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Developing a Telehealth Protocol for Cognitive Testing

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DEVELOPING A TELEHEALTH PROTOCOL FOR COGNITIVE TESTING

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BACKGROUND

When the Coronavirus (COVID) pandemic reached the United States in March of 2020, many healthcare services were moved to remote delivery for continuation of care while complying with social distancing restrictions. A 3,060% increase was noted in the number of virtual visits for health services in October 2020 when compared to data from October 2019[1]. To accommodate the follow-up visits for patients with cognitive impairment, the Mini Mental Status Examination (MMSE) testing was moved from traditional face-to-face assessment to testing via telehealth in one specialty clinic in Vermont.

RATIONALE

Given the available research, it is reasonable to consider telehealth cognitive testing (MMSE) as a reliable alternative to traditional face-to-face testing[2,3,4]. This alternative testing has shown to be effective in both diagnosing and managing patients with dementia, specifically those in the rural setting[2]. It is important to note that while this testing is appropriate for many patients, telehealth cognitive testing does not accurately assess impairment in those individuals with more deficits (specifically related to language, hearing, and eyesight). Given this information, it was important to identify specific individuals who should not be included in telehealth MMSE testing, but rather require face-to-face MMSE testing to accurately measure rate of cognitive decline. This information was used to inform the development of a telehealth protocol for for administration of the MMSE 2.

METHODS

- Retrospective chart review of patients (N=65) seen via telehealth between April 2020 and September 2021

- Patients fitting the inclusion criteria (n=30) of two face-to-face MMSE assessments and two MMSE assessments performed via telehealth were analyzed

- Linear regression was used to calculate individual patient MMSE slope per unit time (year) for all MMSE scores in face-to-face and telehealth assessments

- Paired t test was used to compare individual MMSE slope between face-to-face and telehealth assessment

- Odds ratio was used to determine given characteristic associated with not following predicted decreasing trend in MMSE score

- Receiver operating characteristic (ROC) curve used to determine accuracy of model for predicting outcome

PROTOCOL DEVELOPMENT

The telehealth protocol for administering the MMSE 2 (Figure 1) was developed following quality review and analysis of previous MMSE scores obtained using the existing telehealth cognitive assessment. Revisions to the original protocol for administering the MMSE were made (Figures 2 and 3) and exclusion for individuals with severe visual impairment was implemented to develop a new protocol for administering the MMSE 2 via telehealth.
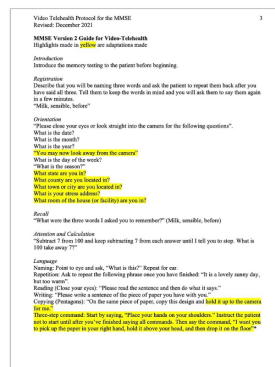
(Figure 1) Copy of MMSE 2 protocol for telehealth administration with virtual adaptations highlighted

(Figure 2) To prevent reading date from computer or calendar, the patient is asked to close their eyes for naming the date, month, and year.
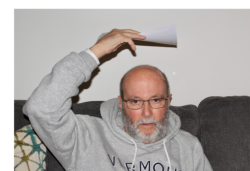
(Figure 3) The three step command is modified so that all parts of the command can be seen by the examiner. The assessor states, "pick up the paper with your right hand, hold it over your head, and drop it to the floor".

RESULTS

- The difference in individual rate of decline from in-person to telehealth MMSE assessment was not statistically significant (p=0.07)

- Odds ratio for Mild Cognitive Impairment (OR = 14.75) and vision loss (OR = 13.06) showed strong association of not following predicted decreasing trend in MMSE score

- Assessments done during the pandemic revealed a non-significant increased rate of cognitive decline in this patient population

CONCLUSIONS

- This project showed consistency between telehealth and face-to-face MMSE assessment

- Telehealth cognitive assessment using the MMSE appropriately follows the predicted rate of decline when compared to face-to-face assessment

- Individuals showed a greater rate of cognitive decline during the pandemic

- Characteristics of individuals for whom measurement of cognitive capacity via telehealth did not match the predicted decreasing trend, informed the development of a protocol for conducting the MMSE Version 2 via telehealth. Those patients with severe visual impairment or Down Syndrome should not be included in telehealth cognitive assessment.

- It is appropriate to continue with implementation of the MMSE 2 protocol for telehealth

IMPLICATIONS

- Creation of a telehealth protocol for administration of MMSE 2 (Figure 3) is appropriate and should undergo future quality review

- Individuals with severe vision impairment should be excluded from future telehealth MMSE assessment

- Notable modifications made to the telehealth protocol included asking the patient to close their eyes for a portion of the orientation questioning (Figure 2) and to place a piece of paper above their head before dropping it to the floor in the three-step command (Figure 3)

- Social activity, which was lacking during the COVID pandemic, is imperative to slow cognitive decline

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