

Review

Healthcare Clowning: Use of Specific Complementary and Alternative Medicine for Hospitalized Children

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Abstract:

Clowning has a varied tradition and a long history. Recently, clowns have been adopted in the medical setting with the aim of decreasing the negative emotions that can be experienced during hospitalization and medical procedures, as well as inducing positive feelings in patients, their relatives, and the hospital staff. Due to an increase in the number of clowns working in hospitals and the large amount of interest shown in utilizing this approach, an increasing number of studies have focused on testing the efficacy of this complementary and alternative strategy. Here, we provide an overview of the concept of healthcare clowning followed by a literature review of 28 randomized controlled trials (RCTs) drawn from two databases (PubMed and Google Scholar), with the aim of investigating and discussing evidence for the effects of healthcare clowning on children. The search revealed the different settings in which RCTs have been conducted: preoperative areas, during medical procedures, and during hospitalization. The search also revealed the different outcomes that were measured. In general, the results show that clown interventions are effective in decreasing negative emotions and psychological symptoms and in enhancing the well-being of patients and their relatives. Appreciation of clown interventions by healthcare staff has also increased in recent years.



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Keywords

Clown; clown doctor; children; humor; positive emotions; complementary medicine

1. Introduction

Clowns have entertained people for centuries and, for a considerable period of time, they have also been involved in the healing process. In fact, it is believed that clowns were present in ancient Greece during the time of Hippocrates because doctors were aware that humor affected health positively [1]. At the end of the 19th Century, the Fratellini Brothers, a famous clown trio, started visiting pediatric patients admitted to hospitals in France. However, interest in the field of healthcare clowning has grown only during the last 30 years [2]. This increase in public interest is attributable to the work of Michael Christensen, a professional clown who worked in the Big Apple Circus in New York. In 1986, this circus established the first Clown Care Unit that was active in a pediatric department and following this example, several associations were shortly established worldwide. More recently, the influence of the American medical doctor, Hunter “Patch” Adams, expanded this movement to include volunteers. The art of clowning in healthcare settings now includes varied practitioners, ranging from well-intentioned volunteers to professional clowns [1]. These practitioners are required to undergo comprehensive training through which they learn the artistic skills and the strategies for dealing with psychological issues in the healthcare system [3]. Healthcare clowning is an interdisciplinary art that involves a wide variety of skills, such as humor, magic, and music, that exert a therapeutic effect on patients and relatives [2]. Thus, it represents a complementary and alternative medicine (CAM) approach aimed at providing humor-based distraction for improving the mood of hospitalized pediatric patients [3]. Here, we provide an overview of the current knowledge regarding the effectiveness of clown interventions in reducing the psychological distress of hospitalized pediatric patients.

2. Literature Review

Limited research has been conducted in the field of healthcare clowning; to our knowledge, the first study that evaluated the efficacy of clown interventions in decreasing anxiety among pediatric patients was published in 2005 [4]. Thus, we first conducted a literature search of the PubMed database for reports published from January 2005 to February 2018 to identify empirical studies involving pediatric patients. We used the search terms “clown”, “clown doctor”, “medical clown”, and “children”. The search terms were used for all fields (including the title, abstract, keywords, and full text). In the first search, we did not limit the search by the language used. A total of 95 reports were identified in this search.

Among the papers screened, we included those that: (a) provided empirical evidence about the impacts and outcomes of clown interventions on hospitalized pediatric patients, (b) included a pediatric population, and (c) included only randomized controlled trials (RCTs) or quasi-RCTs. Meta-analyses, case studies, and studies published in a language other than English were excluded. The titles, abstracts, and full texts of the included manuscripts were examined. A total of 23 papers were identified. Thereafter, we screened the Google Scholar database to identify

additional research papers. Using the same selection criteria described for the initial search, we identified five additional research papers in this second search. Thus, a total of 28 papers that met the inclusion criteria were identified as being relevant to the current literature review.

3. Results

As a result of the literature review, we identified 28 reports involving studies that: (a) assessed the effects of clown interventions on pediatric patients (and their parents) in the preoperative area, (b) were conducted on pediatric patients undergoing medical procedures, or (c) were conducted during the hospital stay of pediatric patients.

