

SUPPLEMENTARY DATA

The META-EYE Study Group

Joanne WY Yau, MBBS(Hons), Sophie L. Rogers, MEpid, Ryo Kawasaki, PhD, Ecosse L. Lamoureux, PhD, Tien Y Wong, PhD (Centre for Eye Research Australia, University of Melbourne, Royal Victorian Eye and Ear Hospital, Australia); Jonathan W Kowalski, PharmD, Suresh Mahabhashyam, MD, Wei-Shi Yeh, PhD (Global Health Outcomes Strategy and Research, Allergan Inc. U.S.A); Tin Aung, PhD, Seang Mei Saw, PhD, Wanting Tay, BSc, Wanling Wong, MSc (Singapore Eye Research Institute, Singapore National Eye Centre, Singapore); Francesco Panero, MD, Massimo Porta, PhD, Graziella Bruno, MD (Department of Internal Medicine, University of Turin, Italy); Supak Caengow, MSc (Phramongkutklao College of Medicine, Office of Research Development, Thailand); Nawarat Somthip, NP, Nahathai Chuikarat, NP (Department of Social Medicine, Samutsakhon general Hospital, Thailand), Molee Wanichsuwan, MD, Korapat Mayurasakorn, MD (Department of Social Medicine, Samutsakhon General Hospital, Thailand); Shih-Jen Chen, MD, Ching-Yu Cheng, MD (Department of Ophthalmology, Taipei Veterans General Hospital, Taiwan); Pesus Chou, MD (Community Medicine Research Center and Institute of Public Health, National Yang-Ming University, Taiwan); Wen-Ming Hsu, MD (Department of Ophthalmology, Shuang Ho Hospital Taipei Medical University, Taiwan); Jorn-Hon Liu, MD (Department of Ophthalmology, Taipei Veterans General Hospital, National Yang-Ming University, Taiwan); Usha Chakravarthy, PhD (Department of Ophthalmology, Queen's University of Belfast, Royal Victoria Hospital, Northern Ireland); Mary Frances Cotch, PhD (Division of Epidemiology and Clinical Applications, National Eye Institute, USA); Johannes Vingerling, PhD, Paulus De Jong, PhD, M. Kamran Ikram, PhD (Departments of Epidemiology and Ophthalmology, Erasmus Medical Center, The Netherlands); Hata Zavrelova, MD, Giel Nijpels, PhD, Jacqueline M. Dekker, PhD (Department of Epidemiology and Biostatistics and the EMGO Institute for Health and Care Research, VU University Medical Center, The Netherlands); Astrid Fletcher, PhD (Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, England); Jakob Grauslund, PhD, Anne Katrin Sjølie, PhD (Department of Ophthalmology, Odense University Hospital, Odense, Denmark), Toke Bek, PhD (Department of Ophthalmology, Aarhus University Hospital, Aarhus, Denmark); Michael Stern, MD, Steven Haffner, MD (The University of Texas Health Science Center at San Antonio, USA); Richard F. Hamman, MD (Department of Epidemiology, Colorado School of Public Health, USA); Miho Yasuda, PhD, Tatsuro Ishibashi, PhD (Department of Ophthalmology, Graduate School of Medical Sciences, Kyushu University, Japan), Yutaka Kiyohara, PhD (Department of Environmental Medicine, Graduate School of Medical Sciences, Kyushu University, Japan); Richard A. Jensen, MD (Cardiovascular Health Research Unit, School of Medicine, and the Department of Epidemiology, School of Public Health, University of Washington, USA); Jost B. Jonas, PhD (Department of Ophthalmology, Medical Faculty Mannheim, Ruprecht-Karls-University, Heidelberg, Germany); Takeo Kato, PhD, Hidetoshi Yamashita, PhD, Takamasa Kayama, PhD (Global Center of Excellence Research, Advanced Molecular Epidemiology Research Institute, Yamagata University, Japan); Beatriz Munoz, MS, Joanna Katz, ScD (International health, Epidemiology, Biostatistics and Ophthalmology, Johns Hopkins University Bloomberg School of Public Health, USA), Sheila West, PhD (Dana Center for Preventive Ophthalmology, Wilmer Eye Institute, Johns Hopkins University, USA), James M. Tielsch, PhD (International Health, Johns Hopkins University Bloomberg School of Public Health, USA), David Friedman, PhD (Wilmer Eye Institute, Johns Hopkins University, USA); Ronald Klein, MD, Barbara EK Klein, MD (Department of Ophthalmology and Visual Sciences, University of Wisconsin School of Medicine and Public Health, USA); Sannapaneni Krishnaiah, MSc (Center for Clinical Epidemiology and Biostatistics, L V Prasad Eye Institute, India); Donna M. Lehman, PhD (Department of Medicine, University of Texas Health Science Center, USA); Catherine McCarty, PhD (The Center for Human Genetics Marshfield Clinic Research Foundation, USA); Rachel G. Miller, MS (EDC Study and GLB Program, University of Pittsburgh, USA); Trevor Orchard, MD (Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh, USA);

