Body Mass Index, Insulin Sensitivity, and Cognition in Early Type 2 Diabetes: the GRADE study

Supplemental Appendix

GRADE Research Group Listing	. pages 2-5
STROBE Checklist	pages 6-7

GRADE Research Group (April 30, 2021)

Designations: Principal Investigator (PI); Co-Principal Investigator (Co-PI); Co-Investigator (Co-I); Study Coordinator (SC); Recruitment/Retention Coordinator (RC); Research Staff (RS)

Current Clinical Centers

Albert Einstein College of Medicine, Bronx, NY, USA: Crandall, JP (PI); McKee, MD (Co-PI, past); Behringer-Massera, S (Co-I, past); Brown-Friday, J (SC); Xhori, E (RC, past); Ballentine-Cargill, K (RS); Duran, S (RS); Estrella, H (RS); Gonzalez de la torre, S (RS, past); Lukin, J (RS, past)

Atlanta VA Medical Center, Atlanta, GA, USA: Phillips, LS (PI); Burgess, E (Co-I); Olson, D (Co-I); Rhee, M (Co-I); Wilson, P (Co-I); Raines, TS (SC); Boers, J (SC); Costello, J (SC); Maher-Albertelli, M (SC); Mungara, R (SC); Savoye, L (SC, past); White, CA (SC); Gullett, C (SC; past); Holloway, L (SC, past); Morehead, F (SC, past); Person, S (SC, past); Sibymon, M (SC, past); Tanukonda, S (SC, past); Adams, C (RC, past); Ross, A (RC, past)

Baylor College of Medicine, Houston, TX, USA: Balasubramanyam, A (PI); Gaba, R (Co-I); Gonzalez Hattery, E (SC); Ideozu, A (SC); Jimenez, J (SC); Montes, G (RC); Wright, C (RS, past)

Baylor Research Institute, Dallas, Tx, USA: Hollander, P (PI); Roe, E (Co-I, past); Jackson, A (SC); Smiley, A (SC); Burt, P (SC, past); Estrada, L (RS); Chionh, K (RS, past)

Case Western Reserve University/Cleveland VA/MetroHealth Medical Center, Cleveland, OH, USA: Ismail-Beigi, F (PI); Falck-Ytter, C (Co-PI); Sayyed Kassem, L (Co-PI); Sood, A (Co-PI, past); Tiktin, M (Co-I, SC); Kulow, T (SC); Newman, C (SC); Stancil, KA (SC); Cramer, B (SC, past); Iacoboni, J (SC, past); Kononets, MV (SC, past); Sanders, C (SC, past); Tucker, L (SC, past); Werner, A (SC, past); Maxwell, A (RS); McPhee, G (RS); Patel, C (RS); Colosimo, L (RS, past); Krol, A (RS, past)

Columbia University Medical Center, New York, NY, USA: Goland, R (PI); Pring, J (SC); Alfano, L (SC); Kringas, P (SC, past); Hausheer, C (RC, past); Tejada, J (RC, past); Gumpel, K (RS, past); Kirpitch, A (RS, past); Schneier, H (RS, past)

Duke University Medical Center, Durham, NC, USA: Green, JB (PI); AbouAssi, H (Co-I); Chatterjee, R (Co-I); Feinglos, MN (Co-I, past); English Jones, J (SC, RC); Khan, SA (SC, RC); Kimpel, JB (SC, past); Zimmer, RP (SC, past); Furst, M (RC, past); Satterwhite, BM (RS); Thacker, CR (RS); Evans Kreider, K (RS, past)

Indiana University, Indianapolis, IN, USA: Mariash, CN (PI); Mather, KJ (PI, past); Ismail, HM (Co-I); Lteif, A (Co-I, past); Mullen, M (SC); Hamilton, T (SC, past); Patel, N (SC, past); Riera, G (RC); Jackson, M (RC, past); Pirics, V (RC, past); Aguillar, D (RS, past); Howard, D (RS, past); Hurt, S (RS, past)

