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Multidimensional Sleep Health is Associated with Cognitive Function in Older Adults

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Multidimensional sleep health (MSH) was significantly related to cognitive function in older adults. These results underscore the importance of examining different components of sleep to better understand how they might relate to cognition and risk for Alzheimer’s Disease.

INTRODUCTION	METHODS	RESULTS	RESULTS	CONCLUSIONS																																																																								
Poor sleep is known to be associated with cognitive impairments in aging but less is known about how specific components of sleep (duration, efficiency, and regularity) relate to cognition and risk for Alzheimer’s Disease. This study’s objective was to determine whether multidimensional sleep health relates to cognition in a sample of community-dwelling older adults without dementia.	<i>Participants</i> - Data were obtained from the University of Pittsburgh Alzheimer’s Disease Research Center. - Participants (N = 138) wore a Fitbit Inspire 3 for one consecutive week and completed a multidomain neuropsychological test battery. <i>Measures</i> - Average sleep duration, efficiency, sleep midpoint, and standard deviation of the midpoint were calculated. - A MSH score was derived. The composite score is the sum, resulting in a range from 0 to 4 (higher score = better sleep). <i>Analysis</i> - Linear regressions analyzed the associations between sleep and cognition adjusting for age and education.	The average multidimensional sleep score was 2.7 ± 1.0. Better multidimensional sleep health was associated with better cognition in the following domains: <i>Attention-</i> Trails A (β = -0.18, p = 0.046) <i>Visuospatial abilities-</i> Block design (β = 0.29, p < 0.001) and visuospatial composite score (β = 0.23, p = 0.01) <i>Executive function-</i> Trails B (β = -0.20, p = 0.02) and Digit Symbol (β = 0.17, p = 0.04)	<table><tr><th></th><th colspan="2">MSH, Adjusted for Age and Education</th></tr><tr><th>Neuropsychological Outcomes</th><th>β</th><th>p-value</th></tr><tr><td><u>Memory Composite</u></td><td>0.005</td><td>0.95</td></tr><tr><td>CERAD List Learning</td><td>-0.004</td><td>0.96</td></tr><tr><td>CERAD Delay</td><td>0.014</td><td>0.87</td></tr><tr><td>Benson Delay</td><td>0.130</td><td>0.14</td></tr><tr><td>Story Immediate</td><td>0.000</td><td>1.00</td></tr><tr><td>Story Delay</td><td>0.086</td><td>0.33</td></tr><tr><td><u>Attention Composite</u></td><td>0.084</td><td>0.34</td></tr><tr><td>Digits Forward</td><td>-0.003</td><td>0.98</td></tr><tr><td>Trails A</td><td>-0.175</td><td>0.046*</td></tr><tr><td><u>Visuospatial Composite</u></td><td>0.225</td><td>0.01*</td></tr><tr><td>Benson Copy</td><td>0.086</td><td>0.34</td></tr><tr><td>Block Design</td><td>0.294</td><td><0.001*</td></tr><tr><td><u>Language Composite</u></td><td>0.101</td><td>0.26</td></tr><tr><td>Animal Naming</td><td>0.158</td><td>0.06</td></tr><tr><td>Vegetable Naming</td><td>0.077</td><td>0.38</td></tr><tr><td>Letter Fluency</td><td>0.053</td><td>0.55</td></tr><tr><td>Naming</td><td>0.150</td><td>0.07</td></tr><tr><td><u>Executive Function Composite</u></td><td>0.008</td><td>0.93</td></tr><tr><td>Digits Backward</td><td>0.060</td><td>0.49</td></tr><tr><td>Trails B</td><td>-0.199</td><td>0.02*</td></tr><tr><td>Digit Symbol</td><td>0.174</td><td>0.04*</td></tr><tr><td>Stroop</td><td>0.100</td><td>0.23</td></tr></table>		MSH, Adjusted for Age and Education		Neuropsychological Outcomes	β	p-value	<u>Memory Composite</u>	0.005	0.95	CERAD List Learning	-0.004	0.96	CERAD Delay	0.014	0.87	Benson Delay	0.130	0.14	Story Immediate	0.000	1.00	Story Delay	0.086	0.33	<u>Attention Composite</u>	0.084	0.34	Digits Forward	-0.003	0.98	Trails A	-0.175	0.046*	<u>Visuospatial Composite</u>	0.225	0.01*	Benson Copy	0.086	0.34	Block Design	0.294	<0.001*	<u>Language Composite</u>	0.101	0.26	Animal Naming	0.158	0.06	Vegetable Naming	0.077	0.38	Letter Fluency	0.053	0.55	Naming	0.150	0.07	<u>Executive Function Composite</u>	0.008	0.93	Digits Backward	0.060	0.49	Trails B	-0.199	0.02*	Digit Symbol	0.174	0.04*	Stroop	0.100	0.23	Multidimensional sleep health was significantly related to attention, visuospatial abilities, and executive function. Given the impacted domains, this association may be driven by cerebrovascular disease or glymphatic clearance. Future research should investigate different components of sleep for independent vs. interactive effects to better understand how they might relate to cognition and risk for Alzheimer’s Disease.  ALZHEIMER'S ASSOCIATION  AAIC 26
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