

The overview of utilizing complementary therapy to relieve stress or anxiety in emergency department patients: animal-assisted therapy, art therapy, and music therapy

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Abstract

The Emergency Department could be a stressful environment for patients. Anxiety and depression may develop due to the atmosphere, in addition to patients' concerns for their health conditions. The condition could potentially affect the experience of the patient in the Emergency Department and the quality of life after the visit. Pharmacological therapy could be administered to the patients. However, adverse effects may be associated with the treatment. Less aggressive complementary treatment approaches are presented in this article. Controlled clinical trials and randomized pilot studies of different complementary therapies, including animal-assisted therapy, art therapy, and music therapy, were conducted. The complementary therapies discussed in this article showed positive outcomes for patients with hospital-induced anxiety and has no adverse effect reported. Hence, hospitals may consider introducing complementary therapies, such as those mentioned in this study, to improve the patients' experiences in the Emergency Department.

Keywords

Stress, anxiety, animal-assisted therapy, art therapy, music therapy

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Introduction

Visiting the Emergency Department (ED) could be an extremely stressful event for many patients. (Rajendran et al., 2020; Reddekopp et al., 2020). They may feel frustrated, anxious, scared, or even in pain at the ED with overloaded patients. Studies suggested that up to 47% of ED admitted patients developed severe psychological distress. A recent study claimed that symptoms of psychological distress remained in up to 38% of the patients 30

days post ED admission (Faessler et al., 2016; Forero et al., 2006; Marchesi et al., 2004). Stress and anxiety developed during ED admission are often undetected and undiagnosed (Pinto & Paul Musey, 2018). Therefore, they were untreated in most cases. The condition could potentially affect the experience of the patient in the ED and the quality of life after the visit. Pharmacological therapy could be administered to the patients. However, adverse effects may be associated with the treatment. Less aggressive complementary

treatment approaches are presented in this article. Controlled clinical trials and randomized pilot studies of different complementary therapies, including animal-assisted therapy, art therapy, and music therapy, were performed. These treatment approaches were proven effective in relieving stress and anxiety developed upon admission into the ED (Hartling et al., 2013; Kline et al., 2019; Rajendran et al., 2020; Weiland et al., 2011).

Animal-assisted therapy (AAT) refers to the treatment utilizing a trained animal, mostly therapy dogs, to relieve patients' conditions such as pain or mental health disorders (Marcus, 2013). AAT is used occasionally in psychiatric patients to relieve psychological stress and reduce anxiety levels (Barker & Dawson, 1998; Nahm et al., 2012). The mechanism of the treatment is believed to be bringing the stressed or anxious patient back into a calming state by reducing serum epinephrine and norepinephrine (Barker & Dawson, 1998; Nahm et al., 2012). Some studies have suggested that pet companionship can potentially reduce blood pressure and even reduce cardiovascular morbidity and mortality (Allen, 2003; Friedmann et al., 1980; Nahm et al., 2012). AAT should be contraindicated in patients who are allergic to animals or have zoophobia. Hygiene could be another potential issue, as introducing an animal into the hospitals or clinics poses the risk of spreading zoonotic diseases. The problem could be resolved by a strict vaccination program for therapy animals, and routine veterinary checks via laboratory tests.

Art and music therapy are practical therapeutic approaches, classified as creative therapy, with fewer limitations compared to AAT. Art therapy is a form of psychotherapy where visual art is used as a medium to assist patients to express their emotions. It is also utilized to treat psychological disorders and enhance mental health (Bitonte & De Santo, 2014; Stuckey & Nobel, 2010; Van Lith, 2016). Music therapy is another form of creative therapy, harmonizing sound, and melody, with a similar approach and outcome. Despite studies on the treatments that have been previously proven to be effective in relieving symptoms of psychological distress, the extent of the therapeutic outcome is not well studied (Stuckey & Nobel, 2010). However, with fewer limitations and very few possible side effects, creative therapy, such as art and music therapy, composes a good candidate to support patients on top of allopathic treatments. This paper intends to provide an overview and update on current complementary treatment for psychological distress in the ED.

Design/Methodology/Approach

Literature and the most recent controlled clinical trials of the complementary therapies including AAT, art therapy, and music therapy in ED patients were gathered from the PubMed database and discussed in this paper. Our selection criteria include randomized controlled trials of the listed complementary treatments for psychological distress within the ED setting. A total of 5 clinical trials were included in this study, 1 for AAT, 1 for art therapy, and 3 for music therapy, the 5 clinical trials reached our selective criteria. The risks and benefits were listed out and the effectiveness will be discussed with any recorded side effects and limitations.