International Diabetes Center, Minneapolis, MN, USA: Bergenstal, R (PI); Carlson, A (Co-I); Martens, T (Co-I); Johnson, M (SC); Hill, R (SC); Hyatt, J (SC); Jensen, C (SC); Madden, M (SC); Martin, D (SC); Willis, H (SC); Konerza, W (RS); Yang, S (RS); Kleeberger, K (RS, past); Passi, R (RS, past)

Kaiser Permanente Northwest, Portland, OR, USA: Fortmann, S (PI); Herson, M (Co-I); Mularski, K (Co-I); Glauber, H (Co-I, past); Prihoda, J (Co-I, past); Ash, B (SC); Carlson, C (SC); Ramey, PA (SC); Schield, E (SC); Torgrimson-Ojerio, B (SC); Arnold, K (SC, past); Kauffman, B (SC, past); Panos, E (SC, past); Sahnow, S (RC); Bays, K (RS); Berame, K (RS); Cook, J (RS); Ghioni, D (RS); Gluth, J (RS); Schell, K (RS); Criscola, J (RS, past); Friason, C (RS, past); Jones, S (RS, past); Nazarov, S (RS, past)

Kaiser Permanente of Georgia, Duluth, GA, USA: Barzilay, J (PI); Rassouli, N (Co-PI); Puttnam, R (Co-I); Ojoawo, B (SC); Nelson, R (RC); Curtis, M (SC, past); Hollis, B (SC, past); Sanders-Jones, C (SC, past); Stokes, K (SC, past); El-Haqq, Z (RS, past); Kolli, A (RS, past); Tran, T (RS, past)

Massachusetts General Hospital, Boston, MA, USA: Wexler, D (PI); Larkin, ME (Co-I, SC); Meigs, J (Co-I); Chambers, B (SC, past); Dushkin, A (SC, past); Rocchio, G (SC, past); Yepes, M (SC, past); Steiner, B (RC); Dulin, H (RC, past); Cayford, M (RS); Chu, K (RS); DeManbey, A (RS); Hillard, M (RS); Martin, K (RS); Thangthaeng, N (RS); Gurry, L (RS, past); Kochis, R (RS, past); Raymond, E (RS, past); Ripley, V (RS, past); Stevens, C (RS, past)

MedStar Health Research Institute/ MedStar Baltimore, Hyattsville/Baltimore, MD, USA: Park, J (PI); Aroda, V (PI, past); Ghazi, A (Co-PI); Magee, M (Co-I); Ressing, Ann (Co-I); Loveland, A (SC); Hamm, M (SC); Hurtado, M (SC); Kuhn, A (SC); Leger, J (SC); Manandhar, L (SC); Mwicigi, F (SC); Sanchez, O (SC); Young, T (SC)

Miami VA Healthcare System/University of Miami, Miami, FL, USA: Garg, R (PI), Lagari-Libhaber, V

(PI); Florez, HJ (PI, past); Valencia, WM (PI, past); Marks, J (Co-PI, past); Casula, S (Co-I); Oropesa-Gonzalez, L (SC); Hue, L (SC, past); Cuadot, A (SC, past); Nieto-Martinez, R (SC, past); Riccio Veliz, AK (SC, past); Gutt, M (RC, past); Kendal, YJ (RS, past); Veciana, B. (RS, past)

Oregon Health & Science University, Portland, OR, USA: Ahmann, A (PI); Aby-Daniel, D (Co-I); Joarder, F (Co-I); Morimoto, V (Co-I); Sprague, C (Co-I); Yamashita, D (Co-I); Cady, N (SC); Rivera-Eschright, N (SC); Kirchhoff, P (SC, past); Morales Gomez, B (RC); Adducci, J (RC, past); Goncharova, A (RC, past) Pacific Health Research and Education Institute/VA Pacific Islands, Honolulu, HI, USA: Hox, SH (PI); Petrovitch, H (Co-PI); Matwichyna, M (SC); Jenkins, V (SC, past); Broadwater, L (RS); Ishii, RR (RS); Bermudez. NO (RS; past)

