.37±4.34 RPC-VD:Inside disc:48.60±7.06,Peripapillary:61.68±3.71, N:57.14±4.09,T:62.45±4.01 M-VD:Fovea:26.18±4.69,Parafoveal:49.10±2.99, S:50.10±3.27,T:48.12±3.23,I:49.28±3.73,N:48.91±2.92	HC vs non-DON:ONH-VD:↓,RPC-VD:↓,M-VD:↓ non-DON vs DON:ONH-VD:↓,RPC-VD:↓,M-VD:-	HC vs non-DON:ONH-VD:Inside disc:↓,Peripapillary:-,N:-,T:↓;RPC-VD:Inside disc:↓,Peripapillary:↓,N:-,T:↓;M-VD:Fovea:-,Parafoveal:↓,S:↓,T:↓,I:↓,N:↓ non-DON vs DON:ONH-VD:Inside disc:-,Peripapillary:↓,N:-,T:↓;RPC-VD:Inside disc:-,Peripapillary:↓,N:↓,T:↓;M-VD:Fovea:-,Parafoveal:-,S:-,T:-,I:-,N:-
					non-DON	ONH-VD:53.81±3.27 RPC-VD:51.66±3.75 M-VD:44.27±3.02	ONH-VD:Inside disc:49.58±5.31,Peripapillary:58.70±3.48, N:57.06±4.17,T:57.74±4.81 RPC-VD:Inside disc:42.45±10.94,Peripapillary:58.73±3.40, N:56.42±3.86,T:58.54±4.90 M-VD:Fovea:24.40±4.66,Parafoveal:46.39±3.35, S:47.16±3.79,T:46.04±3.26,I:46.15±4.30,N:46.21±3.59		

		ONH-VD:Inside disc:46.42±7.27,Peripapillary:55.18±5.31, N:54.55±5.84,T:52.13±6.47
DON	ONH-VD:50.26±4.45	RPC-VD:Inside disc:39.17±8.96,Peripapillary:55.36±5.40, N:53.51±4.99,T:53.35±5.44
	RPC-VD:48.90±5.24	M-VD:Fovea:25.45±4.73,Parafoveal:45.16±3.78, S:42.28±4.13,T:45.16±3.20,I:44.61±5.13,N:45.63±3.96
	M-VD:42.85±3.39	

M-SRCL: macular superficial retinal capillary layer; M-DRCL: macular deep retinal capillary layer; ONH-VD: optic nerve head vessel density; RPC-VD: radial peripapillary capillary vessel density; M-VD: macular vessel density

S: superior; T: temporal; I: inferior; N: nasal; Superior-hemi: superior hemifield; Inferior-hemi: inferior hemifield;

HC: healthy control; GD: Graves' disease; TAO: thyroid-associated ophthalmopathy; non-DON: TAO without DON; DON: dysthyroid optic neuropathy

NA: data not reported; -:no significant difference; ↓: significant decrease; ↑: significant increase