Results and Discussion

Animal-assisted therapy

The bonding between domestic animals and humans is believed to be therapeutic for patients who suffer from anxiety, pain, depression, or fatigue. (Therapy Dogs Bring Joy and Healing, n.d.) AAT was done by exposing the patient to a trained disciplined therapy animal, mostly but not limited to dogs. Although the therapy is accepted by some medical authorities and organizations, it is still important to perform randomized clinical trials to ensure that the therapy is effective and safe for patients. Unlike traditional pharmacotherapy, AAT is less likely to induce physiological adverse effects. However, patients who receive such treatment should not be afraid of the therapy animal nor allergic to them. (Kline et al., 2019) Major concerns of the therapy are sanitary problems or the interference of the staff work by the therapy animals. (Nahm et al., 2012; Therapy Dogs Bring Joy and Healing, n.d.)

A controlled clinical trial utilizing therapy dogs to reduce anxiety in ED patients was performed recently. 80 participants were included in the study. The care providers of the patients all agreed that the patient is experiencing moderate to great anxiety and patients who are fearful of dogs or allergic to dogs were excluded from the study. 40 patients were assigned into each group: the control group, and the therapy dog group. In the therapy dog group, patients were arranged to meet the therapy dog with their handler for 15 minutes, while patients were treated with standard care for 15 minutes in the control group. (Kline et al., 2019) The actual treatment of the standard care was not discussed in the literature. Two follow-ups were performed; the first follow-up was done 30 minutes after the treatment. Pain, depression, and anxiety score were recorded during the follow-up session and the last follow-up was done as late as possible during the patient's ED visit. (Kline et al.,

2019) No medication was prescribed to the patients in both groups before the first follow-up. However, 1 patient in the therapy dog group and 7 patients in the control group received an opioid pain medication in the ED between the first and last follow-up. 2 patients from the therapy dog group and 4 patients were also administered with anxiolytic agents.(Kline et al., 2019) The median and mean initial scores of anxiety, pain, and depression were similar between the two groups. A significant reduction of median anxiety and pain scores was observed in the therapy dog group in the first follow-up and were the same in the second follow-up. The median anxiety and pain scores remained unchanged throughout the two follow-ups in the control group.(Kline et al., 2019) Both the control and the therapy dog groups showed a reduction in the median depression score in the first follow-up and the median depression score remained the same during the second follow-up. Nevertheless, the reduction in the therapy dog group was more statistically significant.(Kline et al., 2019) Despite the absence of a detailed scientific explanation of the psychological or biological mechanism of anxiety, pain, and depression alleviation, the data of this clinical trial suggested that AAT is effective in terms of relieving anxiety, pain, and depression in ED patients who were initially considered as moderate or severe anxiety by the treating physician.(Beck, 2014; Kline et al., 2019) Recent studies also suggested that therapy dogs are more accepted by the community, especially for people who have domestic pets or have experience with them.(Reddekopp et al., 2020) Only a small number of patients and hospital staff are afraid or are concerned that therapy animals may pose a sanitary risk.(Kline et al., 2019; Nahm et al., 2012)

There are several major contraindications of AAT. Patients who have zoophobia, or who are allergic to animals, might not be as effectively benefited from the therapy. The symptoms might potentially exacerbate due to fear and/or allergic reaction.(Mani & Weese, 2016) Hygiene is also one of the major issues and limitations of AAT, as introducing live animals into the hospital settings possess a potential risk of spreading communicable zoonotic diseases. The problem could be solved by developing a mature system of protocols and rules for therapy animals, which may require strict vaccinations of the animal, routine veterinary checks, educating the handler about high-standard hygiene, and arranging specific therapy spaces isolated from the wards.(Therapy Dogs Bring Joy and Healing, n.d.; Writing Panel of Working Group et al., 2008) There were no reported major adverse effects in this study. Given the effectiveness and lack of adverse

effects, AAT can potentially be a form of conventional therapy for anxiety disorders, pain, and depression shortly with further clinical trials and studies performed. Despite researchers challenging the methodology of proving the effectiveness of AAT, the therapy should be performed along with usual treatments when the potential risk of any adverse effect is low.(Reddekopp et al., 2020)

Art therapy

Art therapy is considered a form of creative therapy. It is utilized to treat psychological disorders and to improve the patient's mental well-being.(Van Lith, 2016) A trained art therapist is often involved in the therapeutic process.(Bitonte & De Santo, 2014) Studies have revealed that art-making can potentially reduce the cortisol level in the human body, which may alleviate stress and/or anxiety.(Kaimal et al., 2016) Besides, art therapy has been used to treat several conditions including acute stress disorders or even post-traumatic stress disorder (PTSD).(Bitonte & De Santo, 2014) In clinical settings, adult coloring books are often offered in waiting rooms for relaxation purposes. Nevertheless, few studies were done to prove the effectiveness of the measure.(Nanda et al., 2012; Rajendran et al., 2020) Coloring is one of the commonly used techniques in art therapy and was shown to be constructive in a previous study.(Kim & Kang, 2013)

