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Texas Woman's University

Grant Title: Validation of Dietary Assessment Tools in Stroke Patients

Funding Period: 12/01/2021 – 05/30/2025 (Longer duration due to approved extensions)

Final Detailed Report on Woodcock Institute Grant

Background

Approximately 60% of stroke patients have some neurological and/or cognitive deficit, and up to 50% have moderate disability that may require assistance with basic activities of daily living. Given these neurological and functional deficits, it is likely that self-reported dietary intake may be more inaccurate in stroke patients when compared to healthy adults. As such, validation studies assessing the accuracy of dietary assessment tools to measure dietary intake in stroke patients are needed to ensure that relationships between diet and clinical outcomes in stroke patients are due to actual dietary intake and not simply the result of measurement error.

The rationale for this project was that upon successful completion, we would have **validated** dietary assessment tools to measure dietary intake that allows us to accurately quantify diet quality and adherence to dietary interventions in stroke patients. This project would also determine how cognitive status correlates with the ability to accurately recall dietary intake. The **framework for this proposal aligned with the mission of the Woodcock Institute to advance neurocognitive research** as it: 1) evaluated whether dietary assessment tools were valid for assessing dietary intake in stroke patients, 2) evaluated the relationship between cognitive status and dietary assessment tool validity in stroke patients.

Study Objectives

The primary objective of this study was to assess the criterion validity of 3 different dietary assessment tools to estimate recalled dietary intake compared to actual (observed) intake (determined by feeding subjects 3 meals in one day) in stroke patients and healthy, age-, and sex-matched controls. A secondary objective was to assess the relationship between cognitive function scores and dietary assessment tool accuracy.

Data Collection and Initial Study Findings

We initially planned on recruiting 25 stroke patients and 25 healthy, age-, and sex-matched controls to meet the objectives of this study. However, after funding was received we made the decision to also include young, healthy reference controls in the study because this allowed us to compare the effects of a prior stroke and aging on our study outcomes.

To date we have completed testing in 50 research participants – including 8 stroke survivors, 19 age-matched healthy controls, and 23 young reference controls. A breakdown of participant characteristics can be found in **Table 1** below. Note this data reflects n = 49 as 1 participant was excluded from final data analysis due to poor study compliance.

As expected, cognitive function (measured using the Montreal Cognitive Assessment [MOCA]) was lower in stroke survivors (23.9 ± 3.3) versus age-matched healthy controls (26.9 ± 2.6) and young reference controls (27.8 ± 2.1) ($F = 7.512$; $p = 0.002$).

We are currently in the process of entering and analyzing the dietary assessment data (main outcomes). Given the nature of this research, data processing is very labor and time intensive given that we have to transcribe handwritten data entries for dietary intake into SPSS or SAS for final analysis. This preliminary data will be submitted for presentation in the form of two scientific abstracts for presentation at the Nutrition 2026 Annual Meeting in Washington DC – abstract deadline is early 2026.

For publication purposes, we would like to complete testing in additional 7 stroke survivors and 2 healthy, age-matched controls using ORSP Small Grant and NFS departmental funds. This would leave us with 15 stroke survivors, 20 healthy, age-matched controls, and 23 young reference controls. We will apply for an ORSP Small Grant next week to continue data collection this Fall. As such, we will keep the IRB active and anticipate full study completion by January 2026.

Per the regulations outlined in the Woodcock Institute Award Acceptance letter, we will include “Supported by Texas Woman’s University Woodcock Institute Research Grant” in any scientific abstract, presentation, or publication resulting from this work. We will also share copies of these outputs with the Woodcock Institute and upload to the Pioneer Open Access Repository.

Expected Scientific Outputs

Scientific Abstracts

Zoellner ER, Akum Z, Mirmire S, Lewis G, Patterson MA, Cooper Hay C, Aggarwal SS, Sharrief AZ, Savitz SI, Miketinas DC, Tucker WJ. (2026). Validation of dietary assessment tools in stroke patients. [Conference: 2026 Nutrition Meeting, Washington, DC]

Tucker WJ, Zoellner ER, Akum Z, Mirmire S, Lewis G, Patterson MA, Cooper Hay C, Aggarwal SS, Sharrief AZ, Savitz SI, Miketinas DC, Tucker WJ. (2026). Validation of dietary assessment tools in young versus older adults. [Conference: 2026 Nutrition Meeting, Washington, DC]

Peer-reviewed Publications

Zoellner ER, Akum Z, Mirmire S, Lewis G, Patterson MA, Cooper Hay C, Aggarwal SS, Sharrief AZ, Savitz SI, Miketinas DC, Tucker WJ. (2026). Validation of dietary assessment tools in stroke patients. [Journal Target → *Am J Clin Nutr*].

