

# Measuring the Cognitive Impact of Laughter on Elderly People with Mild Cognitive Impairment in Japan

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## ABSTRACT

**Objective:** To evaluate the effect of laughter on cognition in elderly with mild cognitive impairment (MCI) through an appropriately designed intervention. **Methods:** The intervention involved watching a Japanese comedy routine (Manzai) for approximately twenty minutes, once a week for ten weeks. Participants were asked to paint, as a simple exercise, in addition to watching the show. Twenty-seven patients with MCI from the convalescent ward of a general hospital in the Kansai region of Japan. We measured cognition by evaluating five cognitive function domains before (baseline) and after the intervention. We used the Wilcoxon signed rank test, a distribution-free method, to compare baseline and post-intervention data. **Ethical Consideration:** Participants were given a document explaining the study. Only those who officially agreed to participate were enrolled. **Results:** Mean age of patients was  $85.0 \pm 2.8$  years; average education was  $8.6 \pm 2.8$  years. Three cognitive function domains had significantly different average scores after the intervention: 1) Exercise:  $44.4 \pm 8.9$  points at baseline,  $36.3 \pm 10.2$  post-intervention ( $p = 0.014$ ); 2) Word memory:  $40.6 \pm 7.2$  at baseline,  $43.1 \pm 8.8$  post-intervention ( $p = 0.002$ ); and 3) Animal name recollection:  $35.3 \pm 8.4$  at baseline,  $38.1 \pm 9.0$  post-intervention ( $p = 0.003$ ). **Discussion:** The intervention led to significantly higher cognitive scores in exercise, word memory, and animal name recollection domains, suggesting that interventions focused on laughter and simple exercise may improve cognition in elderly patients with MCI.

**Keywords:** Cognitive Impact; Laughter; Elderly People; Mild Cognitive Impairment

## 1. Introduction

A lot of data from previous study shows effects of cognitive function from diversional therapy in the world [1-4]. S. L. Wheeler, and K. Houston examined the power of milieu therapy in the general medical setting in USA [1]. B. P. Leifer says early intervention is critical because a delay in treatment is associated with nonreversible symptom progression. Realistic treatment expectations include reduction in symptom severity and slowed decline in cognition, function, and behavior [3]. G. Sanchez-Benavides, *et al.* illuminated to test the discriminant and concurrent validity of the Spanish version of the Bayer Activities of Daily Living scale (B-ADL) in mild cognitive impairment (MCI) and mild Alzheimer disease (AD) in Spain [4]. At the same time, previous study shows effects of cognitive function from diversional therapy in Japan [5-8]. These articles imply that it is important to consider about cultural and individual contents for elderly people in each countries. Therefore, we would think Japanese cultural diversional therapy for elderly people with dementia in Japan. Moreover, "MANZAI" performance is

traditional Japanese comic chat form comedian in Japan. "MANZAI" is one of a traditional style of stand-up comedy in Japanese cultural entertainments, which usually involves two performers (manzai-shi). "MANZAI" has often been associated with the Osaka region, and manzai comedians often speak in the Kansai dialect during their acts. Almost Kansai people like "MANZAI" performance. A great deal of effort has been made on clarify effect of "MANZAI". What seems to be lacking, however, is to clarify effect of laughing of "MANZAI" for cognitive function of elderly people.

## 2. Objectives

To evaluate the effect of laughter on cognition in elderly with mild cognitive impairment (MCI) through an appropriately designed intervention in Japan.

## 3. Methods

The intervention involved watching a Japanese comedy routine (Manzai) for approximately twenty minutes, once a week for ten weeks. Participants were asked to paint, as

a simple exercise, in addition to watching the show. Twenty-seven patients with MCI from the convalescent ward of a general hospital in the Kansai region of Japan. We measured cognition by evaluating five cognitive function domains before (baseline) and after the intervention [9]. We used the Wilcoxon signed rank test, a distribution-free method, to compare baseline and post-intervention data. Ethical consideration: Participants were given a document explaining the study. Only those who officially agreed to participate were enrolled.

#### 4. Results

Mean age of patients was  $85.0 \pm 2.8$  years; average education was  $8.6 \pm 2.8$  years (**Table 1**). Three cognitive function domains had significantly different average scores after the intervention: 1) Exercise:  $44.4 \pm 8.9$  points at baseline,  $36.3 \pm 10.2$  post-intervention ( $p = 0.014$ ); 2) Word memory:  $40.6 \pm 7.2$  at baseline,  $43.1 \pm 8.8$  post-intervention ( $p = 0.002$ ); and 3) Animal name recollection:  $35.3 \pm 8.4$  at baseline,  $38.1 \pm 9.0$  post-intervention ( $p = 0.003$ ).

#### 5. Discussion

Mean age of patients was  $85.0 \pm 2.8$  years; average education was  $8.6 \pm 2.8$  years.

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The intervention led to significantly higher cognitive scores in exercise, word memory, and animal name recollection domains, suggesting that interventions focused

on laughter and simple exercise may improve cognition in elderly patients with MCI.

#### 6. Acknowledgements

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**Table 1. Mean age and average education of patients.**

	Years
Mean age of patients	$85.0 \pm 2.8$
Average education	$8.6 \pm 2.8$