A recent clinical trial was completed to examine the effectiveness of using adult coloring books to relieve stress and anxiety in ED patients.(Rajendran et al., 2020) The clinical trial consisted of 53 participants, 26 of them were assigned to the therapeutic coloring group and the others, 27 participants, were assigned to the placebo group. Hospital Anxiety and Depression Scale (HADS-A), a commonly utilized self-reporting system for anxiety and depression, was used in this study to define the severity of the patient's mental situation.(Dennis et al., 2007; Rajendran et al., 2020; Zigmond & Snaith, 1983) Participants were recruited in the ED and all the included patients have a HADS-A ≥ 7 , indicating moderate to severe anxiety.(Brennan et al., 2010; Kuijpers et al., 2003; Rajendran et al., 2020, Romash, IR., Vynnyk MI., 2019) The therapeutic group received a coloring pack that consists of 10 mindfulness coloring book images with 36 color pencils. The placebo group was provided a placebo pack containing a pen with 10 blank papers for them to draw or write freely.(Rajendran et al., 2020) The HADS-A were assessed again 2 hours after the packs were provided in the follow-up and the data were compared with the baseline HADS-A. The baseline mean of HADS-A score in the therapeutic group was slightly higher than that of the placebo group.

Although the mean of HADS-A scores in both groups was decreased in the follow-up, the mean changes in the therapeutic coloring group are more significant with a decrease of 3.7 compared to the mean placebo group change of 0.3. The mean HADS-A score went from 13.1 to 9.3 in the therapeutic coloring group which supports that the coloring book, a tool utilized in art therapy, can alleviate anxiety and depression. However, the mean HADS-A score in both groups in the follow-up was > 7 , which marked the threshold of significant anxiety (Brennan et al., 2010; Kuijpers et al., 2003; Rajendran et al., 2020). This suggested that the patients in both groups were still in a state of moderate to severe anxiety after the 2 hours session. Additionally, the involvement of qualified art therapists was not mentioned in the study, assuming that the therapy session was not given by an art therapy professional. Further large-scale monitored studies with the involvement of relevant professionals should be implemented to further investigate the effectiveness of the therapeutic approach.

There were no reported side effects of the art therapy. Contraindications were not discussed in the study. However, the limitation may be due to the insufficient impact that coloring books may possess as a single therapy. Additionally, the coloring session is 2 hours, which might be time-consuming in comparison to other therapy options discussed in this article. The scale of anxiety and depression was inadequate to bring severely anxious patients back to a stable state, determined by the HADS-A score < 7 . Clinical trials on coloring in addition to other therapeutic approaches could be completed to maximize the effect of the technique.

Music therapy

Music therapy has been exercised in various clinical settings. This includes behavioral and cognitive disorders, (Gómez-Romero et al., 2017) oncology patients, (Bradt et al., 2016) and relieving anxiety in the ED. (Belland et al., 2017; Hartling et al., 2013; Mandel et al., 2019; Weiland et al., 2011) A randomized pilot study compared the effect of music therapy plus standard care and standard care alone, as a control group, in elderly patients (> 65 years old). The music intervention involved handling tablets and headphones to the patients and allowed them to listen to music for one hour. The music was slow and had no lyrics. Patients with deafness had been excluded from the study. The study utilized Spielberger's state-trait anxiety inventory (STAI) survey to measure state anxiety. The STAI score of 80 indicates extremely high anxiety, whereas a score of 20 denotes little-to-no anxiety level. (State-Trait Anxiety Inventory Self Evaluation Questionnaire, Form Y | PTC, n.d.) With

a total of 35 participants, there was a statistical significance in the mean STAI scores reduction of 10 ± 12.29 in the treatment group, and 1.88 ± 7.97 in the control group. (Belland et al., 2017)

Sound compositions developed at the Royal Melbourne Institute of Technology (RMIT) were incorporated into a randomized controlled trial at St. Vincent's Hospital, Melbourne (SVHM) to investigate the effect on patients' self-rated anxiety levels at the hospital's ED. (Weiland et al., 2011) Participants were ≥ 18 years old patients at the ED. The STAI was adopted as an outcome measurement. (State-Trait Anxiety Inventory Self Evaluation Questionnaire, Form Y | PTC, n.d.) Participants were randomly assigned to one of the five groups: headphone only, ED ambient noise without verbalization, electroacoustic composition, composed non-musical audio, and combination of binaural beats in audio field recordings. The STAI's were collected before listening, and 20 minutes after listening to the recordings. The participants' total trait anxiety scores were ranged in moderate anxiety level (score 39-45). The electroacoustic composition, non-musical audio field, and binaural beats combination groups demonstrated significantly lower anxiety levels post-intervention in comparison to the control group and the ED ambient noise group. The STAI score was reduced to between 33.7-36.9 in the three music intervention groups which indicated low anxiety levels. (Weiland et al., 2011)

