

Professional Training Boosts Pediatric Nurses' Clown Therapy Perceptions

Jun Wu*, Jianwen Fan, Suyi Xu, Qinyue Lan, Xin Wang, Shuangyang Feng, Qianqian Shen, Huafen Wang

Department of Nursing, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China

**Author to whom correspondence should be addressed.*

Copyright: © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: *Aim:* To evaluate the impact of professional training on pediatric outpatient nurses' cognition and attitudes towards the use of clown therapy, and to assess its clinical applicability. *Design:* A pre- and post-training evaluation study. *Methods:* A total of 31 pediatric outpatient nurses participated in the study, completing a self-designed 15-item questionnaire focused on clown therapy. The questionnaires were administered both before and after a structured training program. The assessment aimed to measure changes in nurses' knowledge and attitudes toward clown therapy. *Results:* The results indicated a statistically significant improvement in the nurses' cognition following the training (mean score post-training: 8.55 vs pre-training: 7.71, $p = 0.003$). *Conclusion:* Notably, the training also eliminated the age-related differences in cognition observed prior to the intervention. Furthermore, nurses expressed more positive attitudes toward the clinical implementation of clown therapy post-training.

Keywords: Medical clown; Pediatric outpatient department; Nursing staff; Cognition; Training; Investigation

Online publication:

1. Introduction

Medical clowning, also known as clown therapy, is a therapeutically grounded approach that utilizes professionally choreographed comedic performances and innovative humorous interactions to effectively alleviate illness-induced anxiety and distress in patients. By cultivating an atmosphere characterized by relaxation and psychological safety, this practice significantly enhances the patient experience within the clinical care setting^[1-3]. Existing research has documented the multifaceted clinical benefits of medical clowning, demonstrating positive impacts across diverse domains^[4,5]. Pertaining to enhancing psychological safety within the workplace and mitigating negative affect among healthcare professionals, a seminal Israeli study conducted with burn unit staff revealed that humor- and laughter-based medical clown interventions significantly reduced subjective distress and perceived tension during wound dressing procedures^[6].

Regarding workflow efficiency, Jacob et al.'s investigation demonstrated that clown therapy reduces non-

compliant behaviors among pediatric patients undergoing electroencephalography (EEG) and their families, thereby improving the efficiency and quality of EEG procedures conducted by neurodiagnostic technologists ^[7]. Concurrently, in the sphere of enhancing interpersonal dynamics, Masetti et al.'s findings indicated that clown interventions not only positively influence relationships between clinicians, patients, and families but also enhance healthcare worker job satisfaction and foster team cohesion ^[8]. The implementation and scholarly inquiry into medical clowning have recently progressed, primarily through philanthropic initiatives, with a predominant focus on pediatric and geriatric clinical contexts ^[9–13].

Healthcare professionals' comprehension and attitudes regarding clown therapy significantly influence its adoption and dissemination efficacy in clinical practice, yet empirical investigation specifically targeting these cognitive and attitudinal factors remains limited. Current practices often depend on volunteer-delivered, ad hoc sessions involving magic or balloon artistry, suffering from a critical absence of standardized, evidence-based protocols tailored to pediatric developmental stages or specific clinical scenarios like venipuncture or preoperative induction, resulting in variable efficacy and poor replicability ^[14]. Furthermore, systematic training programs for healthcare staff in clown therapy competencies are notably deficient. Predominantly structured as fragmented short-term workshops emphasizing rudimentary performance techniques, existing training largely neglects the integration of foundational principles from child psychology, clinical communication science, and culturally responsive adaptation frameworks, consequently impeding nurses' capacity to reliably implement the intervention within high-acuity outpatient environments.

Establishing a standardized, evidence-based framework for clown therapy within specialized pediatric nursing promises substantial benefits: significant reduction in pediatric procedural discomfort; decreased treatment durations; mitigation of nurse burnout stemming from distressed and resistant patients; empowerment of nurses to incorporate clown therapy into routine care activities such as vaccination or nebulizer treatment administration; reduction in sedative medication requirements; indirect optimization of specialist resource allocation; and alignment with tiered healthcare delivery systems. This study systematically investigates pediatric outpatient nurses' current levels of awareness and understanding regarding medical clowning and explores the cognitive and attitudinal shifts engendered by specialized training. The primary objective is to generate robust evidence supporting the feasibility and implementation of clown-integrated care, thereby facilitating enhancements in healthcare service quality.