3.1 Effects of Clown Interventions on Children and Parents in the Preoperative Area

Hospitalization and surgery have always been considered negative experiences that can exert considerable health effects on adults and children [5]. Even minor pediatric surgery may have negative consequences on the emotional, behavioral, cognitive, and educational development of a child, and it is estimated that approximately 50% of children experience anxiety while undergoing surgery [6]. Several studies have focused on the ability of healthcare clown interventions to decrease the negative emotions experienced by pediatric patients during the preoperative period. To the best of our knowledge, the first study in this field was performed in Italy in 2005 [7] with the aim of investigating the effects exerted by the presence of a clown on a pediatric patient's preoperative anxiety during anesthesia induction for minor surgery. In this study, 40 children (aged 5–12 years) were randomly allocated to the experimental group ($n = 20$) and the control group. Two professional clown doctors interacted with the experimental group patients (accompanied by one parent) during the move from the ward room (WR) to the operating room (OR), while the control group patients received standard care (accompanied by one parent with no other distractions). Preoperative anxiety was assessed by two psychologists using the Modified Yale Preoperative Anxiety Scale (m-YPAS), which is an observational behavioral checklist. Parental anxiety was assessed using the State–Trait Anxiety Inventory. The assessment was carried out both in the WR and in the OR during the induction of anesthesia. The results showed that, during the induction of anesthesia, the anxiety of the patients in the experimental group was significantly lower than that of those in the control group. However, there was no significant difference between the scores of the parents in the two groups, although the parents of the experimental group patients had lower levels of anxiety.

A Portuguese study conducted in 2010 [8] evaluated the ability of clown interventions to reduce the preoperative anxiety of 70 children (aged 5–12 years) scheduled to undergo minor surgery, while also considering parental anxiety. In contrast to the first study, self-reporting measures were used instead of the evaluations of an external observer in this study; both the children and the parents in the clown group showed a reduction in preoperative anxiety and emotional responses. In contrast, an Italian study conducted in 2014 on 77 children (aged 3–11 years) showed that clowns helped reduce anxiety even when they were present only in the preoperative room and were not involved in the medical procedure in the OR [9].

An Israeli study conducted in 2009 [10] divided pediatric patients (aged 3–8 years) into the following three groups: Group 1 (no premedication; no clown); Group 2 (midazolam administered 15–30 min before surgery); Group 3 (two clowns present in the preoperative holding area and

accompanied the patient to the OR until anesthesia-induction). Video recordings were made of the patients for later use in grading. The study showed that clowns alleviated preoperative anxiety, although there were no significant differences among the three groups during the anesthesia mask induction. Furthermore, the clown group had the largest increase in the m-YPAS score. The main limitation of this study was that the interventions were identifiable owing to the occasional appearance of the clowns in the videos of the EG patients.

In a more recent trial conducted in Italy in 2010 [11], a total of 75 patients (aged 5–12 years) patients were also randomly assigned to one of three groups to determine differences in the effects of parental presence, clowns, or sedative premedication on preoperative anxiety. The results showed that the anxiety of children in the clown group was significantly lower than that of those in the premedication and control groups, with no significant differences found between the latter two groups.

A later study aimed at evaluating the potential of psychological interventions (clowns, dog interaction, and music) to reduce anxiety and fear levels was conducted in a sample of Italian patients [12]. One hundred-five children (aged 4–11 years) enrolled for MRI examinations, were assigned to the experimental group (15 children interacted with a clown, 12 with dogs and 13 with musicians) and 65 children were assigned to the control group. The results confirmed the high effectiveness of the three interventions in reducing the level of anxiety and fear and decreasing the need for sedation in the experimental groups compared to the control group.

Although the majority of the results are positive, some studies show methodological limitations that can affect the results. A study of the efficacy of clown interventions in lowering preoperative anxiety compared to the effect of toys and video games in a large sample of Italian children (aged 5–12 years) had various limitations. [13]. The study involved an experimental group of 444 children, and a control group of 441 children who were not accompanied by clowns in the waiting room and were free to play with toys and video games. Patients assigned to the experimental group experienced less anxiety during anesthesia-induction than those in the control group. However, the study design was unclear because the authors did not specify the number of children who used toys or video games.

