RESPONSE TO COMMENT ON NUNLEY ET AL.

Clinically Relevant Cognitive Impairment in Middle-Aged Adults With Childhood-Onset Type 1 Diabetes. Diabetes Care 2015;38:1768–1776

Karen A. Nunley,[1] Christopher M. Ryan,[2] Judith A. Saxton,[3] Tina Costacou,[1] Trevor J. Orchard,[1] and Caterina Rosano[1]

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We would like to thank van Broekhoven and Nefs (1) for their thoughtful comment that depression may explain the high rate of cognitive impairment (28%) we reported among adults with type 1 diabetes (T1D) (2). As our objective was to investigate the biological correlates of cognitive impairment in this patient population, the original article did not address depression. We do, of course, agree that this is an important topic, with studies showing lingering deleterious effects of depression on cognition even after depressive symptoms subside (3). Even so, our knowledge regarding depressive symptoms in adults with childhood-onset T1D remains limited. We therefore appreciate this opportunity to discuss our data on the cross-sectional relationship between cognitive impairment, assessed in 2010–2013 (2), and depressive symptoms, assessed via the Beck Depression Inventory (BDI) in 2004–2006, controlling for education and antidepressant use.

BDI scores were available for 93% (90/97) of the T1D participants and were evaluated using established cut points (4): 69 of 90 participants scored <10 ("minimal depression"), 16 of 90 scored 10–18 ("mildly depressed"), 4 of 90 scored 19–29 ("moderately depressed"), and 1 of 90 scored 30–63 ("severely depressed"); 20 of 90 used antidepressants, similar to rates previously reported in T1D (5). Ordinal logistic regression models (2) revealed no statistically significant relationship between BDI score and cognitive impairment (odds ratio 1.04; 95% CI 0.98–1.11; $P = 0.62$). Results were similar when controlling for education and antidepressant use and when using individual cognitive test scores as the outcome (data not shown).

We found moderate to severe depressive symptoms in only 5% of this cohort, and depressive symptoms did not explain cognitive impairment in this population. These negative results could be due to a participation bias; while we did not exclude participants based on mood, severely depressed individuals may have self-excluded by declining to participate. We also assessed depressive symptoms rather than clinically diagnosed depression; it is possible that milder depressive symptoms simply do not correlate with cognitive impairment in our cohort.

Depression in T1D is likely multifactorial, related to living with a chronic condition and the daily burden of managing T1D, compounded by the presence of painful neuropathy and/or other disabling conditions (e.g., poor vision) that limit mobility and independence. We suggest that the next step to improve our knowledge would be to conduct a carefully designed study into the characterization of depression as a syndrome in people with T1D, examining age at first depressive episode, number of depressive episodes/remissions, adequacy and type of depression treatment, and prevalence of comorbid mood disorders (e.g., anxiety, stress). This would require a thorough review of medications as polypharmacy is very prevalent in T1D, leading to potential interactions, direct or indirect, between mood and medications. For example, analgesics control chronic pain, which would improve mood, but pain medications can have deleterious neurotropic effects, compromising both mood and cognition.

In conclusion, although we found no cross-sectional relationship between depressive symptoms and cognitive impairment in this T1D population, a carefully designed study aiming to disentangle these complex relationships would be of great public health interest.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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[1]*Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA*
[2]*Human Research Protection Program, University of California, San Francisco, San Francisco, CA*
[3]*Department of Neurology, University of Pittsburgh, Pittsburgh, PA*

Corresponding author: Karen A. Nunley, kan62@pitt.edu.