Pennington Biomedical Research Center Baton Rouge, LA: Hsia, DS (PI); Cefalu, WT (PI, past); Greenway, FL (Co-I); Waguespack, C (Co-I); King, E (SC); Fry, G (SC); Dragg, A (SC); Gildersleeve, B (SC); Arceneaux, J (SC); Haynes, N (SC, past); Thomassie, A (SC, past); Pavlionis, M (SC, past); Bourgeois, B (RC, past); Hazlett, C (RS)

San Diego VA Medical Center. San Diego, CA, USA: Mudaliar, S (PI); Henry, R (PI, past); Boeder, S (Co-I, past); Pettus, J (Co-I, past); Diaz, E (SC); Garcia-Acosta, D (SC); Maggs, S (SC); DeLue, C (SC, past); Stallings, A (SC, past); Castro, E (RC, past); Hernandez, S (RC, past)

Southwestern American Indian Center, Phoenix, AZ, USA: Krakoff, J (PI); Curtis, JM (Co-I); Killean, T (SC); Khalid, M (SC); Joshevama, E (RC, past); Diaz, E (RS); Martin, D (RS); Tsingine, K (RS); Karshner, T (RS, past)

St. Luke's-Roosevelt Hospital, New York, NY, USA: Albu, J (Co-PI); Pi-Sunyer, FX (Co-PI, past); Frances, S (Co-I); Maggio, C (SC, past); Ellis, E (RC); Bastawrose, J (RC, past); Gong, X (RS)

SUNY Downstate Medical Center/New York Hospital-Queens, Brooklyn/Flushing, NY, USA: Banerji, MA (PI); August, P (Co-I); Lee, M (Co-I); Lorber, D (Co-I); Brown, NM (SC, RC); Josephson, DH (SC); Thomas, LL (SC, RC); Tsovian, M (SC, RC); Cherian, A (SC, RC, past); Jacobson, MH (RS); Mishko, MM (RS) The University of North Carolina Diabetes Care Center, Durham, NC, USA: Kirkman, MS (PI); Buse, JB (Co-I); Dostou, J (Co-I); Machineni, S (Co-I); Young, L (Co-I); Bergamo, K (Co-I, past); Goley, A (Co-I, past); Kerr, J (Co-I, past); Largay, JF (Co-I, past); Guarda, S (SC); Cuffee, J (SC, past); Culmer, D (SC, past); Fraser, R (RC); Almeida, H (RC, past); Coffer, S (RC, past); Debnam, E (RC, past); Kiker, L (RC, past); Morton, S (RC, past); Josey, K (RS); Fuller, G (RS, past)

University of Alabama Birmingham, Birmingham, AL, USA: Garvey, WT (PI); Cherrington, AL (Co-PI); Dyer, D (SC); Lawson, MCR (SC); Griffith, O (SC, past); Agne, A (RC); McCullars, S (RC)

University of Cincinnati/Cincinnati VA Medical Center, Cincinnati, OH, USA: Cohen, RM (PI); Craig, J (SC); Rogge, MC (SC; past); Burton, K (SC, past); Kersey, K (SC, RC, past); Wilson, C (SC, past); Lipp, S (RC, past); Vonder Meulen, MB (RC, past); Adkins, C (RS); Onadeko, T (RS)

University of Colorado-Denver/VA, Denver, CO, USA: Rasouli, N (PI); Baker, C (Co-I); Schroeder, E (Co-I, past); Razzaghi, M (Co-I); Lyon, C (Co-I, past); Penaloza, R (Co-I, past); Underkofler, C (SC); Lorch, R (SC); Douglass, S (SC, past); Steiner, S (SC, past)

University of Iowa, Iowa City, IA, USA: Sivitz, WI (PI); Cline, E (SC); Knosp, LK (SC); McConnell, J (SC, past); Lowe, T (RC)