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Rajendra Pradeepa, MSc, Rema Mohan, PhD, Viswanathan Mohan, PhD (Department of Ophthalmology, Madras Diabetes Research Foundation, Chennai, India); Joseph Paul O'Hare, FRCP (Clinical Sciences Research Institute, Warwick Medical School, University of Warwick, Coventry, U.K); Neil T. Raymond, MSc (Department of Epidemiology, University of Warwick, UK); BCP Polak, PhD (VU University Medical Center, The Netherlands); Jie Jin Wang, PhD, Paul Mitchell, PhD, Elena Rochtchina, MAppStat (Centre for Vision Research, Westmead Hospital, University of Sydney, Australia); Monique S. Roy, MD (Institute of Ophthalmology and Visual Science, University of New Jersey, USA); Rajiv Raman, MS, Tarun Sharma, MD (Shri Bhagwan Mahavir Vitreoretinal Services, Sankara Nethralaya, India); Mina Torres, MS, Rohit Varma, MD (Doheny Eye Institute, Keck School of Medicine, University of Southern California, USA); Johan Seland, MD (Eye Centres, University of Bergen, Bergen); Jesus Vioque, PhD (Departamento de Salud Pública, Campus San Juan, Universidad Miguel Hernández, Spain); Feng Hua Wang, MD, Ning Li Wang, PhD, Yuan Bo Liang, PhD (Beijing Tongren Eye Center, Beijing Tongren Hospital, Capital Medical University, China); Qi Sheng You, MD, Liang Xu, MD, Xing Yuan Zhang, MD, Ya Xing Wang, MD (Beijing Institute of Ophthalmology, Beijing Tongren Hospital, Capital Medical University); Ian Young, MD (Centre for Public Health, School of Medicine, Dentistry and Biomedical Sciences, Royal Victoria Hospital, Belfast, Northern Ireland); Xinzhi Zhang, PhD (Centers for Disease Control and Prevention, USA); Hugh R. Taylor, MD, AC (Melbourne School of Population Health, University of Melbourne); David S. Siscovick, MD (Department of Medicine and Epidemiology, University of Washington, School of Public Health, USA); Coen DA Stehouwer, PhD (Department of Internal Medicine, Maastricht University Medical Centre and Cardiovascular Research Institute Maastricht, The Netherlands); Mati Rahu, PhD (Department of Epidemiology and Biostatistics, National Institute for Health Development, Tallinn, Estonia); Gisele Soubrane, PhD (Creteil University Eye Clinic, University of Paris XII, France); Laura Tomazzoli, MD (Università degli studi di Verona, Verona); Fotis Topouzis, MD (Aristotle University of Thessaloniki, Greece); Jonathan Shaw, MD and Paul Zimmet, AO (Baker IDI Heart and Diabetes Institute, Australia)

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Supplementary Table 1. Appraisal of Study Methodology