A RCT conducted in Portugal in 2016 [14] aimed to test the effectiveness of clown doctors in reducing anxiety among children undergoing general surgery and in their parents who accompanied them. The sample consisted of 88 children ($n = 44$ per group) aged 4–12 years. The results confirmed that clown interventions reduced the anxiety in the children's caregivers; however, the results did not support the hypothesis related to the ability of clown interventions to reduce anxiety in children. One possible reason for the lack of effectiveness in children may be the combination of setting and sedation that may have regulated anxiety.

In recent years, some studies have focused not only on decreasing anxiety, but also on evaluating other interesting outcomes. One RCT evaluated the effect of healthcare clowning on a sample of 80 children (aged 2–16 years) scheduled to undergo outpatient penile surgery (meatotomy) [15]. In addition to having lower anxiety levels, the children accompanied by clowns required a reduced anesthesia-induction time, spent less time in the , and were discharged earlier.

A recent German study [16] investigated the ability of clown interventions to induce positive psychological and physiological effects in hospitalized pediatric patients. Thirty-one children (aged 4–13 years) were randomly assigned to a clown group ($n = 17$) or a control group ($n = 14$). Both physiological (saliva samples for oxytocin measurement) and psychological parameters (children's

anxiety, worries, and well-being) were assessed. Children in the intervention group showed lower levels of anxiety and higher oxytocin concentrations at T2 than at T1, while the control group showed no changes.

Finally, a combined intervention of art therapy and clown visits was shown to enhance the efficacy of oral medication in reducing preoperative anxiety in pediatric patients [17]. Seventy-eight children (aged 3–11 years) who were administered general anesthesia for surgery were divided into the standard practice (n = 41) and intervention (n = 37) groups; the intervention group received both art therapy and clown visits. The combination of the two different CAMs significantly reduced the anxiety of the children in the intervention group; however, it was not possible to define the efficacy of each CAM approach.

3.2 Presence of Clown Doctors during Medical Procedures

Recently, the efficacy of clown doctor interventions has been investigated in children undergoing painful medical procedures. In fact, children often experience anxiety when undergoing medical treatment, and learn to associate these treatments with anxiety. Anxiety occurs when an individual's well-being is threatened or endangered in any manner [18]. Patient anxiety reduction is categorized as behavioral, cognitive, physical, emotional, or pharmacological [19], and clown interventions provide the benefit of humor and positive emotions, encompassing all the categories mentioned, except pharmacological [20]. Therefore, clown interventions can be defined as a CAM approach.

One of the first studies in this area was conducted in Denmark [21] on 60 pediatric patients with spastic cerebral palsy. It assessed the effectiveness of the performance of a female clown in reducing a child's crying during the administration of botulinum toxin. The research showed mixed results, with positive results in girls, while boys under the age of 8 years showed negative effects, and no effect observed in children treated for the first time. Only a female clown was involved in the intervention; therefore, it is reasonable to conclude that a sex-related correlation may be established.

Several other studies yielded mixed results. A quasi-experimental study was conducted to assess the role of a clown in reducing negative emotions during anogenital examination in 30 children (aged 1–17 years) who were allegedly abused [22]. Results indicated that children who were visited by a clown (n = 24) showed significantly lower levels of fear and pain and had a less severe perception of the invasiveness of the procedure, while there was no difference in hyperarousal and avoidance behavior. One limitation of the study was that there was no evaluation before the intervention, although the authors attempted to bridge this gap by performing a retrospective survey among the children about their level of fear before the evaluation.

The effect of clown interventions on the pain experienced by 47 pediatric emergency patients (aged 3–16 years) during intravenous administration was also evaluated [23]. Clown interventions were found to be effective only in those aged 4–7 years, while no significant differences were observed in those aged 8 years and older. It is noteworthy that the clown intervention reduced the lower levels of anxiety only among the parents of older children. This lack of a "clown effect" in the parents of younger children may be attributed to the fact that they were more involved in reassuring their children and were therefore not so focused on the clown's performance. Thus,

this group of parents were less able to benefit from the “calming” effect of the clown’s intervention.

