Bangabandhu Sheikh Mujib Medical University Journal 2025;18(1):e75339
ISSN 2074-2908 | eISSN 2224-7750 |

RESEARCH ARTICLE

Effect of hypnotherapy on paediatric cancer pain management in Indonesia: A quasi-experimental study

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Abstract

Background: Paediatric cancer patients often experience pain related to their condition and treatment. Hypnotherapy, a non-pharmacological intervention, has shown promise in pain management. This study aimed to investigate the effects of hospital-based hypnotherapy on pain reduction in paediatric cancer patients.

Methods: A pretest-posttest experimental design without a control group was done with 60 paediatric cancer patients (ages 6–12) at Central General Hospital, Dr. Kariadi Semarang, Indonesia, from February to May 2024. Pain levels were assessed using the visual analogue scale (scores from 0 to 10) at the baseline, after two follow-up sessions at a week interval. Pain scores were recorded starting from 0 to 10. These were categorised as no score 0, mild (1–3), moderate (4–6) and severe (7–10) pain. Pain scores were compared using ANCOVA, but pain categories were compared using the chi-square test.

Results: The mean age of the subjects was 8.8 (standard deviation, 4.2) years; 60% were boys. Hypnotherapy significantly reduced pain scores from a baseline mean score of 4.7 to 0.7 at the second assessment (P<0.001). Severe pain (13.3%) declined to 0%, and conversely, no pain category (0%) increased to 51.7% (P<0.001).

Conclusion: Hypnotherapy at hospital significantly reduces pain in paediatric cancer patients. Therefore, hypnotherapy could be a valuable adjunct to conventional pain management strategies in paediatric oncology.

Key messages

Paediatric cancer patients often face treatment-related pain, ranging from mild to severe grades. Hypnotherapy is known to have some role in pain mitigation. In a hospital-based sample of patients, we observed that hypnotherapy substantially decreases pain intensity. Therefore, hypnotherapy should be considered to complement conventional non-pharmacological pain management strategies in paediatric oncology.

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Publication history
Received: 5 Aug 2024
Accepted: 25 Nov 2024
Published online: 2 Feb 2025

Responsible editor
M Mostafa Zaman
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Reviewer
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P: Anonymous

Keywords
hospital-based hypnotherapy, pain, children, cancer, oncology

Funding
This study was funded by STIKES Telogorejo Semarang.

Ethical approval
Approved by the research ethics committee of RSUP Dr Kariadi Semarang (No: 1647/EC/KEPK-RSDK/2023) on 15 Dec 2023.

Trail registration no.
None

Introduction

The incidence of paediatric cancer is gradually increasing.[1] Cancers occur in every location irrespective of their economic conditions: developed, developing or underdeveloped. In Indonesia, cancer is the seventh leading cause of death, with paediatric cases presenting unique challenges to the healthcare system.[2] In Indonesia, cancer and tumours account for 5.7% of all causes of mortality, making them the seventh most common cause of death. One of the most distressing symptoms experienced by children with cancer is pain, which can stem from the disease itself, treatment side effects, or associated procedures.[3]

Effective pain management in paediatric cancer patients is crucial for improving quality of life and potentially influencing treatment outcomes.[4] While pharmacological interventions are the mainstay of pain management, they often come with side effects and may not address the multidimensional nature of cancer-related pain.[5] As a result, there is growing interest in complementary approaches to pain management, including non-pharmacological interventions.[6] Nurses can assist patients by employing complementary medicine practices. Relaxation techniques are the most critical non-pharmacological intervention for pain management.[6]

Hypnotherapy, a technique involving focused attention and increased suggestibility, has shown promise in managing various types of pain in both adult and paediatric populations.[7] By potentially modulating pain perception and reducing anxiety, hypnotherapy could offer a valuable tool in the comprehensive management of cancer-related pain in children.[8] The function of the hypothalamus is to reduce the activity of the sympathetic nervous system and release catecholamines; relaxation can reduce muscle tension and the dangerous physiological effects of stress, such as high blood pressure, tachycardia, and muscle spasms. Since the seventh century, hypnotherapy has been used as a standard approach to psychotherapy. However, the efficacy of hypnotherapy for pain management in paediatric cancer patients, particularly in the Indonesian context, remains underexplored. Therefore, this study aimed to investigate the association between hospital-based hypnotherapy and pain reduction in paediatric cancer patients at a tertiary care hospital in Indonesia.

Methods

Study design, setting and participants

A quasi-experimental (pretest-posttest) study without a control group was conducted at the Paediatric Oncology Unit of Central General Hospital, Dr. Kariadi Semarang, Indonesia, from February to May 2024. Sixty paediatric cancer patients aged 6-12 were recruited using convenience sampling. Inclusion criteria were a cancer diagnosis, cancer-related pain, and the ability to communicate and follow the therapists' instructions. The consent of the parents and the children was obtained before enrolling in the study.