2. Methods

2.1. Participants

This study enrolled a cohort of 31 registered nurses from our institution's outpatient department, aged 25–56 years (mean $\pm$ standard deviation (SD): 36.2 ± 10.2 years), with mean clinical experience of 14.1 ± 12.6 years. Educational attainment comprised bachelor's degrees ($n = 28$, 90.3%) and associate degrees ($n = 3$, 9.7%). Validated survey instruments assessing cognitive understanding and attitudinal dispositions toward clown therapy were administered to all participants preceding a standardized training intervention. Identical instruments were subsequently readministered to the fully matched cohort following training completion. This paired pre-post design ensures methodological equivalence for comparative analysis of cognitive and attitudinal differentials. The study protocol received full ethical approval from REDACTED.

2.2. Questionnaire design

Referencing relevant studies and training contents, the training content is based on current international basic and clinical research on clown therapy, and the evaluation questionnaire is independently designed around the psychosocial adaptation theory and health belief model [5,15–18]. The questionnaire investigating pediatric outpatient nurses' cognition of clown therapy covered the following aspects.

- (1) Ten binary (“Yes/No”) questions were designed regarding basic concepts, mechanism of action, theoretical foundation, therapeutic effects, application scenarios, and evaluation indicators
- (2) Five questions on healthcare providers' cognitive attitudes toward clown therapy were formulated using a response scale ranging from “Fully Agree” to “Fully Disagree”.

After structural and logical error checking by the researchers, the questionnaires were determined for validity before inclusion in the analysis.

In addition to personal basic information, the questionnaire included the following 10 cognition-related questions.

- (1) Is clown therapy a treatment approach combining clown performance with medical intervention?
- (2) Does clown therapy reduce pain by stimulating endorphin secretion?
- (3) Does clown therapy primarily exert therapeutic effects through medications?
- (4) Does clown therapy rely entirely on patients' self-regulation to achieve effects?
- (5) Can clown therapy improve patients' treatment compliance?
- (6) Does combining clown therapy with psychotherapy cause adverse reactions?
- (7) Is clown therapy applicable to the treatment of all diseases?
- (8) Do implementers of clown therapy need to possess medical knowledge and receive training?
- (9) Can a decrease in pain score be used as an indicator of clown therapy effectiveness?
- (10) Does clown therapy interfere with the normal work of the medical team?

The questionnaire included the following 5 attitude-related questions:

- (1) Do you agree with the clinical application value of clown therapy in pediatric outpatient settings?
- (2) Do you agree that clown therapy significantly reduces pain and anxiety in children?
- (3) Do you agree that clown therapy can improve patients' treatment cooperation?
- (4) Do you agree that implementing clown therapy in clinical practice is difficult?
- (5) Do you agree that healthcare providers need professional knowledge and skills to effectively carry out clown therapy?

Cognition-related questions used binary choices, with correct answers scored to evaluate nurses' overall cognitive level of medical clowns through total scores, and specific questions were assessed by response accuracy rates. Attitude-related questions adopted a five-point Likert scale: “Fully Agree”, “Somewhat Agree”, “Neutral”, “Somewhat Disagree”, and “Fully Disagree”. Results were summarized and analyzed to clarify the enhancement of professional training on cognition and attitudes toward clown therapy and areas for improvement.

The survey was conducted via anonymous self-administered questionnaires. After structural and logical error checking by staff, missing information was verified and supplemented to determine questionnaire validity for inclusion in the analysis.

2.3. Clown therapy training

Thirty-one pediatric outpatient nurses who had no prior exposure to the concept of clown care were selected

for standardized training on clown therapy via PPT presentation in a conference room. The training lasted approximately 1.5 hours and consisted of two components: The first component covered the developmental history, basic concepts and theories of clown therapy, its implementation models, and various medical scenarios applying clown care, referencing domestic and international clinical studies. The second component focused on introducing and training the standardized procedures for applying modified clown care in nebulization inhalation procedures in pediatric outpatient settings and exploring its application potential. Nurses embodying culturally adapted clown personas facilitate collaborative role-playing, inviting training participants to simulate patient roles while demonstrating the protocol-driven procedure for clown-assisted nebulization therapy. An online survey platform (Wenjuanxing) was used to collect basic information (age, work experience, educational background) and cognitive data on clown therapy among pediatric outpatient nurses before and immediately after the training.

