

AB037. Preliminary findings from the COMPASS-ND study: reading acuity and contrast sensitivity at different levels of cognitive impairment

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Background: Declines in visual function have been reported in individuals with Alzheimer's disease (AD) and other neurological disorders, and have been associated with cognitive decline seen in those disorders. Here we report preliminary visual findings from the COMPASS-ND study of the Canadian Consortium on Neurodegeneration in Aging (CCNA) in a diverse group of individuals at various stages of cognitive impairment, diagnosed via clinical consensus and stringent criteria.

Methods: Participants were 109 older adults (age range, 60–89, $M=72.94$, $SD=7.01$) that are part of the CCNA cohort at different stages of cognitive decline (subjective cognitive impairment, SCI, $n=24$; mild cognitive impairment, MCI, $n=64$; mild AD, $n=21$). Reading acuity (MNRead) and contrast sensitivity (Mars test) were tested

with habitual correction. We additionally report scores on the Montreal Cognitive Assessment (MoCA) scale for the three groups.

Results: Out of all the participants, 25% had reduced reading acuity [>0.5 logMAR (20/63)] and 23% presented with moderate to severe loss of contrast sensitivity [<1.48 log CS (3.3% contrast)]. Only 6.5% of participants had combined reduced reading acuity and moderate to severe contrast sensitivity. Notably, only 8.3% of individuals with SCI presented with reduced reading acuity, compared to 32.3% and 23.8% of those with MCI and AD, respectively ($\chi^2=5.28$, $P=0.071$). Lower contrast sensitivity was observed in AD participants relative to those with MCI and SCI ($P=0.04$, $\omega^2=0.04$; Figure 1), after adjusting for age, sex and education. No differences in reading acuity were observed ($P=0.46$, $\omega^2=0.004$).

Conclusions: Using the Mars test, a measure of the processing of low spatial frequencies, we were able to replicate previous reports of declines in contrast sensitivity in individuals with AD compared to those with MCI and SCI. We also observed higher rates of reduced reading acuity in the AD and MCI groups relative to those reported in the general population. These results set the groundwork for examining the relationship between vision status and cognitive function, brain integrity, quality of life, in these groups.

Keywords: Cognitive impairment; cognition; visual acuity; contrast sensitivity

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