Another randomized clinical trial was designed to assess the effect of music therapy on pain reduction and distress in 42 pediatric patients, aged 3-11 years, in the ED at the Stollery Children's Hospital. (Hartling et al., 2013) Children's self-reported pain and STAI completed by their parents were collected. (State-Trait Anxiety Inventory Self Evaluation Questionnaire, Form Y | PTC, n.d.) The music, selected by a music therapist, was played via an iPod speaker during the intravenous (IV) placement. The result of music intervention was found to be borderline significant in reducing the children's increase in distress overall, but there was no statistically significant in behavioral distress between the music intervention and standard care (control) groups. (Elliott et al., 1987) However, the Faces Pain Scores, measured by Faces Pain Scale-Revised were found to be significantly different pre-procedure and post-procedure with a median of 0 in the music group, and 2 in the standard care group. (Hicks et al., 2001) This indicated a positive outcome and impact on children receiving IV placement. In addition, nurses who performed the IV placement were reportedly more relieved and satisfied during the procedure in the music group (86%) in

comparison to the standard care group (48%) ($P = 0.02$). (Hartling et al., 2013)

The limitations of the music therapy studies could be due to the small sample size, and the variety of music selection. A collaboration with a music therapist may aid the music intervention procedure and standardize the choices of tunes as observed in the previous clinical trial. (Hartling et al., 2013) The underlying illnesses such as severity could play a role in the ineffectiveness and cooperativeness in participation. (Belland et al., 2017) Patients with hearing impairment could not participate in the studies. (Belland et al., 2017; Hartling et al., 2013; Weiland et al., 2011) In the studies collected, music therapy illustrated positive outcomes in lowering the anxiety levels in the ED, and may also play a role in easing and diverting the pain during painful procedures. (Hartling et al., 2013; Tan et al., 2010) Patients and healthcare staff also reported high satisfaction with music therapy during their ED stays. (Mandel et al., 2019) The mechanism of music therapy was proposed and could be harmonized in 4 levels: learned cognitive response, cognitive activation of neural circuits, stimulated neural coherence, and cellular-genetic responses. (Clements-Cortes & Bartel, 2018) However, more scientific studies and larger-scale controlled trials are needed to uncover the mechanism of positive effects in music therapy.

Conclusions

ED setting could be a stressful environment for patients. Anxiety and depression may develop due to the ED's atmosphere, in addition to patients' concerns for their health conditions. (Faessler et al., 2016; Forero et al., 2006; Marchesi et al., 2004) The poor mental states of these patients are often neglected and overlooked by the treating physicians in the ED. (Pinto & Paul Musey, 2018) Therefore, they were often undiagnosed and untreated. Pharmacotherapy such as anxiolytics may be excessive for patients who suffer from ED-induced anxiety or stress. Three forms of complementary therapies were discussed in this article and randomized clinical trials of each therapeutic approach in ED patients have proven the effectiveness of the therapies. No major adverse effects were reported, indicating the safeness of these treatment options. Pharmacotherapy is the conventional treatment for anxiety and depression in the past decades. The effectiveness of anxiolytic medications was not doubted. However, the strong therapeutic effect arrives with significant adverse effects. Side effects including drowsiness, sedation, confusion, GI problems, or even sexual

dysfunction after the use of anti-anxiety drugs were well-documented. (Anxiety Drugs (Anxiolytics) Side Effects, List of Names & Interactions, n.d.; Guy Edwards, 1981; Müller-Spahn, 1999) Due to the long list of potential adverse effects of the anxiolytic medication and the risk of patients developing dependence on medication, physicians often hesitate to prescribe anxiolytic drugs when patients with mild to moderate anxiety were seeking help. (Longo & Johnson, 2000) The complementary therapies discussed in this paper showed positive outcomes for patients with hospital-induced anxiety. Although the methodology of testing these complementary therapeutic approaches was criticized by researchers, the overall patients' clinical outcomes were positive. The limitations could be resolved with standardized protocols and more cooperation with the experts in each therapeutic field. The therapies were accepted by medical authorities and organizations. (Hartling et al., 2013; Kline et al., 2019; Rajendran et al., 2020; Reddekopp et al., 2020; Weiland et al., 2011) Hospitals may consider introducing complementary therapies, such as those mentioned in this study, to improve the patients' experiences in the ED.

Conflict of interest

The author declares that she has no conflict of interests.

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