2.4. Statistical analysis

Data were entered using Excel and statistically analyzed with R 4.3.2. Normally distributed measurement data were expressed as mean $\pm$ standard deviation, while non-normally distributed data were presented as median (interquartile range). Categorical data were described by frequency and percentage. The Chi-square test was used for categorical variables. For continuous variables, normality tests were first performed: paired *t*-tests were applied to normally distributed data with homogeneous variances, while paired rank sum tests were used for non-normally distributed data or those with heterogeneous variances. Spearman's correlation analysis was conducted to assess the correlation between clinical characteristics and scores. Statistical significance was set at $p < 0.05$.

3. Results

3.1. Participants

A total of 31 outpatient nurses from our hospital were enrolled, all females. Thirty-one valid questionnaires were collected before training, and 32 valid questionnaires after training (**Table 1**). The additional post-training questionnaire was completed by a nurse who joined the training midway, so this case was excluded from the cohort.

Table 1. Demographic characteristics of nursing staff

Characteristic	Pediatric Outpatient Nurses (n = 31)
Sex, No. (%)	
Female	31 (100%)
Age, y	
Mean ($\pm$ SD)	36.2 ($\pm$ 10.2)
Work Experience, y	
Mean ($\pm$ SD)	14.1 ($\pm$ 11.6)
Education Level, No. (%)	
Bachelor's degree	28 (90.3%)
College diploma	3 (9.7%)

3.2. Nurses' cognitive level significantly improved after clown therapy training

A self-developed questionnaire was used to evaluate nurses' cognitive level of clown therapy before and after training. Results showed a significant improvement in nurses' overall cognition of clown therapy after training

compared with pre-training (8.55 vs. 7.71, $p = 0.001$). Except for the question “Is clown therapy applicable to the treatment of all diseases?”, the correct response rates for all other cognition-related questions significantly increased after training. Notably, the question “Do implementers of clown therapy need to possess medical knowledge and receive training?” showed a pre-training correct rate of 12.9% and a post-training rate of 19.4%, which was far lower than other cognition-related questions. Details are shown in **Table 2**.

Table 2. Nurses’ cognitive survey results regarding clown therapy before and after training

Cognitive Statement	Pre-Training (%)	Post-Training (%)	<i>p</i>
Is clown therapy a treatment approach combining clown performance with medical intervention?	90.3%	100%	
Does clown therapy reduce pain by stimulating endorphin secretion?	87.1%	100%	
Does clown therapy primarily exert therapeutic effects through medications?	71.0%	87.1%	
Does clown therapy rely entirely on patients’ self-regulation to achieve effects?	71.0%	80.6%	
Can clown therapy improve patients’ treatment compliance?	93.5%	100%	
Does combining clown therapy with psychotherapy cause adverse reactions?	83.9%	100%	
Is clown therapy applicable to the treatment of all diseases?	83.9%	74.2%	
Do implementers of clown therapy need to possess medical knowledge and receive training?	12.9%	19.4%	
Can a decrease in pain score be used as an indicator of clown therapy effectiveness?	93.5%	96.8%	
Does clown therapy interfere with the normal work of the medical team?	83.9%	96.8%	
Total Cognitive Score (Sum of 10 items, max = 10)	7.71 (± 1.16)	8.55 (± 0.81)	0.003

3.3. Cognitive disparities among nurses of different age groups prior to training were eliminated following the intervention

Subsequent correlation analysis between nurses’ age and their cognitive scores regarding clown therapy revealed a significant inverse relationship prior to training ($R_s = -0.35$, $p = 0.053$). However, this age-dependent correlation became non-significant following the intervention ($R_s = -0.01$, $p = 0.96$; **Figure 1**). Age-stratified subgroup analysis further demonstrated that nurses aged ≤ 40 years exhibited significantly higher baseline cognitive scores than those > 40 years (8.08 ± 0.89 vs. 7.00 ± 1.26 ; $p = 0.016$). Post-training cognitive improvements were observed in both cohorts (≤ 40 years: 8.62 ± 0.65 vs. baseline 8.08 , $p = 0.053$; > 40 years: 8.40 ± 0.89 vs. baseline 7.00 , $p = 0.033$). Crucially, the pre-existing intergroup cognitive disparity was eliminated after training (8.62 ± 0.65 vs. 8.40 ± 0.89 ; $p = 0.49$; **Table 3**). These data demonstrate that although age-related differences in clown therapy cognition exist among pediatric nurses, standardized professional training effectively mitigates such disparities.