University of Michigan, Ann Arbor, MI, USA: Herman, WH (PI); Pop-Busui, R (Co-PI); Tan, MH (Co-I); Martin, C (SC); Waltje, A (SC, RC); Katona, A (SC); Goodhall, L (SC, past); Eggleston, R (RC, past); Kuo, S (RS); Bojescu, S (RS, past); Bule, S (RS, past); Kessler, N (RS, past); LaSalle, E (RS, past); Whitley, K (RS, past)

University of Minnesota, Minneapolis, MN, USA: Seaquist, ER (PI); Bantle, A (Co-I); Harindhanavudhi, T (Co-I); Kumar, A (Co-I); Redmon, B (Co-I); Bantle, J (Co-I, past); Coe, M (SC); Mech, M (SC); Taddese, A (RC); Lesne, L (RS); Smith, S (RS)

University of Nebraska Medical Center/Omaha VA, Omaha, NE, USA: Desouza, C (PI);

Kuechenmeister, L (Co-I); Shivaswamy, V (Co-I); Burbach, S (SC); Rodriguez, MG (SC); Seipel, K (SC); Alfred, A (SC, past); Morales, AL (SC; past); Eggert, J (RS); Lord, G (RS); Taylor, W (RS, past); Tillson, R (RS, past)

University of New Mexico, Albuquerque, NM, USA: Schade, DS (PI); Adolphe, A (Co-PI); Burge, M (Co-PI, past); Duran-Valdez, E (SC); Martinez, J (RC, past); Bancroft, A (RS); Kunkel, S (RS); Ali Jamaleddin Ahmad, F (RS, past); Hernandez McGinnis, D (RS, past); Pucchetti, B (RS, past); Scripsick, E (RS, past); Zamorano, A (RS, past)

UT Health San Antonio, San Antonio, TX, USA: DeFronzo, RA (PI); Cersosimo, E (Co-PI); Abdul-Ghani, M

(Co-I); Triplitt, C (Co-I); Juarez, D (SC); Mullen, M (SC); Garza, RI (SC, past); Verastiqui, H (SC, past); Wright, K (RC, past); Puckett, C (RS)

University of Texas-Southwestern Medical Center, Dallas, TX, USA: Raskin, P (PI); Rhee, C (Co-I, past); Abraham, S (SC); Jordan, LF (SC); Sao, S (SC); Morton, L (SC, past); Smith, O (SC, past); Osornio Walker, L (RC, past); Schnurr-Breen, L (RC, past); Ayala, R (RS); Kreymer, RB (RS); Sturgess, D (RS, past) VA Puget Sound Health Care System/University of Washington, Seattle, WA, USA: Utzschneider, KM (PI); Kahn, SE (Co-I); Alarcon-Casas Wright, L (Co-I); Boyko, EJ (Co-I); Tsai, EC (Co-I); Trence, DL (Co-I, past); Trikudanathan, S (Co-I, past); Fattaleh, BN (SC); Montgomery, BK (SC, past); Atkinson, KM (RS); Kozedub, A (RS); Concepcion, T (RS, past); Moak, C (RS, past); Prikhodko, N (RS, past); Rhothisen, S (RS, past)

Vanderbilt University, Nashville, TN, USA: Elasy, TA (PI); Martin, S (SC); Shackelford, L (RC, RS, past); Goidel, R (RS); Hinkle, N (RS); Lovell, C (RS); Myers, J (RS); Lipps Hogan, J (RS, past)
Washington University, St. Louis, MO, USA: McGill, JB (PI); Salam, M (Co-I); Schweiger, T (SC, RC); Kissel, S (SC, RC, past); Recklein, C (SC, past); Clifton, MJ (RS)

Yale University/Fair Haven Community Health Center/West Haven VA Medical Center, New Haven, CT, USA: Tamborlane, W (PI); Camp, A (Co-I); Gulanski, B (Co-I); Inzucchi, SE (Co-I); Pham, K (Co-I); Alguard, M (SC, RC); Gatcomb, P (SC); Lessard, K (SC); Perez, M (SC); Iannone, L (RC); Magenheimer, E (RC); Montosa, A (RC)