Table S4. Subgroup Analysis Results

Subgroup	Name	Area	Parameter	Comparison	Overall Effect		Heterogeneity		
					Mean Difference (95% CI)	P -value	I ² Test (%)	Q Test (P)	
Device Brand	Optovue	PRNFL	Overall	HC vs non-DON	-1.25 [-4.89, 2.38]	0.5	76	0.006	
			HC vs DON	-12.24 [-31.85, 7.36]	0.22	98	0.00		
			non-DON vs DON	-11.12 [-26.72, 4.47]	0.00.16	98	0.00		
			Superior-hemi	HC vs non-DON	-0.62 [-5.28, 4.03]	0.79	72	0.06	
			HC vs DON	7.66 [-7.23, 22.55]	0.31	83	0.02		
			non-DON vs DON	3.84 [-9.14, 16.81]	0.56	80	0.006		
			Inferior-hemi	HC vs non-DON	-4.03 [-11.25, 3.19]	0.27	89	0.002	
			HC vs DON	2.64 [-12.20, 17.48]	0.73	87	0.006		
			non-DON vs DON	1.93 [-9.93, 13.79]	0.75	85	0.001		
			Overall	HC vs non-DON	-1.22 [-3.34, 0.90]	0.26	69	0.01	
			HC vs DON	-3.15 [-3.74, -2.56]	0.00	87	0.00		
			non-DON vs DON	-7.27 [-10.80, -3.74]	0.00	76	0.00		
	MGGCL	Superior-hemi	HC vs non-DON	-0.94 [-3.86, 1.99]	0.53	70	0.07		
		HC vs DON	-3.38 [-4.09, -2.66]	0.00	92	0.00			
		non-DON vs DON	-7.30 [-12.84, -1.76]	0.01	79	0.009			
		Inferior-hemi	HC vs non-DON	-0.08 [-3.44, 3.27]	0.96	73	0.06		
		HC vs DON	-2.22 [-2.77, -1.68]	0.00	95	0.00			
		non-DON vs DON	-9.07 [-16.56, -1.59]	0.02	88	0.00			
		Overall	HC vs DON	4.30 [-0.77, 9.38]	0.10	62	0.07		
		Zeiss	PRNFL	S	HC vs DON	6.65 [0.82, 12.49]	0.03	0	0.50
				T	HC vs DON	3.75 [1.10, 6.40]	0.006	0	0.58
				I	HC vs DON	6.05 [-0.48, 12.58]	0.03	37	0.20
				N	HC vs DON	3.61 [-1.66, 8.87]	0.18	57	0.10
				Overall	HC vs non-DON	-0.62 [-3.15, 1.92]	0.04	63	0.63
HC vs DON	-4.04 [-14.14, 6.05]			0.00	97	0.43			
non-DON vs DON	-8.11 [-25.38, 9.16]			0.00	98	0.36			
S	HC vs non-DON			0.35 [-10.43, 11.14]	0.03	80	0.95		
Race	Southeast Asian	PRNFL	HC vs DON	-11.97 [-37.50, 13.56]	0.00	94	0.36		
			non-DON vs DON	-32.74 [-130.23, 64.76]	0.00	98	0.51		
			T	HC vs non-DON	-0.76 [-4.12, 2.60]	0.46	0	0.66	
			HC vs DON	2.88 [-1.61, 7.36]	0.08	55	0.21		
			non-DON vs DON	-4.73 [-28.77, 19.30]	0.02	81	0.70		
			I	HC vs non-DON	-0.87 [-12.53, 10.79]	0.06	72	0.88	
			HC vs DON	-12.48 [-36.89, 11.93]	0.00	95	0.32		
			non-DON vs DON	-32.47 [-137.06, 72.12]	0.00	98	0.54		
		MGCCCL	N	HC vs non-DON	3.15 [-9.33, 15.63]	0.00	88	0.62	
			HC vs DON	-6.72 [-22.68, 9.25]	0.00	97	0.41		
			non-DON vs DON	-19.82 [-81.15, 41.51]	0.00	99	0.53		
			Overall	HC vs non-DON	-1.16 [-4.08, 1.76]	0.03	66	0.43	