Quality Criteria	Maximum score
Representation of the general diabetes population. Participants selected should be representative of the general diabetes population of a defined area, and methods of achieving this may involve using population registries, electoral roles, inhabitants of a defined area, or people registered with general practices of a defined area. Participants attending health checkups or respondents to health screening invitations may be biased and cover only certain population groups	1 point
Appropriate method of ascertaining diabetes population. Appropriate inclusion of all persons with diabetes is important for accurate DR prevalence estimates. This may be defined on the basis of a positive laboratory test (i.e. an oral glucose tolerance test or fasting blood glucose) and/or a self-reported history of physician's diagnosis and current diabetes treatment. A review of medical records or use of a national health registry to identify individuals with diabetes is also appropriate	3 points
Appropriate assessment of outcome. In this case, retinal photography must be performed on all study participants diagnosed with diabetes. Retinal photography should not be limited to participants who have been diagnosed with DR from a clinical examination for where photographs served only as documentation of clinical findings	1 point
Assessment of DR in both eyes. Studies that photographed only 1 randomly selected eye may miss detecting DR in the opposite eye	2 points
Number of retinal fields photographed	3 points
Photographic based grading of DR and DME based on standardized protocols and definitions, such as the ETDRS, modified ETDRS, modified Airlie House, WESDR, AAO or EURODIAB classification schemes	1 point

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Supplementary Table 2. Characteristics of Included Study Populations

Study	Study Design	DM diagnosis	DR data provided	DME data provided	Methodology score
ADDITION	DM study	OGTT	2 eyes; 5 severity categories	2 eyes	9
ARIC	CVD study	FBG/RBG/ SR	1 eye; modified ETDRS	1 eye	8
Aarhus	DM study	Registry	2 eyes; 5 severity categories	2 eyes	9
Andhra Pradesh	Eye study	SR	1 eye; 5 severity categories	2 eyes	6
AusDiab	DM study	OGTT/SR	2 eyes; 5 severity categories	2 eyes	10
BDES	Eye study	SR/RBG/HbA _{1C}	2 eyes; modified ETDRS	2 eyes	11
BES	Eye study	SR	2 eyes; yes/no	No data	7
BMES	Eye study	FBG/SR	2 eyes; ETDRS scale	2 eyes	10
Beijing	Eye study	FBG/SR	1 eye; ETDRS scale	1 eye	10
CHS	CVD study	FBG/SR	1 eye; ETDRS scale	1 eye	8
CURES E.S.	Eye study	SR/2hBG	Worse eye; 5 severity categories	1 eye	10
EDC	DM study	MR	2 eyes; non-standard severity categories	1 eye	10
EUREYE	Eye study	SR	2 eyes; yes/no	No data	7
Funagata	Eye study	OGTT/SR	1 eye; ETDRS scale	1 eye	8
Fyn	DM study	Registry	2 eyes; ETDRS scale	2 eyes	11
Handan	Eye study	FBG/SR	2 eyes; ETDRS scale	2 eyes	10
Hisayama	Eye study	OGTT/SR	2 eyes; non-standard severity categories	No data	9
Hoorn	DM study	OGTT/SR	2 eyes; non-standard severity categories	2 eyes	10
LALES	Eye study	SR/ HbA _{1C} / RBG	1 eye; non-standard severity categories	1 eye	11
MESA	CVD study	FBG/SR	2 eyes; ETDRS scale	2 eyes	8
MVIP	Eye study	SR	1 eye; yes/no	2 eyes	8
NHANES	National survey	SR/ HbA _{1C}	Worse eye; modified ETDRS	2 eyes	9
New Jersey 725	DM study	MR	1 eye; modified ETDRS	1 eye	11
Proyecto VER	Eye study	SR/ HbA _{1C}	Worst eye; modified ETDRS	1 eye	9
Rotterdam	Eye study	SR/RBG/ 2hBG	2 eye; yes/no	No data	8
SINDI	Eye study	RBG/SR	1 eye; yes/no	2 eyes	10
SNDREAMS	DR study	SR/ FBG	1 eye; 5 severity categories	1 eye	11
Samutsakhon	DM study	SR, HbA _{1C}	Worse eye; non-standard severity categories	No data	9
San Antonio	CVD study	OGTT, SR	1 eye; non-standard severity categories	No data	11
San Luis Valley	DM study	OGTT , SR	Worse eye; modified ETDRS	1 eye	9
Shihpai	Eye study	SR	Worse eye; 5 severity categories	1 eye	8
SIMES	Eye study	RBG, SR	2 eyes; 5 severity categories	2 eyes	10
Turin	DM study	MR, registry	1 eye; non-standard severity categories	1 eye	10
UKADS	DM study	MR	1 eye; non-standard severity categories	1 eye	9
WESDR	DR study	MR	Worse eye; 5 severity categories	1 eye	11

