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Mentalplus digital game usefulness in cognitive dysfunction evaluation compared to neuropsychological testing batteries in a hypertensive treated population

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Introduction: Cognitive dysfunction has been a time-consuming evaluation when full neuropsychology battery is performed, what is the most used method up to nowadays. The time is a limitation besides the necessity of a specific professional to apply it. Both reasons limit the clinical use and even research widespread of cognitive dysfunction evaluation in a variety of diseases that we suppose that might be linked to cognitive dysfunction in its lifetime evolution.

Purpose: The purpose of this study is to evaluate the correlation between a digital game named Mentalplus and a usual neuropsychology battery to cognitive dysfunction evaluation in a hypertensive medically treated and followed group.

Methods: A 163 hypertensive and followed by cardiologists group was evaluated for cognitive dysfunction by two means: A standard neuropsychology battery that spent around two hours and was performed by neuropsychologists. Then, Mentalplus digital game was applied, for 25 minutes. The Mentalplus digital game was developed to evaluate some cognitive functions like selective and alternate attention, short and long term memory, inhibitory control, language, visuoconstruction, executive function. Spearman test was used to calculate the correlations between specific validated tests with each Mentalplus phase. Staticists used IBM-SPSS. The significance level was 5%.

Results: 41.7% male, mean age of 51.1 ± 16.2 SD years, mean arterial pressure of 93.1 ± 8.7 SD mmHg in use of up to 3 blood pressure medications. Concerning to cognitive evaluation by both methods, the main findings were strong correlations related to functions below: short term memory, comparing VLT-A-1 and Mentalplus phase developed to evaluate that function: ($r=0.563$, $p<0.005$); Long term memory, comparing Rey-figure-long term memory and Mentalplus ($r=0.887$, $p<0.005$); Attention and Visuoconstruction, comparing Rey-figure copy and Mentalplus: ($r=0.929$, $p<0.005$) and Stroop-C and Mentalplus: ($r=0.941$, $p<0.005$); Selective attention, comparing TMT-A and Mentalplus phase: ($r=0.889$, $p<0.005$); Alternate attention, comparing STOOP-B and TMT-B and Mentalplus phase is similar ($r=0>0.98$, $p<0.005$); Inhibitory control, comparing Rey-Figure immediate memory and Mentalplus phase ($r=0.969$, $p<0.005$).

Conclusion: Mentalplus phases present a strong correlation with specific validated neuropsychologic tests usually performed in a normal evaluation battery. It opens a useful way to evaluate the cognitive function in a hypertensive treated group during the lifelong time, to follow cognitive dysfunction during treatment with less time consuming and more convenience for the patients.



MentalPlus Short Term Memory - Part I