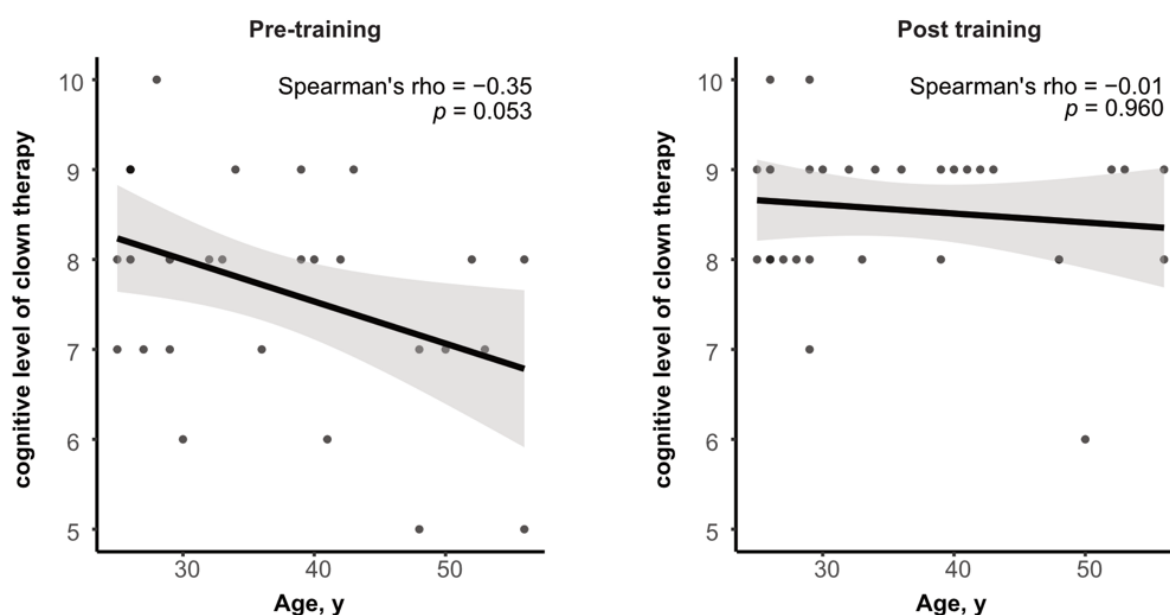


Figure 1. Correlation between age and cognition toward clown therapy before and after training.

Table 3. Cognitive disparities among nurses of different age groups toward clown therapy

Age group	Pre-Training	Post-Training	<i>p</i>
≤ 40 (n = 21)	8.05(± 0.92)	8.62(± 0.74)	0.053
> 40 (n = 10)	7.00(± 1.33)	8.40(± 0.97)	0.033
<i>p</i>	0.016	0.49	

3.4. Attitude comparison among nurses toward clown therapy before and after training

A self-developed questionnaire was used to evaluate nurses' attitudes toward clown therapy before and after training. Compared with pre-training, nurses showed significant positive shifts in attitudes post-training regarding the clinical application value of clown therapy in outpatient practice (1.84 vs. 1.45, $p = 0.002$), its efficacy in reducing pain and anxiety in children (1.74 vs. 1.48, $p = 0.002$), and its role in improving treatment cooperation (1.84 vs. 1.45, $p = 0.002$). For the statement "Implementing clown therapy in clinical practice is difficult", the proportion of "Somewhat Disagree/Fully Disagree" responses increased from 19.35% to 51.6%. Regarding the attitude "Healthcare providers need professional knowledge and skills to effectively deliver clown therapy", the majority of outpatient nurses maintained "Fully Agree/Somewhat Agree" attitudes both before and after training (87.1% vs. 80.6%). Details are presented in **Table 4** and **Figure 2**.