Abbreviations: CVD, cardiovascular disease; DM, diabetes mellitus; DR, diabetic retinopathy; FBG, fasting blood glucose; Hx, history; MR, medical records; NR, not reported; OGTT, oral glucose tolerance test; RBG, random blood glucose; SR, self-report, which includes self-reported history of physician diagnosis or use of diabetes medications; Tx, treatment; 2hBG, 2-hour post-load blood glucose. ADDITION, Anglo-Danish-Dutch study of Intensive Treatment in People with Screen-detected Diabetes in Primary Care; ARIC, Atherosclerosis Risk in Communities Study; Andhra Pradesh, Andhra Pradesh Eye Disease

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Study; AusDiab, Australian Diabetes, Obesity and Lifestyle Study; BDES, Beaver Dam Eye Study; BES, Baltimore Eye Survey; BMES, Blue Mountains Eye Study; Beijing, Beijing Eye Study; CHS, Cardiovascular Health Study; CURES ES, Chennai Urban Rural Epidemiology Study (Eye Study); EDC, Pittsburgh Epidemiology of Diabetes Complications Study; EUREYE; European Eye Study; Funagata, Funagata Study; Handan, Handan Eye Study; Hisayama, Hisayama Study; Hoorn, Hoorn Study; LALES, Los Angeles Latino Eye Study; MESA, Multi-ethnic Study of Atherosclerosis; MVIP, Melbourne Vision Impairment Project; NHANES, National Health and Nutrition Examination Survey; Project VER, Proyecto Vision and Eye Research; Rotterdam, Rotterdam Study; SiMES, Singapore Malay Eye Study; SINDI, Singapore Indian Eye Study; SNDREAMS, Sankara Nethralaya Diabetic Retinopathy Epidemiology and Molecular Genetics Study; UKADS, UK Asian Diabetes Study; WESDR, Wisconsin Epidemiologic Study of Diabetic Retinopathy.

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Supplementary Table 3. Age-Standardized Prevalence of Diabetic Retinopathy by Study in Diabetic Subjects Aged 20 to 79 years