Zoellner ER, Akum Z, Mirmire S, Lewis G, Patterson MA, Cooper Hay C, Aggarwal SS, Sharrief AZ, Savitz SI, Miketinas DC, Tucker WJ. (2026). Validation of dietary assessment tools in young versus older adults. [Journal Target → *J Academy of Nutrition & Dietetics*].

Graduate Student Training

This research funding provided 4 graduate students with the opportunity to learn new skills in stroke pathophysiology and symptomology, dietary assessment methodology, cognitive testing with the MOCA, and future opportunities to present this data at scientific conferences.

Use of Funds

Please refer to **Table 2** for details on initial study budget and final expenditures on the grant.

Future External Submissions

This research funding has provided my research laboratory with the knowledge and skills required to undertake future research studies in patients with stroke. In addition, it has allowed me to grow my clinical collaborations for recruitment in patients with stroke. Finally, this preliminary data will serve as strong pilot data for upcoming external grant applications in stroke.

Dr. Daniel Miller and Jacque Endres, thank you so much for your patience and help on this grant. This was our first research study in patients with stroke and we underestimated how hard it is to recruit and enroll participants in this patient population. We appreciate the extensions and look forward to sharing our final study results with you in the near future.

Sincerely,

Wesley Tucker

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Table 1. Participant Characteristics (n = 49).

	Stroke Survivors	Age-matched healthy controls	Young reference controls
<i>N</i>	8	18	23
Gender (M, F)	(6, 2)	(2, 16)	(7, 16)
Age (years)	53 ± 11	54 ± 9	23 ± 3*
Body Mass Index (kg/m ²)	30.0 ± 3.7	27.8 ± 6.6	27.3 ± 6.5
Ethnicity			
Non-Hispanic	7 (88%)	17 (94%)	19 (83%)
Hispanic	1 (12%)	1 (6%)	4 (17%)
Race			
White	2 (26%)	8 (44%)	10 (44%)
African American/Black	5 (63%)	5 (28%)	5 (22%)
Asian	1 (17%)	2 (11%)	6 (26%)
Native American	–	1 (6%)	–
Two or More Races	–	2 (11%)	2 (8%)

Ethnicity and race displayed as n (% of group). All other data displayed as Mean ± SD. * denotes significant difference (p<0.001) between young reference controls versus age-matched healthy controls, and stroke survivors using One Way ANOVA.

Table 2. Initial budget and final use of funds on Tucker Woodcock grant.

Detailed Budget				
Texas Woman's University Principal Investigator:	Dr. Wesley Tucker			
Funding Agency:	Woodcock Institute			
Project Period:	12/1/2021-5/30/2025			
	Base:	FTE	Budgeted	Spent
Personnel				
<u>Texas Woman's University Faculty</u>				
Dr. Wesley Tucker, PI				
0 FTE 9 month academic year	\$ 78,912	0%	\$ -	\$ -
0.1 FTE 3 month summer	\$ 23,831	10%	\$ 2,383	\$ 2,383
Doctoral Student Assistant				
3 hrs @ \$18.97 x 50 participants			\$ 2,846	\$ 2,846
Total Salaries and Wages			\$ 5,229	\$ 5,229
Fringe Benefits				
<u>Texas Woman's University Faculty</u>				
Dr. Wesley Tucker, PI @ 17%			\$ 405	\$ 405
Total Fringe Benefits			\$ 405	\$ 405
TOTAL TEXAS WOMAN'S UNIVERSITY PERSONNEL			\$ 5,634	\$ 5,634
MATERIALS & SUPPLIES				
Meals @ \$4 x 3 x 50 participants			\$ 600	\$ 562
Napkins, plates, cleaning supplies			\$ 266	\$ -
TOTAL MATERIALS & SUPPLIES			\$ 866	\$ 562
OTHER EXPENSES				
Participant incentives @ \$150 each x 50 participants			\$ 7,500	\$ 7,500
Participant parking @ \$20 each x 50 participants			\$ 1,000	\$ 1,000
TOTAL OTHER EXPENSES			\$ 8,500	\$ 8,500
TOTAL COSTS			\$ 15,000	\$ 14,696