Two recent Israeli studies showed that clown interventions were helpful in reducing pain perception in pediatric patients with juvenile idiopathic arthritis during the administration of intra-articular corticosteroids [24]. The researchers evaluated procedural pain during the injection of nitrous oxide (NO₂), asking the patient, parents, physicians, healthcare clowns, and nurses to rate their pain by completing a visual analog scale (VAS) ranging from 0 to 10. Thirty-two children (23 girls and 9 boys) participated in the study of 46 procedures. The presence of the clown helped reduce pain and stress in patients, although five patients had increased heart rate and experienced increased pain. The main limitation of this study was the lack of a control group; however, data were compared to the findings from a similar study that did not involve the use of a clown.

Another study confirmed that clowns were effective in decreasing anxiety and pain in children undergoing allergy skin prick tests [25]. In this blinded RCT, 91 children (aged 2–17 years) were randomly assigned to either the control group or the experimental group. Anxiety was assessed using the m-YPAS, and pain was assessed using the Face, Legs, Activity, Cry, Consolability (FLACC) scale. One of the main limitations of this study was that an external observer made the evaluations.

Clowns were effective in reducing the duration of crying as a subjective assessment of pain level in 100 Israeli children (aged 2–10 years) during withdrawal of venous blood [26]. However, the lowest level of pain was experienced by a child in the group that received local anesthetic cream, and the levels were not significantly altered by the clown intervention. The control group had the shortest pain duration for the entire process compared to that of the other two groups. A similar study was conducted to investigate the ability of healthcare clown interventions to reduce a child's distress during venipuncture [27]. A total of 53 Israeli children (aged 2–15 years) were randomly assigned to the healthcare clown group (n = 29) or the control group (n = 24). The healthcare clown intervention reduced the distress caused by venipuncture in children, although there was no effect on the cortisol levels, indicating that clown intervention was more helpful in decreasing the psychological symptoms than the physiological symptoms.

These results were in accordance with those of a quasi-RCT conducted in Italy that evaluated the effectiveness of clown visits in 40 children (aged 4–11 years) undergoing painful procedures in an emergency department [28]. The outcome measures were the clown’s influence on the patient’s procedural pain and anxiety. The study showed that the pain levels in the two groups remained unchanged; however, the anxiety levels were significantly lower in the clown group. A recent study [29] on 142 Israeli patients (aged 0–5 years) investigated the ability of clown interventions to prevent the need for sedation in young children. The main aim of the clowns was to encourage the child to cooperate during the procedure. Only five children (3.2%) required pharmacologic sedation after the intervention compared to 100% before it, indicating the potential of clown interventions as a good alternative to sedation in cases where the procedure does not involve pain and only requires the child’s cooperation.

One study investigated the impact of clown interventions on pain during recurrent botulinum toxin injections in children with cerebral palsy [30]. A total of 45 children (aged 1.5–18 years) were randomized to receive either clown (n = 20) or standard care (n = 25). Assessment of pain VAS before and after the procedures showed lower levels of pain experienced during the procedure

among the children receiving clown care compared with those receiving standard care. In another Israeli study, 93 children (aged 2–6 years) who required physical examination in the pediatric emergency department were recruited and randomly assigned to one group that underwent physical examination conducted by a pediatrician in the presence of caregivers (n = 49) or another examined with the assistance of a healthcare clown (n = 44) [31]. Results showed that the duration of discomfort was shorter in the clown group. Moreover, 94% of pediatricians reported that the healthcare clown improved their ability to perform a complete physical examination.

3.3 Studies Conducted on Hospitalized Children Receiving Visits from Clown

In healthcare settings, clown doctors often conduct “clown rounds”. In this parody of medical rounds, clowns ask permission before entering the patient’s room to improvise a visit with the aim of distracting the patient and his/her relatives from boredom and reducing the stress and anxiety caused by hospitalization [32].

