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# Therapeutic Music in the Aeromedical Transport of Critically Ill Patients: Intervention to Reduce Flight Stressors

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**Abstract-** Therapeutic music is one of the strategies widely adopted as a complementary therapy, proven by its relevance as a strategy to reduce pain, decrease the level of anxiety and increase adherence to treatment, especially in critically ill hospitalized patients. The application of complementary practices in critically ill patients has been introduced in many Intensive Care Units (ICU) as their benefits are evidenced both in biopsychosocial well-being and in the spiritual sphere. This work is a survey of articles whose objective was to characterize the scientific production on the application of Music Therapy. The main search source was in the databases indexed in the Biblioteca Virtual de Saúde (BVS) and *Scientific Electronic Library Online* (SciELO). In order to reduce the damage caused by painful procedures and the permanence in an exhausting environment such as the ICU, full of alarms, lights and other noises, many professionals seek a way to humanize through various integrative and non-pharmacological therapies. Among these, we find in the literature a varied range such as: breastfeeding, music therapy, laughter therapy (with clowns), use of sucrose, among others. And through the analysis of the highly technological environment such as planes and helicopters that provide safety to airborne critical patients, we realized that this alternative can humanize this environment and bring possible results such as reduction of flight stressors. This work is just the basis for the next phase of the research that will be extended with practical application on Helisul flights.

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## I. INTRODUCTION

The intensive care environment is characterized by several stressors that can significantly alter the patient's homeostasis, hindering his recovery. Recognizing these factors and intervening to reduce them contributes to the humanization of care, in view of this, it cooperates so that the permanence of this patient in this environment is welcoming (Lana, Mittmann, Moszkowicz & Pereira, 2018).

De Oliveira Ferreira et al (2021) conducted an integrative review and concluded that to develop the culture of humanization it is necessary to reflect on the individual, far beyond the health-disease process, it is also necessary to understand their psychic, social and

spiritual needs. Complementary therapies favor the expression of emotions and contribute to the consolidation of the bond between the people involved. It is a low-cost care that provides an increase in the quality of care.

A randomized clinical trial with thirty-one children hospitalized in a pediatric intensive care unit demonstrated that the application of music as an intervention is effective in reducing pain, stress, respiratory rate, temperature, heart rate and blood pressure, corroborating other studies, also randomized trials, on the benefits of therapeutic music (Chadi, Silva & Corrêa, 2021).

Music therapy is a professional activity, which requires training and specialized musical knowledge to apply it as a therapeutic resource (Bergold, 2005), (Bergold & Alvim, 2009) and (Zanini et al, 2009).

According to Silva et al (2015), therapeutic music is the use of music by health professionals as a tool in care with the objective of promoting tranquility, encouragement and patient safety.

The characteristics of the intensive care unit are found in the planes and helicopters used to transport critically ill patients, with the addition of the particularities of the hypobaric environment such as: variation in pressure, temperature, vibration, noise, luminosity, acceleration, in addition to fear and anxiety, inherent to the patient about their expectations, experiences and knowledge about air transport, which can generate discomfort during care (Sueoka, Freixo & Taverna, 2021).

For the application of therapeutic music, it is necessary to make a consultation about the patient's preferences and interests, considering the expected results after the intervention of complementary therapy, therefore, conducting an interview and defining a plan of goals are fundamental for measurement of effectiveness (Almeida, 2012).

The objective of this study was to know the national and international scientific production on the application of therapeutic music to reduce stressors in critically ill patients on air medical transport.

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## II. METHODOLOGY

The type of research chosen was the literature review on the application of therapeutic music in critically ill patients submitted to fixed wing aeromedical transport. Thus, a search was carried out in the indexed databases in the Biblioteca Virtual de Saúde (BVS) and Scientific Electronic Library Online (SciELO), using the descriptors "aeromedical transport", "therapeutic music" and "integrative therapies" and the combination was through of the Boolean AND operator. Inclusion criteria were articles that addressed the use of music as a therapeutic tool to reduce stressors in the critical care environment, published in Portuguese and English during the period of 2005 until 2021. Thus, 19 articles were located and, after analysis, 10 met the previously established inclusion criteria.

