Alzheimer's Care via Telemedicine for Oregon (ACT-ON), Phase I: Establishing the Feasibility and Reliability of Telemedicine-based Measures

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July 2016

Background

Alzheimer's Care via Telemedicine for Oregon (ACT-ON)

- Phase 1: Establish reliability of measures commonly used in dementia evaluations.

- Phase 2: Assess the feasibility of standard clinical visits when done via telemedicine

- Funded by the Oregon Health Authority, Administered by the Office of Rural Health
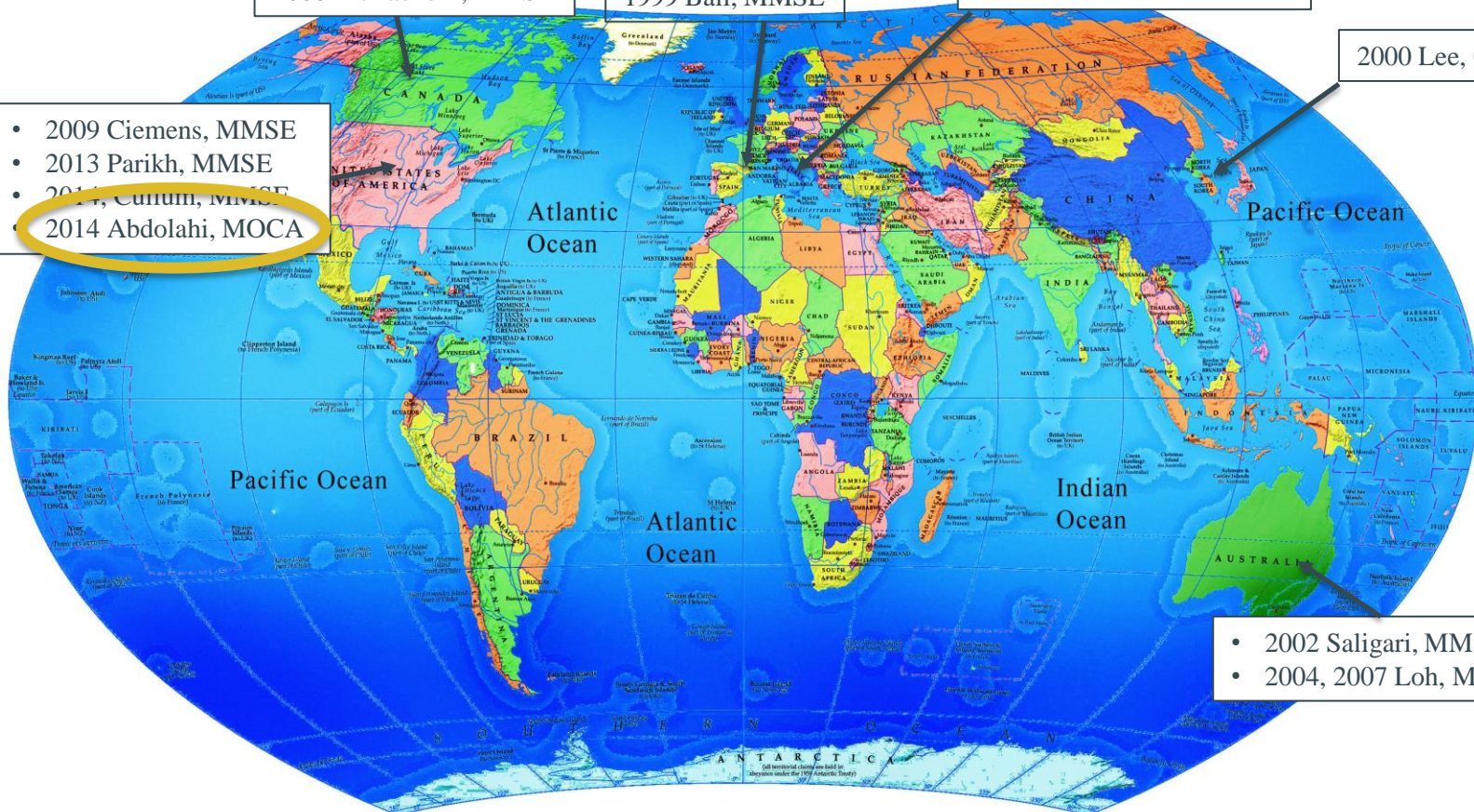
2008 McEachern, MMSE

1993 Ball MMSE
1999 Ball, MMSE

2013 Timpano, MMSE

2000 Lee, CDR, MMSE

- 2009 Ciemens, MMSE
- 2013 Parikh, MMSE
- 2014, Cullum, MMSE
- 2014 Abdolahi, MOCA

- 2002 Saligari, MMSE, GDS
- 2004, 2007 Loh, MMSE, GDS

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Methods

AIMS

Assess the inter-site correlation of assessment measures for persons with Alzheimer's Disease and their caregivers.

