

Project Title

A Comparison of Face-to-face (F2F) Versus Remote Video Conference (VC)-based Cognitive Assessment for Older Adults During the Coronavirus Disease 2019 (COVID-19) Pandemic

Project Lead and Members

Project lead: Ong Poh Ling

Project members: Hernandez Herb Howard Cunanan, Philomena Anthony, Ang Siew Ling, Nur Bazilah Binte Mohd Salim, Yew Pey Ying Suzanne, Noorhazlina Bte Ali, Lim Jun Pei, Lim Wee Shiong, Justin Chew

Organisation(s) Involved

Tan Tock Seng Hospital, Institute of Geriatrics and Active Ageing

Healthcare Family Group Involved in this Project

Medical, Nursing

Applicable Specialty or Discipline

Geriatric Medicine

Project Period

Start date: June 2020

Completed date: June 2021

Aims

Our aim is to examine the reliability and agreement between face-to-face and video conference administrations of the Abbreviated Mental Test (AMT), modified version of the Chinese Mini-Mental State Examination (mCMMSE) and Chinese Frontal Assessment Battery (CFAB) in older adults with known or suspected cognitive impairment.

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Lessons Learnt

It would be beneficial to explore further on optimising the environment as some caregivers' prompting was heard despite instructions given to caregivers beforehand to avoid giving cues. Our result shows good reliability between face-to-face and videoconference administration of cognitive assessments with older adults. However, it cannot be generalise to the whole older adult population as those with hearing or vision impairment, and behavioural issues were excluded.

Conclusion

See poster appended / below

Additional Information

This project attained Silver (Category: COVID-19 Our response to a new challenge (Poster)) at the Singapore Health & Biomedical Congress (SHBC) 2021

Project Category

Technology, Digital Health, Telehealth

Keywords

Telemedicine, Cognitive Assessment, COVID-19

Name and Email of Project Contact Person(s)

Name: Ong Poh Ling

Email: poh_ling_ong@ttsh.com.sg

A comparison of face-to-face (F2F) versus remote videoconference (VC)-based cognitive assessment for older adults during the Coronavirus Disease 2019 (COVID-19) pandemic

PL Ong¹, HHC Hernandez², P Anthony¹, SL Ang¹, MS Nur Bazilah¹, PYS Yew³, N Ali², JP Lim^{2,3}, WS Lim^{2,3}, J Chew^{2,3}

¹Dementia Care, Nursing Specialty, Tan Tock Seng Hospital, Singapore

²Department of Geriatric Medicine, Tan Tock Seng Hospital, Singapore

³Institute of Geriatrics and Active Ageing, Tan Tock Seng Hospital, Singapore

Background

- The COVID-19 pandemic spurred the need for cognitive assessment adapted for telemedicine.
- However, the use of VC-based cognitive screening tools particularly in older adults with cognitive impairment remains to be established.

Our **aim** is to examine the reliability and agreement between F2F and VC administrations of the Abbreviated Mental Test (AMT), modified version of the Chinese Mini-Mental State Examination (CMMSE) and Chinese Frontal Assessment Battery (CFAB) in older adults with known or suspected cognitive impairment.

Results

- 56 subjects completed AMT and CMMSE, of which 30 subjects completed CFAB (Table 1)
- ICC showed good reliability for 3 assessments (Table 2)
- VC-AMT and VC-CMMSE scores were significantly higher compared to F2F (Table 3)
- Bland-Altman plots indicated wide 95% limits of agreement (Figure 1-3).

Table 1. Baseline Characteristics of study subjects

Baseline characteristic	Study subjects
Age in years, Mean (SD)	76 (5.4)
Gender, N (%)	
Female	31 (55%)
Race, N (%)	
Chinese	51 (91%)
Language, N (%)	
English	30 (54%)
Mandarin	26 (46%)
Educational level, N (%)	
No formal education	3 (5%)
Primary	19 (34%)
Secondary	21 (38%)
Tertiary	13 (23%)
Clinical Dementia Rating, N (%)	
Normal	1 (1.8%)
Very mild	34 (60.7%)
Mild	16 (28.6%)
Moderate	5 (8.9%)
Duration between F2F and VC, Mean (SD)	17.7 (3.2)

Summary

- High ICC suggests good overall reliability between F2F and VC assessment
- Wide limits of agreement may be influenced by outliers
- Large differences in VC versus F2F cognitive scores in a small number of individuals

Conclusion

- Use VC in selected patients, at earlier stages of cognitive impairment
- Ensure optimal environment for accurate assessment (no prompting, no visual cues e.g. clock, calendar)
- Further studies: patient and environmental factors influencing agreement

Methods

Patients were recruited consecutively from a Memory Clinic in a tertiary hospital of Singapore.

- Completed F2F cognitive assessment
- Remote VC assessment via Whatsapp video call
- With the same assessor
- Between 2 to 3 weeks from the F2F assessment

Statistics analysis:

- Reliability using intraclass correlation coefficients (ICC, two-way random effects model)
- Mean difference between VC and F2F-based assessments using paired sample t-test
- Agreement using Bland-Altman plots

Table 2. ICC for cognitive assessments

Cognitive assessments	ICC (95% CI)
AMT	0.80 (0.68 – 0.88)
CMMSE	0.80 (0.63 – 0.88)
CFAB	0.82 (0.66 – 0.91)

Table 3. Mean difference of cognitive assessment

Mean difference of cognitive assessment (VC minus F2F)		
AMT	0.34 (1.13)	p value 0.029
CMMSE	1.29 (2.86)	p value 0.001
CFAB	0.40 (1.73)	p value 0.216

Figure 1. Bland-Altman plot of AMT

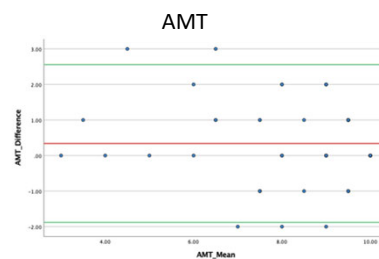


Figure 2. Bland-Altman plot of CMMSE

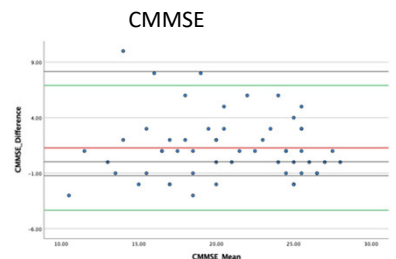
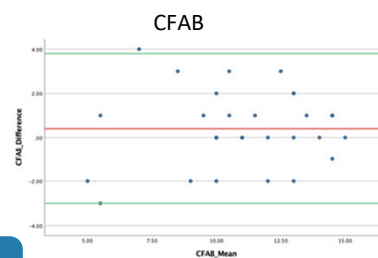


Figure 3. Bland-Altman plot of CFAB



• Wide limits of agreement for all 3 cognitive tests

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