			HC vs DON	-6.63 [-10.83, -2.43]	0.00	78	0.00	
			non-DON vs DON	-4.34 [-6.33, -2.36]	0.25	26	0.00	
		Overall	HC vs non-DON	-1.70 [-3.97, 0.58]	0.01	84	0.14	
			HC vs DON	-4.96 [-7.89, -2.03]	0.03	79	0.00	
			non-DON vs DON	-3.22 [-4.55, -1.88]	0.62	0	0.00	
		Inside disc	HC vs non-DON	-2.80 [-5.01, -0.60]	0.18	44	0.01	
			HC vs DON	-5.64 [-8.34, -2.94]	0.19	41	0.00	
			non-DON vs DON	-2.89 [-5.00, -0.77]	0.81	0	0.00	
		Peripapillary	HC vs non-DON	-1.28 [-3.34, 0.79]	0.06	73	0.23	
			HC vs DON	-4.56 [-7.28, -1.83]	0.10	63	0.00	
			non-DON vs DON	-3.20 [-4.77, -1.63]	0.68	0	0.00	
		Overall	HC vs non-DON	-1.23 [-1.92, -0.54]	0.08	56	0.00	
			HC vs DON	-8.31 [-16.96, 0.35]	0.00	99	0.06	
			non-DON vs DON	-6.87 [-14.67, 0.92]	0.00	99	0.08	
		Inside disc	HC vs non-DON	-2.50 [-4.29, -0.71]	0.14	49	0.01	
			HC vs DON	-5.03 [-8.88, -1.19]	0.00	85	0.01	
			non-DON vs DON	-1.13 [-2.73, 0.46]	0.24	30	0.16	
		Peripapillary	HC vs non-DON	-1.16 [-2.24, -0.08]	0.06	65	0.04	
			HC vs DON	-3.49 [-6.11, -0.87]	0.00	86	0.01	
			non-DON vs DON	-2.07 [-3.97, -0.16]	0.02	76	0.03	
		Superior-hemi	HC vs non-DON	-0.77 [-1.01, -0.52]	0.50	0	0.00	
			HC vs DON	-1.85 [-2.10, -1.60]	0.34	0	0.00	
			non-DON vs DON	-1.46 [-2.86, -0.06]	0.17	46	0.04	
		Inferior-hemi	HC vs non-DON	-1.06 [-1.67, -0.45]	0.23	31	0.00	
			HC vs DON	-1.89 [-2.75, -1.02]	0.25	24	0.00	
			non-DON vs DON	-1.26 [-3.24, 0.73]	0.07	69	0.21	
		S	HC vs non-DON	-0.67 [-1.00, -0.34]	0.84	0	0.00	
			HC vs DON	-13.71 [-38.64, 11.21]	0.00	98	0.28	
			non-DON vs DON	-12.97 [-37.74, 11.80]	0.00	98	0.30	
		T	HC vs non-DON	-2.06 [-3.08, -1.04]	0.11	54	0.00	
			HC vs DON	-9.78 [-17.03, -2.54]	0.00	97	0.01	
			non-DON vs DON	-7.28 [-13.90, -0.66]	0.00	96	0.03	
		I	HC vs non-DON	-0.33 [-0.71, 0.04]	0.90	0	0.08	
			HC vs DON	-12.85 [-36.17, 10.47]	0.00	98	0.28	
			non-DON vs DON	-12.56 [-35.99, 10.87]	0.00	98	0.29	
		N	HC vs non-DON	-0.59 [-1.12, -0.06]	0.32	11	0.03	
			HC vs DON	-7.46 [-13.73, -1.19]	0.00	95	0.02	
			non-DON vs DON	-6.25 [-11.54, -0.97]	0.00	95	0.02	
		Overall	non-DON vs DON	-5.75 [-20.72, 9.22]	0.02	82	0.45	
		PRNFL	Superior-hemi	non-DON vs DON	-2.33 [-13.20, 8.54]	0.26	50	0.67
			Inferior-hemi	non-DON vs DON	-3.49 [-14.41, 7.42]	0.16	50	0.53
		MGCCL	Overall	non-DON vs DON	-12.46 [-16.93, -7.98]	0.34	0	0.00
non-Southeast Asian								

Criteria	EUGOGO criteria	Superior-hemi	non-DON vs DON	-10.20 [-14.51, -5.90]	0.77	0	0.00		
		Inferior-hemi	non-DON vs DON	-12.63 [-16.92, -8.34]	0.91	0	0.00		
		Overall	HC vs non-DON	-4.68 [-7.76, -1.59]	0.44	0	0.03		
				HC vs DON	-6.05 [-10.67, -1.42]	0.59	0	0.01	
			PRNFL	non-DON vs DON	-5.26 [-13.46, 2.95]	0.01	80	0.21	
				Superior-hemi	non-DON vs DON	-2.33 [-13.20, 8.54]	0.01	80	0.21
				Inferior-hemi	non-DON vs DON	-3.49 [-14.41, 7.42]	0.26	20	0.67
				Overall	HC vs non-DON	-1.00 [-3.01, 1.01]	0.27	24	0.33
					HC vs DON	-9.12 [-11.85, -6.39]	0.08	60	0.00
			MGGCL	non-DON vs DON	-9.29 [-12.63, -5.95]	0.19	37	0.00	
				Superior-hemi	non-DON vs DON	-10.20 [-14.51, -5.90]	0.77	0	0.00
				Inferior-hemi	non-DON vs DON	-12.63 [-16.92, -8.34]	0.91	0	0.00
				Overall	HC vs non-DON	-2.83 [-4.05, -1.60]	0.85	0	0.00
					HC vs DON	-6.11 [-7.73, -4.49]	0.48	0	0.00
				non-DON vs DON	-3.36 [-5.06, -1.65]	0.64	0	0.00	
				Inside disc	HC vs non-DON	-1.05 [-7.08, 4.97]	0.03	88	0.73
					HC vs DON	-3.85 [-10.86, 3.17]	0.02	83	0.28
			ONH-VD	non-DON vs DON	-2.87 [-5.47, -0.27]	0.73	0	0.03	
				Peripapillary	HC vs non-DON	-2.62 [-4.21, -1.03]	0.69	0	0.00
					HC vs DON	-6.00 [-8.05, -3.95]	0.96	0	0.00
				non-DON vs DON	-3.41 [-5.40, -1.42]	0.81	0	0.00	
				Overall	HC vs non-DON	1.52 [-2.39, 5.42]	0.15	53	0.45
					HC vs DON	-21.09 [-86.00, 43.83]	0.00	99	0.52
			PRNFL	non-DON vs DON	-23.63 [-92.93, 45.67]	0.00	99	0.50	
				Overall	HC vs non-DON	-1.13 [-1.36, -0.90]	0.50	0	0.00
					HC vs DON	-9.25 [-19.71, 1.22]	0.00	99	0.08
				non-DON vs DON	-7.65 [-17.02, 1.72]	0.00	99	0.11	
				Inside disc	HC vs non-DON	-1.78 [-2.41, -1.15]	0.62	0	0.00
					HC vs DON	-3.15 [-5.72, -0.58]	0.07	69	0.02
				non-DON vs DON	-0.87 [-2.50, 0.77]	0.22	34	0.30	
		Peripapillary	HC vs non-DON	-0.88 [-1.37, -0.39]	0.27	18	0.00		
			HC vs DON	-1.89 [-2.71, -1.07]	0.26	22	0.00		
	Bartley criteria	non-DON vs DON	-1.48 [-3.40, 0.45]	0.08	68	0.13			
		RPC-VD	non-DON vs DON	-1.48 [-3.40, 0.45]	0.08	68	0.13		
		Superior-hemi	HC vs non-DON	-0.77 [-1.01, -0.52]	0.50	0	0.00		
			HC vs DON	-1.85 [-2.10, -1.60]	0.34	0	0.00		
		non-DON vs DON	-1.46 [-2.86, -0.06]	0.17	46	0.04			
		Inferior-hemi	HC vs non-DON	-1.06 [-1.67, -0.45]	0.23	31	0.00		
			HC vs DON	-1.89 [-2.75, -1.02]	0.25	24	0.00		
		non-DON vs DON	-1.26 [-3.24, 0.73]	0.07	69	0.21			
		S	HC vs non-DON	-0.67 [-1.00, -0.34]	0.84	0	0.00		
			HC vs DON	-13.71 [-38.64, 11.21]	0.00	98	0.28		