Few studies have been conducted to evaluate the effect of clowns in reducing negative emotions during medical rounds. An Italian RCT [33] assessed the role of clowns in decreasing symptoms in 43 pediatric patients hospitalized for respiratory pathologies. During their hospital stay, 21 patients in the experimental group received clown visits lasting almost three hours, while 22 children assigned to the control group received no clown visits. The experimental group showed earlier disappearance of pathological symptoms and significant lowering of diastolic blood pressure, respiratory frequency, and temperature than that in the control group.

A Canadian study assessed 10 individuals (aged 4–21 years) with differing levels of disability [34] over a period of four days after receiving alternating the control (days 1 and 3) or intervention (days 2 and 4). On the day of the intervention, the children engaged in an interactive performance lasting 15 minutes with a pair of clowns. On the control day, the children watched a television (TV) comedy show of the same duration. The outcomes measured on each day consisted of physiological, behavioral, emotional, and verbal responses. The clown intervention led to significantly positive changes in all the responses (physiological, behavioral, emotional, and verbal) compared to those recorded in the control group. The limitations of this study were the small sample size and the large age range of participants.

Recently, a Turkish study investigated the effect of hospital clowns on anxiety and depression levels of pediatric patients and their mothers during their hospital stay [35]. A total of 99 children (aged 7–13 years) and their mothers were randomly divided into the clown group (n = 50) and the control group (n = 49). The presence of clowns during the hospital stay was found useful for managing the patient’s anxiety and depression; however, it was not efficient for lowering the anxiety of their mothers.

A Brazilian study on 36 children (aged 6–7 years) diagnosed with any acute pathology [36] aimed to evaluate the role of clown doctors in reducing stress by assessing the children’s responses using physiologic (salivary cortisol level) and psychological measures (VAS score). The clowns performed at lunchtime and at dinnertime; 18 children were randomly assigned to the lunchtime performance and 18 to the dinnertime performance. Each child served as his/her own control. Assessment of the outcome measures before and after the clown doctor activities revealed a reduction in salivary cortisol levels after the clown doctor intervention in both groups. Furthermore, a significant difference was observed in the VAS scores of the lunch group.

A recent and innovative study assessed the influence of culture on the effects of healthcare clowning interventions on anxiety and pain among a group of 89 children (39 Jewish and 50 Bedouin) aged 7.5–12 years [37]. Although the clown visits reduced the pain and anxiety in both cultural groups, anxiety levels were reduced more significantly among the Bedouin children. Furthermore, the anxiety reduction in this sample was mediated by verbal components.

Finally, we report one of the few studies assessing positive emotions due to clown interventions [38]. A total of 100 patients (aged 6–14 years) were randomized to a clown visit group ($n = 50$) or a no-visit control group ($n = 50$). Positive emotions were assessed using a modified version of the KINDer Lebensqualitätsfragebogen questionnaire at three time points; before the clown visit (pre-test), immediately after the clown visit (post-test), and four hours after the visit (follow-up). Clown visits induced positive emotions at the second assessment in both the children and their parents; however, the effects were not maintained at follow-up. Moreover, the clown visits did not alter the perceived physical well-being. These results confirmed that although clown visits improve the psychological well-being of pediatric patients and their relatives, the effects are short-lived, and there is no effect on the physiological symptoms.

4. Discussion

One of the main goals of clowning is to bring smiles and laughter to an audience of people of all ages. Today, healthcare clowning is an integral part of the healthcare system. In the previous 30 years, the number of clown doctors has increased significantly both in the US and Europe [39]. They use humor, empathy, and sensitivity to support, divert, and help patients, their relatives, and hospital staff in dealing with concerns over healthcare and medical treatment. Clown interventions have several aims including seeking to parody the medical routine to distract pediatric patients during medical procedures and to induce positive emotions while reducing negative emotions in patients and caregivers. This approach also aims to stimulate humor and playfulness, support relationships, and provide a safe and positive environment where the patient can undergo medical procedures; thus, it can be considered a CAM approach [3].

This area of research is relatively new; to our knowledge, the first study was published in 2005. However, since then, the effect of clowning interventions in several clinical settings has received increasing attention [3]. The literature review presented here demonstrates how most controlled trials of the impact of clown doctor interventions on children have highlighted the positive effects, although the results are conflicting. The most significant efforts to promote controlled trials of the efficacy of clown interventions in children are being made in Israel (12 studies) and Italy (8 studies). Reports of two studies in Germany and Portugal have been also been published, while there are reports of only one study each from Brazil, Denmark, Canada, and Turkey.