## III. RESULTS AND DISCUSSIONS

Music can be considered as a care proposed for the assistance of disorders such as: spiritual anguish, sleep disorder, hopelessness, anxiety, disturbance in self-concept, disturbance in the energy field, grief, leisure deficit, risk for loneliness, social isolation and pain (Silva, et al, 2008).

To offer therapeutic music it is necessary: 1) sound equipment in good working order 2) provide headphones, if convenient; or 3) speaker. The team must ensure that the volume is adequate, avoiding leaving the music for long periods to prevent the occurrence of fatigue or a decrease in musical perception (Almeida, 2012) and (Silva, et al, 2008).

The main physiological responses found in articles in Almeida's master's thesis (2012) were a randomized clinical trial by Hatem, which proved the action of music in reducing pain and vital signs (heart and respiratory rate) in children, from experimental group, in the postoperative period of cardiac surgery, in a neonatal ICU. Another author cited Puggina used music and voice messages in coma patients in the ICU, noting that in the experimental group there were also statistically significant changes in vital signs (oxygen saturation and respiratory rate). In the before mentioned study by Leão e Silva , musical pieces were used for women with diagnoses of fibromyalgia, repetitive strain injury/work-related osteoarticular diseases and disorders related to the spine, and the result was a significant reduction in pain intensity when end of the musical audition in the three experimental groups. Finally, he mentions Zanini and other authors who applied music to hypertensive patients, in an experimental study with a reduction in blood pressure values and an improvement in quality of life.

In the foreign literature surveyed by Almeida (2012), he cites among them the one by Heitz who used music in the post-anesthetic care unit, resulting in a longer delay in requesting analgesics. In the cited article

by Smolen, he noticed a reduction in anxiety, blood pressure, heart rate and less use of anesthetics.

When transporting critically ill patients by air, they are exposed to flight stressors such as accelerating forces, hypoxia, pressure and temperature variations, among others.

HELISUL Aviação is a company that performs aeromedical transport throughout Brazil, based in the south of the country, carried out in the last 10 years more than 3,000 aeromedical transports. From this study, we empirically started to play ambient music with a speaker, realizing that the exposure time was greater than 40 minutes associated with a clear demonstration of anxiety by conscious patients.

In the search for the definition of the best strategy, given the introduction of the therapy precisely in the SARS COVID-19 period and thinking about better hygiene, the sound box had better acceptance and performance in relation to the use of headphones.

The initial application was in conscious patients who accepted the therapy. Welcomed by the majority, the team then made available a playlist according to the patient's musical preference.

Almost everyone chose country music. Based on the initial experience, we obtained the following results: reduced heart rate, reduced blood pressure, and decreased anxiety and/or fear in patients who were exposed in the worst situation in the face of the disease versus their first flight, in addition to humorous reports of thanks.

Based on the above, we will delve deeper into the studies and carry out a standardization through a protocol for the flight team.

## IV. FINAL CONSIDERATIONS

The scenario of the intensive care unit, in both hospital and air, is a factor that increases stress levels in the patient. Critical patients have their autonomy weakened, insecurities and fears related to their future, therefore, humanization in care is essential to minimize the negative and deleterious effects evidenced.

The air transport of critically ill patients requires the application of technologies and permanent and up-to-date technical-scientific training to provide opportunities for the reduction of complications arising from the long stay in hospital and various invasive procedures.

With the purpose of enabling the patient's recovery in the context of the critical environment, integrative and complementary practices are resources capable of helping the individual's well-being and therapeutic music is a scientifically based intervention that works to improve quality.

There is scientific evidence that proves the benefits of using music as a therapeutic method, such as: decreased pain, heart rate, blood pressure,

temperature adjustment, reduced stress and improved mood.

Therefore, knowledge of the patient's propensities is necessary, through the analysis of the collected data and the ability to apply therapeutic music as an adjunct in the treatment, not only of the disease, but also of the patient as a unique and integral being.

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