Study Units

NIH/NIDDK, Bethesda, MD, USA (Sponsor): Cefalu, WT (Director, Division of Diabetes, Endocrinology and Metabolic Diseases); Fradkin, J (Director, Division of Diabetes, Endocrinology and Metabolic Diseases, past); Burch, HB (Project Scientist); Bremer, AA (Project Scientist, past)

Chairman's Office, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA: Nathan, DM (Study Chair, Study Co-PI)

Executive Committee: Nathan, DM (Study Chair, Study Co-PI); Lachin, JM (U01 Contact PI, Study Co-PI); Buse, JB (Co-I); Kahn, SE (Co-I); Krause-Steinrauf, H (Co-I, Project Director); Larkin, ME (Co-I, SC); Tiktin, M (Co-I, SC); Wexler, D (PI); Burch, HB (Program Scientist); Bremer, AA (Project Scientist, past)

Coordinating Center, The George Washington University Biostatistics Center, Rockville, MD, USA: Lachin, JM (U01 Contact PI, Study Co-PI); Krause-Steinrauf, H (Co-I, Project Director); Younes, N (Co-I); Bebu, I (RS); Butera, N (RS); Buys, CJ (RS); Fagan, A (RS); Gao, Y (RS); Ghosh, A (RS); Gramzinski, MR (RS); Hall, SD (RS); Kazemi, E (RS); Legowski, E (RS); Liu, H (RS); Suratt, C (RS); Tripputi, M (RS); Arey, A (RS, past); Backman, M (RS, past); Bethepu, J (RS, past); Lund, C (RS, past); Mangat Dhaliwal, P (RS, past); McGee, P (RS, past); Mesimer, E (RS, past); Ngo, L (RS, past)

Central Biochemical Laboratory, University of Minnesota Advanced Research and Diagnostic Laboratory, Minneapolis, MD, USA: Steffes, M (PI); Seegmiller, J (Co-I); Saenger, A (Co-I, past); Arends, V (SC); Gabrielson, D (SC, past)

Drug Distribution Center, VA Cooperative Studies Program Clinical Research Pharmacy Coordinating Center, Minneapolis, MN, USA: Conner, T (PI); Warren, S (PI, past); Day, J (RS); Huminik, J (RS); Scrymgeour, A (RS)

ECG Reading Center, EPICARE, Wake Forest University, Winston-Salem, MN, USA: Soliman, EZ (PI); Pokharel, Y (PI, past), Zhang, ZM (Co-I, past); Campbell, C (SC); Hu, J (SC); Keasler, L (SC); Hensley, S (SC, past); Li, Y (RS)

Economic Evaluation and Assessment Center:

University of Michigan, Ann Arbor, MI, USA: Herman, WH (PI); Kuo, S (RS); Martin, C (SC); Waltje, A (SC, RC); Mihalcea, R (RS); Min, DJ (RS); Perez-Rosas, V (RS); Prosser, L (RS); Resnicow, K (RS); Ye, W (RS)

Centers for Disease Control and Prevention, Atlanta, GA, USA: Shao, H (RS); Zhang, P (RS)

Neurocognitive Coordinating Center, Columbia University Medical Center, New York, NY, USA: Luchsinger, J (PI); Sanchez, D (SC); Assuras, S (RS)

QWB Reading Center, University of California San Diego Health Services Research Center: Groessl, E (PI); Sakha, F (SC); Chong, H (SC, past); Hillery, N (RS)

Collaborators

Cardiovascular Adjudication Advisor: Everett, BM (Brigham and Women's Hospital)

