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Neuropsychiatric Outcomes of Intensive Music Therapy in Stroke Rehabilitation A Premilitary Investigation

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Abstract : Stroke is the leading cause of disability in adults in Canada and directly related to depression, anxiety, and sleep disorders; with an estimated annual cost of $50 billion in health care. Strokes not only impact the individual but society as a whole. Current stroke rehabilitation does not include Music Therapy, although it has success in clinical research in the use of stroke rehabilitation. This study examines the use of neurologic music therapy (NMT) in conjunction with stroke rehabilitation to improve sleep quality, reduce stress levels, and promote neurogenesis. Existing research on NMT in stroke is limited, which means any conclusive information gathered during this study will be significant. My novel hypotheses are a.) stroke patients will become less depressed and less anxious with improved sleep following NMT. b.) NMT will reduce stress levels and promote neurogenesis in stroke patients admitted for rehabilitation. c.) Beneficial effects of NMT will be sustained at least short-term following treatment. Participants were recruited from the in-patient stroke rehabilitation program at Providence Care Hospital in Kingston, Ontario, Canada. All participants-maintained stroke rehabilitation treatment as normal. The study was spilt into two groups, the first being Passive Music Listening (PML) and the second Neurologic Music Therapy (NMT). Each group underwent 10 sessions of intensive music therapy lasting 45 minutes for 10 consecutive days, excluding weekends. Psychiatric Assessments, Epworth Sleepiness Scale (ESS), Hospital Anxiety & Depression Rating Scale (HADS), and Music Engagement Questionnaire (MusEQ), were completed, followed by a general feedback interview. Physiological markers of stress were measured through blood pressure measurements and heart rate variability. Serum collections reviewed neurogenesis via Brain-derived neurotrophic factor (BDNF) and stress markers of cortisol levels. As this study is still on-going, a formal analysis of data has not been fully completed, although trends are following our hypotheses. A decrease in sleepiness and anxiety is seen upon the first cohort of PML. Feedback interviews have indicated most participants subjectively felt more relaxed and thought PML was useful in their recovery. If the hypothesis is supported, larger external funding which will allow for greater investigation of the use of NMT in stroke rehabilitation. As we know, NMT is not covered under Ontario Health Insurance Plan (OHIP), so there is limited scientific data surrounding its uses as a clinical tool. This research will provide detailed findings of the treatment of neuropsychiatric aspects of stroke. Concurrently, a passive music listening study is being designed to further review the use of PML in rehabilitation as well.

Keywords : music therapy, psychotherapy, neurologic music therapy, passive music listening, neuropsychiatry, counselling, behavioural, stroke, stroke rehabilitation, rehabilitation, neuroscience
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