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Letter to the Editor

Many Influencing Factors Modify the Effect of Music on the Frequency, Intensity, and Duration of Delirium in Intensive Care Patients

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We read with interest the article by Hao *et al.* on the effect of music on the prevention and reduction of delirium in intensive care unit (ICU) patients. The meta-analysis included 14 studies ^[1]. The interventions used were categorized as follows: simple music (SM), traditional Chinese music (TCM) with the five elements, family vocal stimulation combined with music (FS), and combined music (CM) with another non-pharmacological component ^[1]. Compared to standard care in the intensive care unit, the incidence of delirium was reduced with all music-based interventions. CM and TCM shortened the duration of delirium, with CM showing the highest probability of benefit ^[1]. The study is interesting, but some points require further discussion.

First, the incidence of delirium in the ICU does not depend solely on background music, but on numerous other factors ^[1]. In general, delirium is triggered by infections, sepsis, cerebral hypoxia, fluctuations in serum electrolytes and blood glucose levels, renal insufficiency, liver dysfunction, hypoperfusion, and shock ^[1]. Administered medications can also significantly influence the incidence of delirium. Common triggers include benzodiazepines, opioids, anticholinergics, glucocorticoids, and withdrawal from alcohol, drugs, nicotine, or sedatives taken at home. Delirium can also be induced by physical stress associated with mechanical ventilation, sleep deprivation due to continuous monitoring, bright lights or alarms, immobility due to bed rest, and misinterpretation of stimuli due to visual, olfactory, gustatory, or auditory impairments. Since the triggers in the evaluated studies were presumably very different and the effect of the music was strongly dependent on the respective delirium trigger, the conclusions drawn are questionable.

Secondly, the effect of music can also depend on the type of music, the duration of exposure, the time of day, and the individual habits of the patient. A patient who does not normally listen to music but prefers watching television, reading newspaper, surfing the internet, or communicating with electronic devices might be more likely to be disturbed by this additional stimulus. Conversely, a confused patient may benefit from familiar stimuli that have a positive effect on him. Therefore, the effect of music depends heavily on the music selection used in the study, the personality type, and the individual preferences of the person being studied.

The third point is that the study designs and interventions used in the 14 included studies differed ^[1]. Although all studies were randomized controlled trials, the type of music, duration of application, and combination with complementary therapies varied considerably. This makes it difficult to assess whether the music alone or the complementary treatment was the primary driver of the benefit.

The fourth point is that the included patients were not homogenized with respect to their pharmacological treatment for delirium. Different anti-delirium therapies can have different therapeutic effects.

Overall, the results should be interpreted with caution, and general conclusions are questionable because the triggers of delirium varied considerably among the included patients, and the effect of the music was likely individual. The effect of music should be investigated in prospective multicenter studies in which the included patients are homogenized with respect to the numerous factors that influence the development, intensity, and duration of delirium, as well as the effect of any therapeutic intervention.

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