This review of the RCTs conducted on children (and in some cases on parents as well) has highlighted the fact that most studies have focused on decreasing the negative emotions (such as anxiety, pain, and stress) experienced by children. Only a few aimed to study the increase in positive emotions, such as improving the hospital atmosphere and bringing something positive, unexpected, and unconventional to the experience. Moreover, some studies showed no significant effect on the outcomes and concluded that clown interventions did not help parents cope with their anxiety [7, 10]. There are various problematic issues associated with the investigation of

evidence regarding the efficacy of clown interventions. Nevertheless, the evidence available to date suggests that there is a wide variety of possible applications for the activity of clown doctors.

Rigorous evaluation of the therapeutic effect of clowning is complex. This complexity is due to several factors:

1) Clowning is a complex multi-modal intervention established according to medical conditions, procedures, family functioning, and healthcare teams [40]. Separating each aspect may be an area for further research.

2) During their performance, clown doctors are required to adapt their techniques for each patient, remembering that their goal is to improve the emotional state of the patient [2]. This means that a standard intervention among different patients with various conditions may not always be possible. It is important that clown doctors have the ability to improvise according to the current situation, based on the patient's medical and psychological condition. This, inevitably, makes it challenging to implement a standardized approach, as would be required in a RCT.

3) The studies reviewed here involve both professional and volunteer clowns. Some RCTs involved one clown, while others involved two clowns, and very few reports [9, 27] include details of the training or expertise of the clowns. This aspect requires clarification in future research because a single clown and a pair of clowns may have a different relational impact on the intervention recipients.

4) The majority of the published studies have focused on the presence of clown doctors in the anesthetics area, replicating the study design first established by Vagnoli and colleagues [7]. Moreover, in some cases, the outcome measures were different. Further studies in other settings, such as oncology, emergency, and pediatric departments, using different study designs are warranted.

5) The studies also differed in the manner of outcome evaluation (self-evaluated or evaluated by others, such as trained psychologists). Several studies assessed the anxiety experienced by children using the m-YPAS and noted that while attempts were made to blind the observers, achieving a true blind observation is challenging because children may talk about their experience with the clowns. In the case of studies that used video recordings, the clowns may rapidly appear in a video or children may directly focus their attention on the clown, and therefore, be easily identified as a member of the experimental group. Moreover, several studies of children's anxiety and pain showed no significant reduction in pain perception. Further studies should focus on the effects of the non-pharmacological techniques (e.g., distraction, storytelling, music, and soap bubbles) used by clown doctors.

6) Although a healthcare clown's purpose is to bring joy and laughter in healthcare settings, with positive psychology as the theoretical background, the majority of the studies have focused on the ability of clowning to decrease negative emotions. Only a few studies have investigated the nature of the positive emotions elicited. This information gap should be addressed in future research.

Despite these limitations, research shows that clowns generally play a positive role in reducing the negative emotions both in hospitalized children and their parents, although rigorous research is warranted to confirm these results.

Author Contributions

The author is responsible for the entire process of writing up, revising, and approving the final version of this manuscript.

Competing Interests

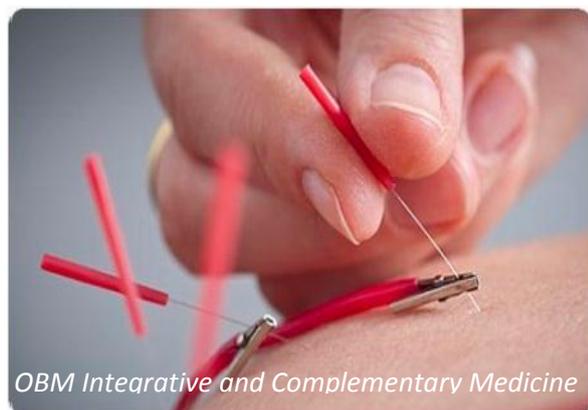
The authors have declared that no competing interests exist.

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