

A Community Choir to Facilitate Psychosocial and Cognitive Health for Caregivers and Persons with Dementia

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Rationale

- Dementias in general, and Alzheimer's disease (AD) in particular, cause progressive neurodegeneration impacting psychosocial function and cognitive frailty^{1,2}.
- Nonpharmacological interventions have previously shown promise in slowing dementia-related decline³.
- Community choirs may elucidate benefits for both caregivers (CG) and persons with dementia⁴ (PwD): engaging body and mind, as well as lessening other burdens (e.g., stress, isolation)^{5,6,7}.
- This study examined the effect of community choir participation on psychosocial (e.g., depressive symptoms) & cognitive (e.g., memory) health of PwD & their caregivers.

Research Questions

- Does community choir participation improve the cognitive function of PwD and their caregivers?
- Does community choir participation reduce depressive signs and symptomology of PwD and their caregivers?

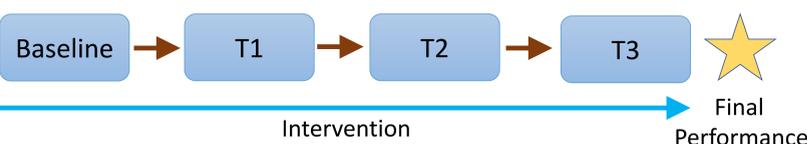
Participants

- Participants (initially n=28) included members from the first of three planned cohorts.
- 3 participants chose to withdraw prior to the baseline assessment resulting in a total of n=25 at baseline.

Characteristic	Caregivers	Persons with Dementia
n	13	12
Age	67.62 (7.24)	78.67 (9.67)
Sex	4 male; 9 female	4 male; 8 female
Mean Education Level	Bachelor's Degree	Bachelor's Degree

Design

- In keeping with a philosophy of the CFN, our design encouraged participants to become involved in the research process (eg. assisting in participant recruitment).
- This investigation employed a longitudinal burst design, with data being collected at an initial baseline assessment and for 3 follow-up visits.
- Between assessments, all participants attended the community choir once per week, culminating in a final performance following the last assessment.
- Assessments included markers of social inclusion, health, affect, cognition, depression, quality of life, and neuropsychological function.



Measures

1) Mini Mental State Examination (MMSE)

- 30 point questionnaire examining global cognition⁸ through the following domains:
 - Orientation/Registration
 - Attention/Calculation
 - Recall
 - Language

A score ≤ 23 is indicative of cognitive impairment

2) Word Recall

- Measure of episodic memory based on Hultsch *et al.* 1998⁹.
- 30 words belonging to discrete categories (insects, furniture, fabric, spices, family designations) were presented in a mixed list format.
- Participants were given 2 minutes to study the words & 5 minutes to recall them.

3) Patient Health Questionnaire 9 (PHQ-9)

- 9 question instrument for screening, diagnosing, & monitoring signs and symptoms of depression¹⁰.
- DSM-IV criteria is combined with other major symptoms to facilitate deriving a summary score reflecting individual differences in depressive symptoms.

Statistical Procedure

- Multilevel modelling was employed to index changes in performance and function pursuant to choir participation.
- Models employed full information maximum likelihood to provide robustness in response to longitudinal attrition.
- Change in cognition and depressive symptoms was modeled as a function of time (weeks) since baseline assessment and cognitive status subgroup.

Results

Q1: Does choir participation improve cognition?

MMSE Model	B	SE	t	P value
Intercept	29.54	0.91	32.33	< 0.001*
Time	-0.07	0.27	-0.26	0.799
Status	-9.15	1.29	-7.08	< 0.001*
Time * Status	0.62	0.38	1.66	0.114

W. Rec. Model	B	SE	t	P value
Intercept	16.00	1.04	15.34	< 0.001*
Time	1.23	0.36	3.41	0.001*
Status	-13.24	1.50	-8.80	< 0.001*
Time * Status	-0.94	0.51	-1.84	0.072

Interpreting the Models

Intercept: Performance of the CG at baseline.

Time: Change in measure for CG per unit increase in time.

Status: Baseline difference b/w CG & PwD on measure.

Time*Status: Difference in slope b/w CG and PwD.

Q2: Does the choir lessen depressive signs & symptoms?

PHQ-9 Model	B	SE	t	P value
Intercept	4.82	1.07	4.50	< 0.001*
Time	-1.10	0.27	-4.01	< 0.001*
Status	-1.36	1.55	-0.88	0.388
Time * Status	0.57	0.39	1.43	0.156

Interpreting the Model

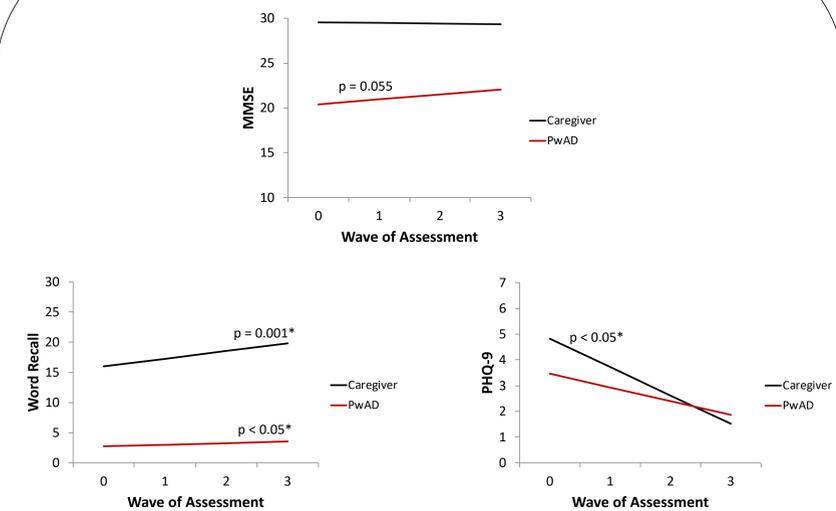
Intercept: Performance of the CG at baseline.

Time: Change in measure for CG per unit increase in time.

Status: Baseline difference b/w CG & PwD on measure.

Time*Status: Difference in slope b/w CG and PwD.

Change In Function Across Intervention



Slopes for change in performance over time were derived for all measures, with caregivers specified as the reference group (coded as 0). In two instances (**Word Recall** & **PHQ-9**), rate of change for the caregiver achieved significance. For persons with dementia, a significant gain in **word recall** & a trend toward significant gain in **MMSE** was observed.

Conclusions

- Preliminary findings for PwD indicated-significant **episodic memory improvement** with a similar trend observed for **MMSE gains**.
- Caregivers exhibited significant **reduction in depressive symptoms on the PHQ-9**; corresponding **gains in episodic memory** were seen for caregivers.
- Choirs are an inexpensive and socially-focused intervention that could have far-reaching implications, reducing healthcare costs and enhancing quality of life for PwD and their caregivers.

Limitations and Future Directions

- A primary limitation is the small sample size and its implications for the quantitative modeling; data will be pooled across the next two cohorts to address this issue.
- There is a ceiling effect for the MMSE, common for healthy populations of this age, limiting elucidation of caregiver benefit for this measure of global cognition.
- Beginning in September, an additional 2 community-dwelling cohorts as well as a residential care cohort will be undertaking the choir initiative.

More Information

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