Collaborating Investigators (Recruitment Sites): Abdouch, I (University of Nebraska Medical Center/Omaha VA); Bahtiyar, G (SUNY Downstate Medical Center); Brantley, P (Pennington Biomedical Research Center (LSU)); Broyles, FE (Swedish Medical Center); Canaris, G (University of Nebraska Medical Center/Omaha VA); Copeland, P (Massachusetts General Hospital); Craine, JJ (UW Valley Medical Center); Fein, WL (Swedish Medical Center); Gliwa, A (SUNY Downstate Medical Center); Hope, L (SUNY Downstate Medical Center); Lee, MS (SUNY Downstate Medical Center); Meiners, R (Pennington Biomedical Research Center (LSU)); Meiners, V (Pennington Biomedical Research Center (LSU)); O'Neal, H (Pennington Biomedical Research Center (LSU)); Park, JE (UW Valley Medical Center); Sacerdote, A (SUNY Downstate Medical Center); Steppel-Reznik, J (Massachusetts General Hospital); Turchin, A (Massachusetts General Hospital)

Beta Cell Ancillary Study: Brooks-Worrell, B (University of Washington); Hampe, CS (University of Washington); Palmer, JP (University of Washington); Shojaie, A (University of Washington)

Continuous Glucose Monitoring Sub-study: Higgins, J (Massachusetts General Hospital; Harvard Medical School)

Emotional Distress Sub-study: Golden, S (Johns Hopkins University); Gonzalez, J (Yeshiva University; Albert Einstein College of Medicine); Naik, A (Baylor College of Medicine); Walker, E (Albert Einstein College of Medicine)

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Recruitment Ancillary Study: Behringer-Massera, S (The Mount Sinai Hospital, Beth Israel Medical Center)

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title	1
		or the abstract	
		(b) Provide in the abstract an informative and balanced summary of	4
		what was done and what was found	
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation	6
-		being reported	
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6-7
Setting	5	Describe the setting, locations, and relevant dates, including periods of	
z c c c c c c c c c c c c c c c c c c c	· ·	recruitment, exposure, follow-up, and data collection	
Participants	6	(a) Give the eligibility criteria, and the sources and methods of	6-7
1 articipants	Ü	selection of participants	,
Variables	7	Clearly define all outcomes, exposures, predictors, potential	7-9
variables	,	confounders, and effect modifiers. Give diagnostic criteria, if	, ,
		applicable	
Data sources/	8*	For each variable of interest, give sources of data and details of	7-9
measurement		methods of assessment (measurement). Describe comparability of	
		assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	13-14
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If	7-8
Qualiticative variables		applicable, describe which groupings were chosen and why	
Statistical methods	12	(a) Describe all statistical methods, including those used to control for	9-10
		confounding	
		(b) Describe any methods used to examine subgroups and interactions	9-10
		(c) Explain how missing data were addressed	7
		(d) If applicable, describe analytical methods taking account of	NA
		sampling strategy	
		(e) Describe any sensitivity analyses	NA
Results			1
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers	10-11
	10	potentially eligible, examined for eligibility, confirmed eligible,	10 11
		included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	10-11
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical,	10-
1	•	social) and information on exposures and potential confounders	1121-
		,	22, 24-
			25
		(b) Indicate number of participants with missing data for each variable	7, 10-

			22, 24-
			25
Outcome data	15*	Report numbers of outcome events or summary measures	10-11
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted	13-14,
		estimates and their precision (eg, 95% confidence interval). Make clear	23,26-
		which confounders were adjusted for and why they were included	27
		(b) Report category boundaries when continuous variables were categorized	7
		(c) If relevant, consider translating estimates of relative risk into	NA
		absolute risk for a meaningful time period	INA
Other analyses	17	Report other analyses done—eg analyses of subgroups and	9-10
		interactions, and sensitivity analyses	
Discussion			
Key results	18	Summarise key results with reference to study objectives	12-14
Limitations	19	Discuss limitations of the study, taking into account sources of	13-14
		potential bias or imprecision. Discuss both direction and magnitude of any potential bias	
Interpretation	20	Give a cautious overall interpretation of results considering objectives,	12-14
		limitations, multiplicity of analyses, results from similar studies, and	
		other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	14
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present	15
		article is based	

^{*}Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.