Table 4. Nurses' attitudes toward clown therapy before and after training

	Group	Nurses' Vote Count					Attitude Score	p
		Fully Agree	Some what Agree	Neutral	Some what Disagree	Fully Disagree		
Do you agree with the clinical application value of clown therapy in pediatric outpatient settings?	Pre-	17	11	3	0	0	1.45 ± 0.68	0.002
	Post	27	3	1	0	0	1.84 ± 0.45	
Do you agree with the clinical application value of clown therapy in pediatric outpatient settings?	Pre	16	14	1	0	0	1.48 ± 0.57	0.013
	Post	24	6	1	0	0	1.74 ± 0.51	
Do you agree that clown therapy can improve patients' treatment cooperation?	Pre	16	12	2	1	0	1.39 ± 0.76	0.001
	Post	26	5	0	0	0	1.84 ± 0.37	
Do you agree that implementing clown therapy in clinical practice is difficult?	Pre	4	9	12	4	2	0.29 ± 1.07	0.004
	Post	4	4	7	6	10	0.45 ± 1.41	
Do you agree that healthcare providers need professional knowledge and skills to effectively carry out clown therapy	Pre	17	10	4	0	0	1.42 ± 0.72	0.97
	Post	19	6	5	0	1	1.35 ± 0.98	

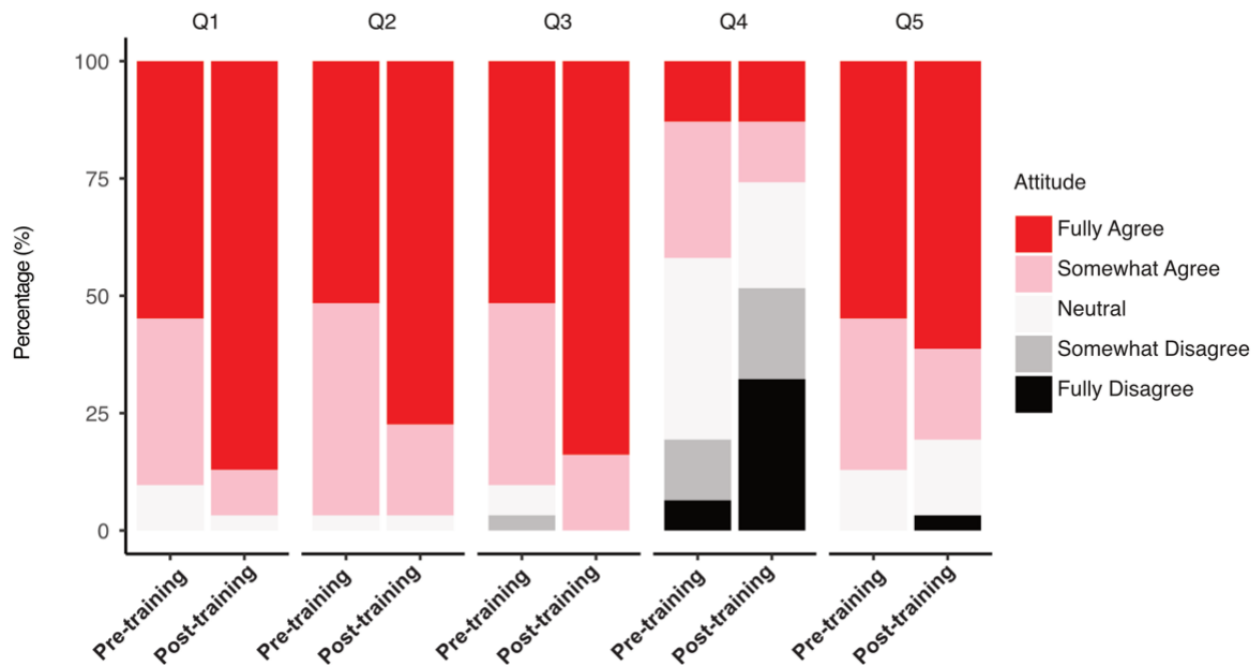


Figure 2. Attitude comparison among nurses toward clown therapy before and after training.