DESIGN

- 28 dyads completed an identical battery of tests-- both in the clinic setting and via direct-to-home telemedicine, approximately 2 weeks apart
- Participants randomized to in-clinic or telemedicine initial visit
- Raters blinded to previous visit results

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Methods

MEASURES
For Persons with AD

- The Montreal Cognitive Assessment (MoCA)
- Clinical Dementia Rating Scale (caregiver component) (CDR)
- Revised Memory and Behavior Problems Checklist (RMBPC; number of behaviors)
- Geriatric Depression Screen (GDS)

For Caregivers

- The Zarit Burden Interview (ZBI)
- Marwit Meuser Caregiver Grief Index (MMCGI)
- RMBPC (reaction to behaviors)

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Methods

MoCA

- 30-point cognitive assessment, measures visuospatial abilities, executive function, verbal learning and memory, attention, concentration, language and orientation (Nasreddine et al., 2005).
- Mailed visuospatial/executive section to dyads, 1 page for each item (trail, cube, clock)
- Animals shown on a screen
- Clapping

Methods

Persons with AD	
Telemedicine	In-Clinic
MoCA (modified)	MoCA (modified)
GDS	GDS
CDR (caregiver component)	CDR (caregiver component)
RMBPC (behavior occurrence)	RMBPC (behavior occurrence)

Caregivers	
Telemedicine	In-Clinic
ZBI	ZBI
RMBPC (reaction to behaviors)	RMBPC (reaction to behaviors)
MMCGI-SF	MMCGI-SF

ANALYSIS
Test-retest reliability was measured by intraclass correlation coefficient (ICC) for continuous variables and the Kappa (K) statistic for categorical variables.

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Results - Demographics

Table 1: Demographics, ACT-ON, Phase I (n=28 Dyads)	
Caregivers (% female)	61%
Persons with AD (% female)	61%
Age, Caregivers (mean, range)	65.3 (38-79)
Age, Person with AD (mean, range)	71.6 (51-96)
Hours/week caregiving (mean, range)	75.4 (0-168)
Years with AD diagnosis (mean, range)	3.3 (0-15)
Distance from clinic (% > 10 miles)	75%

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Results - Feasibility

- 33 dyads consented, 5 dropped out

- Of the 28 dyads that completed the visits, four patients (14%) were unable to complete the telemedicine MoCA

- All 28 caregivers completed the in-clinic and telemedicine batteries.

- Mean administration time, in-clinic visits: 41.4 minutes (SD=13)

- Mean administration time, telemedicine: 47.5 minutes (SD=12.6)

"It's [computer screen] has just got to be plain and simple and it didn't tend to be. . . And there was a lot of background stuff around the interviewer too. Her office looked fascinating but you were paying attention to that."

"I would prefer to have it [visits] as a telemedicine and not waste my time, energy and resources."

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Results - Reliability

Table 2: Inter-site Reliability, Measures of Dementia Status			
Scale	**In-Clinic Score**	**Telemedicine Score**	**ICC/Kappa**
MoCA (mean, range)	**12.2, 0-23**	**13.1 0-24**	**0.93**
Visuospatial/Exe	**2.1 (0-5)**	**1.9 (0-5)**	**0.86**
Letter clapping	**Categorical**		**0.69**
CDR (Caregiver component, range)	**0.5-3**	**0.5-3**	**0.75**
RMBPC (mean, range) (frequency of behaviors)[a]	**9.5, 2-18**	**9.7 (2-18)**	**0.77**
GDS (mean, range) [a]	**2.3, 0-9**	**2.0, 0-9**	**0.61**

[a] Not administered to first seven participants (n=21)

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Results - Reliability

Table 3: Inter-site Reliability, Caregiver Measures			
Scale	**In-Clinic Score**	**Telemedicine Score**	**ICC/Kappa**
MMCGI (mean, range)	47.3, 22-66	46, (23-61)	0.87
ZBI (mean, range)	6.4, 3-11	6.7, (2-15)	0.79
RMBPC (mean, range) (reaction to of behaviors)[a]	11.1, 1-36	11.1, (1-43)	0.80

[a]Not administered to first seven participants (n=21)