		non-DON vs DON	-12.97 [-37.74, 11.80]	0.00	98	0.30
T		HC vs non-DON	-1.84 [-2.54, -1.13]	0.22	33	0.00
		HC vs DON	-10.57 [-25.99, 4.86]	0.00	97	0.18
		non-DON vs DON	-9.00 [-25.30, 7.30]	0.00	97	0.28
I		HC vs non-DON	-0.33 [-0.71, 0.04]	0.90	0	0.08
		HC vs DON	-12.85 [-36.17, 10.47]	0.00	98	0.28
		non-DON vs DON	-12.56 [-35.99, 10.87]	0.00	98	0.29
N		HC vs non-DON	-0.82 [-1.94, 0.30]	0.14	55	0.15
		HC vs DON	-10.40 [-28.16, 7.36]	0.00	98	0.25
		non-DON vs DON	-9.30 [-25.83, 7.23]	0.00	97	0.27

PRNFL: peripapillary retinal nerve fiber layer; MGCCCL: macular ganglion cell complex; ONH-VD: optic nerve head vessel density; RPC-VD: radial peripapillary capillary vessel density; M-VD: macular vessel density

S: superior; T: temporal; I: inferior; N: nasal; Superior-hemi: superior hemifield; Inferior-hemi: inferior hemifield

HC: healthy control; non-DON: thyroid-associated ophthalmopathy without DON; DON: dysthyroid optic neuropathy

Table S5. Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Page 2
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 4
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 4
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 5
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Page 5-6
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 5
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	none
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 6
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Page 6
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 6
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	none
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	none
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 6
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Page 6
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Page 6
Reporting bias	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	none

Section and Topic	Item #	Checklist item	Location where item is reported
assessment			
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Page 6
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Figure 1
Study characteristics	17	Cite each included study and present its characteristics.	Table S1-S3
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table S1
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Table 1-3, S4
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Table 1-3, S4
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Table 1-3, S4
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Table S4
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Table 1-3, S4
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	none
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Table S1
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 8-10
	23b	Discuss any limitations of the evidence included in the review.	Page 10
	23c	Discuss any limitations of the review processes used.	Page 10
	23d	Discuss implications of the results for practice, policy, and future research.	Page 10-11
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 5
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Page 5
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Page 5
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 5
Competing interests	26	Declare any competing interests of review authors.	Page 5
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	none

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

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