4. Discussion

In the context of continuous transformation and development in the current healthcare environment, medical clowning, as an innovative auxiliary medical approach in the field of complementary medicine, has increasingly

attracted attention for its potential in improving healthcare service experience ^[17,19,20]. This study focused on pediatric outpatient nurses, conducted professional training on clown therapy, and evaluated changes in their cognition and attitudes before and after training. The results showed that at the cognitive level, younger nurses had a higher level of understanding of clown therapy than older nurses before training, which may be attributed to younger nurses' easier access to emerging information and higher acceptance of innovative concepts.

However, after professional training, the correct response rates of both groups of nurses significantly improved, and there was no significant difference after training, fully demonstrating that professional training plays a positive and effective role in promoting nurses' correct understanding of clown therapy. In terms of attitudes, evaluation through the first four subjective questions revealed that training significantly increased nurses' acceptance of clown therapy. This shift is of great significance for clinical nursing work, implying that nurses will more proactively promote clown therapy in their work, reduce promotion difficulties, and greatly improve its clinical accessibility, laying a foundation for creating a more relaxed and pleasant medical environment for pediatric patients.

The study also found that despite informing nurses during training that clown therapy does not require implementers to possess professional medical skills, nurses generally still held the view that such skills are necessary. This reflects the ingrained cognitive patterns formed by nurses based on their professional backgrounds and clinical experience. As known from previous studies, the effectiveness of medical clowning varies in different medical contexts. For example, in sensitive situations such as infertility and death, and when patients are in special states, interventions by medical clowns may produce opposite effects, which may be related to nurses' tendency to believe that professional medical skills can better control the intervention process and ensure its effectiveness and safety.

Based on these findings, it is particularly critical to further investigate whether professional medical skills can enhance the effect of clown therapy in relieving patients' anxiety and pain, as well as improve practical application outcomes. On the one hand, professional medical skills may enable implementers to more accurately judge the condition and adopt more appropriate intervention measures when facing children's complex physiological and psychological conditions. For example, when a child is emotionally agitated due to pain, an implementer with medical skills may more accurately assess the degree and cause of pain, thereby combining clown therapy for more effective comfort^[21]. On the other hand, there is currently a lack of sufficient empirical research to support this hypothesis. Most previous studies have focused on the application effects of medical clowning, with little discussion on the relationship between implementers' skills and effects. Therefore, future research should carry out more high-quality and targeted studies, comparing the effect differences between implementers with professional medical skills and ordinary implementers in applying clown therapy through rigorous experimental designs, to provide scientific and reliable evidence for clinical practice.

From the perspective of application potential, the transformation of nurses' attitude and cognition can effectively facilitate the promotion of clown therapy in pediatric outpatient settings. During the waiting period, nurses can use their understanding of clown therapy to guide medical clowns in carrying out interactions, improving the waiting atmosphere and optimizing outpatient order; during diagnosis and treatment, they can formulate personalized intervention plans based on children's conditions and psychology, enhancing children's treatment compliance and cooperation. In addition, the transformation of nurses' cognition and attitude toward clown therapy can promote interprofessional team collaboration, integrate various resources, and comprehensively improve the quality of medical services in pediatric outpatient departments. This study provides a solid basis for

clown therapy in clinical practice from the perspective of nursing staff, helps clown therapy achieve a broader and more effective application in pediatric outpatient settings, promotes the continuous innovation and development of pediatric medical service models, and creates a better medical experience for children.

5. Conclusion

Professional training was found to effectively enhance nurses' cognition of clown therapy. Younger nurses had a higher cognitive level before training, but there was no significant difference between younger and older nurses after training. Training also significantly improved nurses' acceptance of clown therapy, reducing clinical promotion difficulties and enhancing clinical accessibility. However, despite emphasizing in training that professional medical skills are not required for implementing clown therapy, nurses generally believed they were necessary. The role of professional medical skills in relieving patients' anxiety and pain and improving the application effect of clown therapy warrants further investigation.

Disclosure statement

The authors declare no conflict of interest.