Study	Eyes/ subject	Fields/ eye	Any DR		PDR		DME		VTDR		Age-Standardised Prevalence per 100 (95% CI)			
			N (tot)	N (DR)	N (tot)	N (DR)	N (tot)	N (DR)	N (tot)	N (DR)	Any DR	PDR	DME	VTDR
By Study														
Aarhus	Both	2	206	50	205	4	205	5	206	8	24.71 (23.08, 26.34)	1.58 (1.33, 1.84)	2.26 (1.94, 2.59)	3.14 (2.78, 3.5)
ADDITION	Both	2	534	61	534	0	533	5	534	5	9.53 (9.12, 9.95)	0 (0, 0.66)	0.91 (0.77, 1.04)	0.9 (0.77, 1.04)
AndhraPradesh	One	2	203	36	203	0	203	5	203	5	15.7 (14.91, 16.49)	0 (0, 1.72)	2.21 (1.91, 2.51)	2.21 (1.91, 2.51)
ARIC	One	1	1652	276	1550	14	1609	10	1652	23	14.13 (13.87, 14.39)	0.84 (0.78, 0.91)	0.54 (0.49, 0.59)	1.27 (1.19, 1.35)
AusDiab	Both	2	723	106	723	12	722	16	723	21	13.92 (13.33, 14.51)	1.78 (1.52, 2.04)	2.43 (2.08, 2.78)	3.04 (2.69, 3.4)
BDES	Both	3	454	146	454	8	451	13	454	19	25.64 (24.94, 26.35)	1.18 (1.04, 1.32)	2.22 (2.01, 2.42)	3.14 (2.9, 3.38)
Beijing	One	2	345	96	345	15	345	10	345	20	22.44 (21.66, 23.21)	3.53 (3.23, 3.84)	3.04 (2.73, 3.35)	4.91 (4.54, 5.27)
BES	Both	2	461	116	NR	NR	NR	NR	NA	NA	21.8 (21.19, 22.41) †	NR	NR	NA
BMES	Both	6	244	62	243	4	244	12	244	15	22.71 (21.63, 23.79)	1.49 (1.21, 1.77)	4.46 (3.98, 4.95)	5.75 (5.2, 6.31)
CHS	One	1	247	41	221	6	243	5	247	8	6.32 (6, 6.63)	1.03 (0.9, 1.17)	0.78 (0.67, 0.89)	1.23 (1.09, 1.37)
CURES E.S.	Worse	4	1707	302	1707	16	1707	90	1707	106	17.69 (17.34, 18.04)	1.03 (0.94, 1.12)	5.14 (4.96, 5.33)	6.17 (5.97, 6.38)
EDC	Both	3	547	514	537	196	547	127	547	225	59.91 (57.89, 61.93)	32.37 (30.8, 33.94)	15.19 (14.17, 16.21)	35.63 (34.01, 37.25)
EUREYE	Both	2	559	109	NR	NR	NR	NR	NA	NA	7.42 (7.19, 7.65) †	NR	NR	NA
Funagata	One	1	156	22	156	5	154	0	156	5	12.31 (11.38, 13.23)	2.5 (2.1, 2.89)	0 (0, 2.27)	2.5 (2.1, 2.89)
Fyn	Both	9	192	186	192	96	189	15	192	101	97.24 (92.97, 101.51)	49.68 (46.66, 52.7)	10.35 (8.35, 12.35)	52.06 (49.02, 55.1)
Handan	Both	2	366	98	366	6	183	20	366	21	25.04 (24.08, 26)	2.14 (1.65, 2.62)	11.7 (10.27, 13.14)	5.76 (5.2, 6.32)
Hisayama	Both	1	274	43	274	5	NR	NR	NA	NA	13.06 (12.36, 13.75) †	0.95 (0.81, 1.08)	NR	NA
Hoon	Both	2	125	30	125	1	NR	NR	NA	NA	19.64 (18.28, 20.99) †	0.39 (0.26, 0.51)*	NR	NA
LALES	One	7	1190	562	1188	73	1183	126	1190	167	40.03 (39.51, 40.54)*	5.25 (5.07, 5.44)	8.99 (8.75, 9.24)	11.91 (11.63, 12.19)
MESA	Both	2	850	216	849	20	828	67	850	76	22.64 (22.14, 23.15)	1.96 (1.82, 2.11)	6.81 (6.53, 7.08)	7.59 (7.3, 7.88)
MVIP	Both	2	211	60	211	9	211	14	211	18	24.55 (23.48, 25.61)	4.71 (4.21, 5.22)	5.04 (4.58, 5.5)	7.99 (7.36, 8.61)
NewJersey725	One	7	355	253	348	46	355	48	355	75	54.44 (52.74, 56.15)	16.88 (15.88, 17.88)	14.58 (13.66, 15.49)	25.92 (24.69, 27.15)
NHANES	Worse	2	937	268	937	22	935	35	937	54	24.14 (23.68, 24.59)	1.83 (1.7, 1.95)	3.25 (3.08, 3.42)	4.76 (4.56, 4.96)
ProyectoVER	One	3	885	424	883	57	875	66	885	102	40.14 (39.54, 40.73)	5.35 (5.14, 5.57)	6.4 (6.16, 6.64)	9.68 (9.39, 9.97)
Rotterdam	Both	2	486	76	NR	NR	NR	NR	NA	NA	13.91 (13.11, 14.72) †	NR	NR	NA
SAHS	One	7	381	153	381	16	NR	NR	NA	NA	38.31 (37.29, 39.32) †	3.96 (3.65, 4.26)	NR	NA
Samutsakhon	One	7	96	11	96	3	NR	NR	NA	NA	10.02 (9.1, 10.93) †	2.43 (1.98, 2.87)	NR	NA
SanLuisValley	Worse	3	392	129	389	17	368	11	392	23	33.64 (32.44, 34.83)	4.3 (3.92, 4.69)	2.74 (2.49, 2.99)	5.66 (5.24, 6.09)
Shihpai	Worse	2	139	18	139	3	139	7	139	10	4.93 (4.56, 5.3)	0.82 (0.67, 0.97)	1.92 (1.69, 2.15)	2.74 (2.46, 3.01)
SiMES	Both	2	757	268	NR	NR	757	44	NA	NA	29.47 (28.9, 30.03)	NR	4.69 (4.46, 4.91)	NA
SINDI	One	2	1075	163	NR	NR	1075	44	NA	NA	12 (11.71, 12.29)	NR	3.57 (3.41, 3.74)	NA
SNDREAMS	One	4	1393	261	1393	21	1393	46	1393	59	15.95 (15.65, 16.26)	1.33 (1.24, 1.42)	2.82 (2.7, 2.95)	3.67 (3.52, 3.82)
Turin	One	2	310	131	310	9	310	24	310	33	69.13 (56.97, 81.3)	3.74 (3.24, 4.24)	5.46 (4.89, 6.02)*	9.2 (8.44, 9.96)
UKADS	One	2	910	369	910	127	910	94	910	127	39.74 (38.61, 40.87)	13.96 (13.24, 14.68)	10.38 (9.78, 10.98)	13.96 (13.24, 14.68)
WESDR	Worse	7	1930	1292	1930	331	1577	212	1930	427	66.59 (65.94, 67.24)	18.01 (17.67, 18.36)	14.21 (13.88, 14.54)	23.35 (22.96, 23.74)