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Results - Reliability

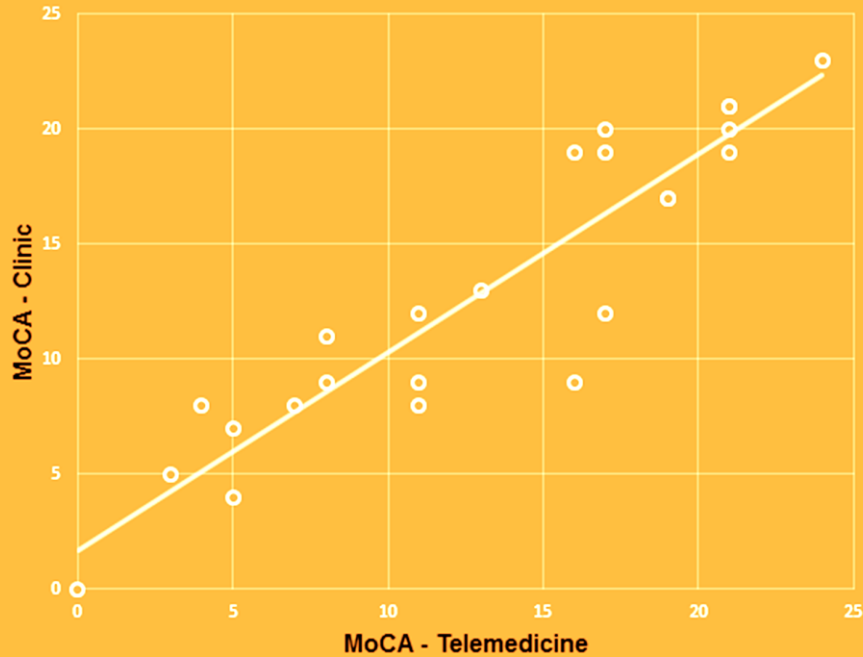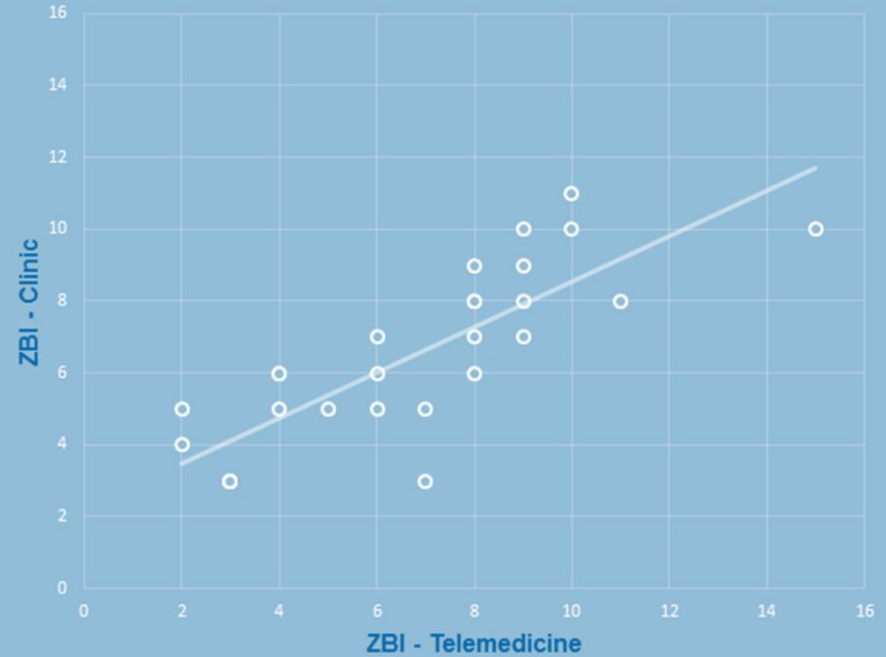FIGURE 1.1 MOCA SCORE: CLINIC VS. TELEMEDICINE

FIGURE 1.2. ZBI SCORE: CLINIC VS. TELEMEDICINE

Future Work

Clinical Practice

- ACT-ON Phase II: Direct-to-home telemedicine clinic follow up visits

- ACT-ON will provide a template for providing telemedicine dementia care across the US, for anyone with a computer and internet access

- Care option fee-for-service visits

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Caregiver Research

- Foundation for researchers to use measures of caregiver burden via telemedicine

- STAR-C-TM ⭐

  - STAR-C is used in assisted living facilities, VA facilities and in communities to train caregivers how to cope with bothersome dementia behaviors

  - Currently testing protocol using telemedicine (STAR-C-TM)

Considerations and Conclusions

- Scores on these measures are similar in both the in-clinic and telemedicine direct-to-home environments, suggesting that they can be used via telemedicine with confidence.
- 40% increase in the numbers of persons with ADRD in the US is expected in the next 10 years
- 58% of adults over 65 use the Internet
- Caregivers foundational to care, but many feel unsupported
- Telemedicine assessments can increase care and research options for older adults living with AD and their caregivers.

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Thank you!

Acknowledgments:

Study participants

Oregon Office of Rural Health