References

- [1] Yang F, Li J, Dan B, et al., 2020, Providing Clown Care in Pediatric Department. *Journal of Nursing Science*, 35(09): 59–60.
- [2] Sun X, Zhang J, Wang Y, et al., 2023, The Impact of Humor Therapy on People Suffering from Depression or Anxiety: An Integrative Literature Review. *Brain Behav*, 13(9): e3108.
- [3] Yu X, Liu Y, Huang Y., 2022, Effects of Clown Care on Children's Anxiety and Pain: A Meta-Analysis. *Journal of Nursing (China)*, 29(04): 21–26.
- [4] Ding Y, Guo W, Wang B., 2018, Discussion on Practice of Nursing Volunteer Service Model of 'Clown Doctor' Under Cross-Cultural Background. *Chinese Nursing Research*, 32(19): 3041–3045.
- [5] Agüero-Millan B, Abajas-Bustillo R, Ortego-Maté C, 2023, Efficacy of Nonpharmacologic Interventions in Preoperative Anxiety: A Systematic Review of Systematic Reviews. *J Clin Nurs*, 32(17–18): 6229–6242.
- [6] Krieger Y, Pachevsky M, Shoham Y, et al., 2022, Relieving Pain and Distress Symptoms in the Outpatient Burn Clinic: The Contribution of a Medical Clown. *Burns*, 48(3): 654–661.
- [7] Jacob G, Einav B, Ashy M, et al., 2022, The Beneficial Effect of Medical Clowns on Performance of EEG in Young Children: A Randomized Controlled Study. *Eur J Pediatr*, 181(9): 3449–3457.
- [8] Masetti M, Caires S, Brandão D, et al., 2019, Confirmatory Factor Analysis of the Questionnaire on the Health Staff's Perceptions Regarding Doutores Da Alegria's Interventions. *J Health Psychol*, 24(2): 166–174.
- [9] Li J, Zhang P, Ding Y, et al., 2020, Application of Clown Care in Vaccination of Preschool Children. *Chinese Nursing Research*, 34(10): 1811–1815.
- [10] Wang P, Zhang L, Cui Y, et al., 2023, Research Progress on the Application of Clown Care in Pediatric Patients. *Clin J Nurs*, 58(08): 1012–1016.
- [11] Wu W, Shiu S, Lu L, et al., 2023, Medical Clowning Influences the Emotions of Parents of Children Undergoing Cancer Treatment: A Quasi-Experimental Study. *J Pediatr Nurs*, 71: e11–e17.

- [12] Yildirim M, Koroglu E, Yucel C, et al., 2019, The Effect of Hospital Clown Nurse on Children's Compliance to Burn Dressing Change. *Burns*, 45(1): 190–198.
- [13] Xi M, Hui R, Gao X, et al., 2023, Research Progress of the Effect of Medical Clowns on the Work of Healthcare Staff. *Journal of Modern Medicine and Health*, 39(16): 2795–2798.
- [14] Sanchez JC, Porras GL, Torres MA, et al., 2024, Effects of Clowning on Anxiety, Stress, Pain, and Hormonal Markers in Paediatric Patients. *BMC Pediatr*, 24(1): 728.
- [15] Qian J, Sun S, Wu M, et al., 2021, Preparing Nurses and Midwives to Provide Perinatal Bereavement Care: A Systematic Scoping Review. *Nurse Educ Today*, 103: 104962.
- [16] Korin O, Babis D, 2024, Medical Clowning in Hospitals: Practices, Training and Perception. *Med Humanit*, 50(2): 383–391.
- [17] Lai J, Ma S, Wang Y, et al., 2020, Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw Open*, 3(3): e203976.
- [18] Sánchez C, Porras L, Torres A, et al., 2024, Effects of Clowning on Anxiety, Stress, Pain, and Hormonal Markers in Paediatric Patients. *BMC Pediatr*, 24(1): 728.
- [19] Korin O, Babis D, 2024, Medical Clowning in Hospitals: Practices, Training and Perception. *Med Humanit*, 50(2): 383–391.
- [20] Aggarwal P, Mathur S, Chopra R, 2024, Assessment of Medical Clowning in Influencing the Anxiety and Behavior Scores of Children Undergoing Various Dental Treatments and the Stress Levels of the Operator. *Int J Clin Pediatr Dent*, 17(1): 59–66.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.