

# Clinical efficacy of sedative music for sleep disturbance in elderly people

## Abstract

Sleep disturbance has been one of the crucial psychosomatic problems in elderly people. In the light of Complementary and Alternative Medicine (CAM), music therapy would be beneficial. Pittsburgh sleep quality index (PSQI) has been used for the evaluation. Adequate application of music therapy will bring positive effects for depressive states and reduction of risk falls. Compared to rhythmic-centered music with some percussion or drum instrumental sounds, sedative music may bring the improvement of sleep quality by modulating the activity of sympathetic nervous system from psychophysiological and neuroendocrinological points of view. Further research development for music therapy will be expected.

**Keywords:** sleep disturbance, complementary and alternative medicine (CAM), music therapy pittsburgh sleep quality index (PSQI), sedative music

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**Abbreviations:** CAM, complementary and alternative medicine; IM, integrative medicine; PSQI, pittsburgh sleep quality index; SWS, slow wave sleep; MPSQI, modified pittsburgh sleep quality index

## Editorial

Complementary and Alternative Medicine (CAM) and Integrative Medicine (IM) have been applied to lots of patients with various problems for long. The CAM and IM include pharmacological and non-pharmacological treatments. In the latter, several therapeutic kinds have well-known, such as music therapy, aromatherapy and so on.<sup>1</sup> On the other hand, many people have shown several health and medical problems due to stressful daily lives. Sleep disturbance has been one of the crucial psychosomatic problems in recent years. Various confounding factors may play a role in this situation.<sup>2</sup> For patients with moderate to severe degree of insomnia, several matters would be involved such as breathing, sleep-wake rhythm disorders, restless legs syndrome and other psychological disorders. In contrast, almost healthy people also sometimes may have sleep problems. In such case, they can take a sleeping pill or apply bedside music from music therapy point of view.<sup>3</sup>

Adequate sleep is indispensable for human. If it is not fulfilled, various impacts are caused for biological and psychological aspects. In the light of circadian rhythm sensitivity, older person needs more time for entering sleep and has shorter sleep period. Then, they tend to feel difficulty for achieving good sleep quality.<sup>4</sup> Concerning the evaluation for sleep quality such as latency, disturbance, duration and daytime situation, Pittsburgh sleep quality index (PSQI) has been widely known for standard method.<sup>5</sup>

For sleep condition, older adults tend to have low sleep efficiency, shorter total sleep time, wake during sleep, and longer sleep latency.<sup>6</sup> In comparison with younger people, elderly usually show higher ratio of lighter sleep and less period of deeper sleep that means slow wave sleep (SWS) and REM. Lots of elderly feel negative perspective for taking sleep medication, because they want to fall asleep in natural way.<sup>7</sup> As non-pharmacologic treatment, adequate sleep hygiene, daytime exercise, light therapy, cognitive behavioral therapy for insomnia (CBT-I), and music therapy are known.<sup>8</sup>

A systematic review was conducted through ScienceDirect and Scopus, in which keywords were applied as elderly, sleep quality and therapy.<sup>9</sup> The results showed that 16 selected articles were from 8 countries and most common CAM therapy was music therapy. In the light of CAM strategies, it is required to provide such information regularly to maintain sleep quality for aged people. Concerning a study of music and sleep, the protocol included 46 older cases dwelling in nursing home and listening to music 45min until 2045h for 3weeks.<sup>10</sup> Sleep quality was evaluated using Modified Pittsburgh sleep quality index (MPSQI). The results showed significant effects of average MPSQI, suggesting clinical improvement of sleep quality in older generation.

Music therapy has showed clinical efficacy for improving anxiety and pain in people with severe condition. A study was found for integrating music therapy into patient care with diversity and multiethnicity.<sup>11</sup> The protocol included the subjects (n=150) for giving music therapy session, and the method for examining pulse, respiration, the degree of pain and anxiety. The result showed that the applicants felt decreased anxiety after session by controlling the factors of age, gender, session period and regression modeling.

Clinical efficacy of music therapy was investigated for sleep disturbance and QOL in patients with depression. The cases included depressive patients (n=112), and they were divided into music intervention group and control waitlist group.<sup>12</sup> The music group was given bedtime music for 1 month. Method included the comparative questionnaires of PSQI as well as WHO -5 questionnaire. The results showed that improvements of PSQI scores was decreased after 4 weeks after the discontinuation of music intervention at 8 weeks. Consequently, music intervention would be safe and effective sleep support for depressive cases with insomnia.

As to the relationship between sleep disturbance and fall risk for elderly people, large retrospective cross-sectional study was conducted.<sup>13</sup> The survey included 201700 cases, and sleep quality, PSQI, mental health and sociodemographic variables were analyzed. The results showed that i) faller revealed poorer sleep quality with >5 pts of PSQI, ii) elevated risk falls associated with poor sleep quality (OR 1.30), iii) seven PSQI components have elevated risk falls with sleep disturbance (OR 1.30), and more daytime dysfunction (OR 1.21). Consequently, elderly people with less sleep quality would increase

fall risk in elderly populations. Among elderly people, engagement in music has been usual activity, associated with probably promoting good sleep.<sup>14</sup> Then, taking advantage of music may contribute to decrease sleep disturbances. For example, sedative and/or relaxing music can increase sleep quality by reducing stress, promoting deep sleep and increasing relaxation.<sup>15</sup> Then, before going to sleep in the bed, one can have enjoyable experience accompanied with good music and mood.<sup>16</sup>

From psychophysiological and neuroendocrinological points of view, sedative music can improve sleep quality by modulating the activity of sympathetic nervous system adequately. It includes the regulating the hormonal regulation of ACTH-cortisol axis and the lowering various responses for anxiety and psychological stress.<sup>17,18</sup> Listening to sedative music may be an effective strategy to improve sleep quality in older adults.<sup>19</sup> When listening to rhythmic-centered music for music therapy research, elderly people could not improve sleep quality or depression level in comparison with control group. It has predominantly included some percussion or drum instrumental sounds.<sup>20</sup> Authors et al. have continued practice and research of music therapy.<sup>21</sup> Among the activities, we always pay attention to sedative or rhythmic music for certain clients.<sup>22</sup>

Concerning sleep quality in elderly people, systematic review and meta-analysis were conducted for clinically efficacy of listening music.<sup>23</sup> The protocol included 5 databases of Cochrane library, Embase, Scopus, Ovid Medline and Taiwan Literature system. As a result, 5 RCT were analyzed. Elderly people with the experience of listening music showed significant beneficial situation than those who did not listen ( $p=0.003$ ). From subgroup analysis, sedative music contributed better improvement of sleep quality than rhythm-centered music ( $p=0.0002$ ). Further, listening music more than 1 month brought better sleep quality ( $p=0.02$ ).

## Conclusion

Clinical efficacy of music for sleep disturbance was introduced. From social, medical and economical points of view, this application would be beneficial. Further research development will be expected.

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## Conflicts of interest

Author declares there are no conflicts of interest towards this article.

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