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Abbreviations: DME: Diabetic Macular Edema; DR: Diabetic Retinopathy; NR: Not reported; NA: Not applicable; PDR: Proliferative Diabetic Retinopathy; VTDR: Vision-threatening Diabetic Retinopathy. ADDITION, Anglo-Danish-Dutch study of Intensive Treatment in People with Screen-detected Diabetes in Primary Care; ARIC, Atherosclerosis Risk in Communities Study; Andhra Pradesh, Andhra Pradesh Eye Disease Study; AusDiab, Australian Diabetes, Obesity and Lifestyle Study; BDES, Beaver Dam Eye Study; BES, Baltimore Eye Survey; BMES, Blue Mountains Eye Study; Beijing, Beijing Eye Study; CHS, Cardiovascular Health Study; CURES ES, Chennai Urban Rural Epidemiology Study (Eye Study); EDC, Pittsburgh Epidemiology of Diabetes Complications Study; EUREYE, European Eye Study; Funagata, Funagata Study; Handan, Handan Eye Study; Hisayama, Hisayama Study; Hoorn, Hoorn Study; LALES, Los Angeles Latino Eye Study; MESA, Multi-ethnic Study of Atherosclerosis; MVIP, Melbourne Vision Impairment Project; NHANES, National Health and Nutrition Examination Survey; Proyecto VER, Proyecto Vision and Eye Research; Rotterdam, Rotterdam Study; SiMES, Singapore Malay Eye Study; SINDI, Singapore Indian Eye Study; SNDREAMS, Sankara Nethralaya Diabetic Retinopathy Epidemiology and Molecular Genetics Study; UKADS, UK Asian Diabetes Study; WESDR, Wisconsin Epidemiologic Study of Diabetic Retinopathy.

† Our 'any DR' definition includes DME information. Studies that did not provide DME data (BES, EUREYE, Hisayama, Hoorn, Rotterdam, SAHS and Samutsakhon) may have higher prevalence estimates for any DR than that reported here.