

Personalized Audio Assessment and Temporal Patterns of Dementia-Related Behavioral Disturbances

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Introduction

Dementia is a complex clinical syndrome characterized by a progressive decline in cognitive and functional abilities. Behavioral disturbances (BDs) are common and often distressing symptoms associated with dementia, which can significantly impact the quality of life for both patients and caregivers. Traditional methods of assessing BDs, such as structured clinical interviews and caregiver reports, are often subjective and may not capture the full extent or temporal patterns of these behaviors. Personalized audio assessment (AA) offers a novel approach to monitoring and assessing BDs in real-time, providing objective and continuous data. This study aims to explore the temporal patterns of dementia-related BDs and how they can be effectively assessed using personalized audio assessment.

Case Report

A 78-year-old male patient with a diagnosis of moderate-to-severe Alzheimer's disease (AD) presented with significant behavioral disturbances. The patient's clinical history includes a long-standing diagnosis of AD, with a Mini-Mental State Examination (MMSE) score of 18/30. He has a history of recurrent falls and is currently on a regimen of cholinesterase inhibitors and antipsychotics. His behavioral disturbances include severe agitation, aggression, and wandering. The patient's caregiver reported that these behaviors were particularly severe in the late afternoon and evening hours. This case report illustrates the use of personalized audio assessment to monitor and manage these behaviors.

The patient's audio assessment revealed a clear temporal pattern in his behavioral disturbances. The most frequent and severe behaviors were observed during the late afternoon and evening hours, with a peak in activity between 5:00 PM and 9:00 PM. This pattern was consistent over several weeks of monitoring. The audio assessment also identified specific triggers for these behaviors, such as changes in lighting and noise levels. These findings were used to tailor the patient's environment and care plan to minimize these triggers and reduce the frequency and severity of his behavioral disturbances. The personalized audio assessment provided valuable insights into the patient's behavior, allowing for more targeted and effective interventions. This case highlights the potential of personalized audio assessment as a tool for monitoring and managing dementia-related behavioral disturbances.

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