Compass for Care: A Digital Self-Care and Well-Being Program for Caregivers of Individuals Living with Alzheimer's Disease and Related Dementias

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1. Overview

The purpose of the statistical analyses was to evaluate the efficacy of the Compass for Care intervention compared with an attention control condition among caregivers of individuals living with Alzheimer's disease and related dementias (ADRD). Analyses examined changes from baseline through 9 months on caregiver burden and secondary psychosocial outcomes.

2. Analysis Population

Participants were randomized to either the Compass for Care intervention or attention control condition. Analyses included participants with baseline data and utilized all available outcome data collected at baseline, 3 months, 6 months, and 9 months.

3. Outcome Measures

Primary Outcome

• Zarit Burden Interview (ZBI)

Secondary Outcomes

• Patient Health Questionnaire-8 (PHQ-8)
• PHQ-8 Diagnostic Categories
• Resilience Evaluation Measure-3 (REM-3)
• World Health Organization Well-Being Index (WHO-5)
• Perceived Stress Scale (PSS)
• Perceived Change Index (PCI) Overall Score
• • Cantril Overall Thriving

4. Statistical Methods

Continuous outcomes were analyzed using linear mixed-effects models with fixed effects for treatment group, time, and treatment-by-time interaction. Participant-level random intercepts were included to account for repeated observations within individuals.

Ordinal outcomes were analyzed using ordinal logistic mixed-effects models.

The binary thriving outcome was analyzed using generalized estimating equations (GEE) with a logistic link function to account for repeated observations within participants.

For all models, the primary test of intervention efficacy was the treatment-by-time interaction.

Model assumptions for continuous outcomes were evaluated using graphical assessment of residuals and random effects.

5. Missing Data

Mixed-effects models and generalized estimating equations utilized all available data under the assumption that data were missing at random. Participants were not required to have complete data at all follow-up assessments to contribute to analyses.

6. Multiplicity

Pairwise comparisons across assessment time points were adjusted using Tukey procedures for multiple comparisons.

7. Moderator Analyses

Exploratory analyses examined whether treatment effects on caregiver burden varied according to:

- Intervention dose (activities completed)
- Login frequency
- Gender
- Race
- Age
- Annual household income
- Relationship to care recipient

Additional exploratory analyses evaluated associations between baseline caregiver burden and changes in selected secondary outcomes.

8. Statistical Software

Analyses were conducted using R version 4.5.2. Statistical models were implemented using the lme4, ordinal, and geepack packages.

9. Statistical Significance

All statistical tests were two-sided. Statistical significance was evaluated using an alpha level of 0.05.