Data collection techniques

Data on age, gender, cancer types, and duration of treatment were collected. Before each hypnotherapy session, participants underwent a pain assessment using the facial expression images from the Baker-Wong Faces[9] but recorded using the visual analogue scale (VAS) scores (0–10). The advantages of using this measuring instrument are that it is the most sensitive method for measuring pain intensity, is easy to make, has a good correlation with other measurement scales, can measure all types of pain, and is applied to all patients. Pain is measured by observation and asking patients about their pain. The scores obtained are categorised as follows: no pain, 0; mild pain (can still be tolerated, activities are not disturbed), 1-3; moderate pain (interferes with activities), 4-6; severe pain (unable to carry out activities independently), 7-10. The VAS pain scale was valid with r = 0.62 and reliable with Cronbach's alpha 0.95.

Trained and certified hypnotherapists experienced in paediatric care conducted all pain assessments to minimise bias. The sessions were conducted in a quiet, comfortable room within the Paediatric Oncology Unit to ensure privacy and reduce external distractions. Each session lasted for 30 minutes. Assistants were trained to adequately to administer the scale, including explaining it to children to record responses accurately. The same therapist conducted pre- and post-session assessments for each participant using the same tool to ensure consistency. Two sessions of hypnotherapy were done one week apart for each participant. The hypnotherapy protocol had four main components. The induction phase utilised a progressive relaxation technique, guiding participants to relax different body parts gradually. This was followed by a deepening phase, where participants were led on an imaginary journey to a safe, comfortable place of their choice. The therapeutic suggestion phase included positive affirmations for pain reduction, comfort, and healing imagery tailored to the paediatric context. Finally, the emergence phase involved a gradual return to full awareness, with suggestions for continued comfort and well-being. The hypnotherapist used age-appropriate language and imagery throughout the session to ensure the intervention was engaging and understandable for this age group.

Ethical concerns

Upon being provided with detailed information regarding the study, all volunteers proceeded to affix their signatures on a written consent form. They were assured that rejecting participation in the study would not affect their professional status, and their data would be kept confidential and anonymous.

Statistical analysis

Data were analysed using SPSS version 26.0. Descriptive statistics (numbers and percents) were used to summarise participant characteristics (sex, education, cancer types, and pain categories). Pain categories were compared using chisquare test. ANCOVA was done to get the adjusted VAS scores for three sessions (pre-, post-1, and post-2). Adjustment was made for age and sex. $P<0.05$ was considered statistically significant.

Results

The mean age was 8.8 years (standard deviation 2.4). The most common cancer diagnosis was acute lymphoblastic leukaemia (55%), followed by retinoblastoma (8.3%), acute myeloid leukaemia (6.7%), and non-Hodgkins lymphoma (6.7%) (Table 1). Hypnotherapy significantly reduced adjusted pain scores from a baseline mean score of 4.7 to 0.7 at the second assessment (P<0.001). Severe pain (13.3%) declined to 0%, and conversely, no pain (0%) increased to 51.7% (P<0.001) (Table 2).

Table 1 Characteristics of cancer child at the paediatric oncology unit of Central General Hospital, Dr. Kariadi Semarang, Indonesia (n=60)

Categories	Number (%)
Sex	
Male	36 (60.0)
Female	24 (40.0)
Age in years[a]	8.8 (4.2)
Education	
Pre-school	20 (33.3)
Elementary school	24 (40.0)
Junior high school	16 (26.7)
Cancer diagnoses	
Acute lymphoblastic leukemia	33 (55)
Retinoblastoma	5 (8.3)
Acute myeloid leukemia	4 (6.7)
Non-Hodgkins lymphoma	4 (6.7)
Osteosarcoma	3 (5)
Hepatoblastoma	2 (3.3)
Lymphoma	2 (3.3)
Neuroblastoma	2 (3.3)
Medulloblastoma	1 (1.7)
Neurofibroma	1 (1.7)
Ovarian tumour	1 (1.7)
Pancreatic cancer	1 (1.7)
Rhabdomyosarcoma	1 (1.7)

[a]Mean (standard deviation)

Discussion

This study demonstrates a significant reduction of pain in paediatric cancer patients (aged 6–12) with hospital-based hypnotherapy in an Indonesian tertiary care setting. This suggests that hypnotherapy could be a valuable adjunct to conventional pain management strategies in paediatric oncology. Previous research indicates that hypnotherapy substantially diminishes sensory and emotional pain perceptions, facilitating effective pain management for patients and thereby significantly alleviating discomfort in cancer patients.[10] Our findings align with previous research on the efficacy of hypnotherapy for pain management in various clinical contexts.[11] The significant pain reduction observed in our study may be attributed to several factors.[12] First, hypnotherapy can modulate pain perception through multiple mechanisms, including altering sensory processing and reducing anxiety.[13] Second, the age group of our participants (6-12 years) may be particularly receptive to hypnotic suggestions due to their vivid imaginations.[14]

Our study's strong association between hypnotherapy and pain reduction has important clinical implications. By providing an effective non-pharmacological option for pain management, hypnotherapy could help reduce reliance on analgesic medications, potentially minimising side effects and improving the overall quality of life for paediatric cancer patients.[15] Moreover, as a non-invasive intervention, hypnotherapy could be easily integrated into existing care protocols without significant additional resources.

Hypnotherapy affects the anterior cingulate cortex, affecting the pain experience. Affection modulation will influence the brain's perception of the pain experience to lead to positive coping. Pain cannot be eliminated, but positive coping will enable a person to accept and realise pain more comfortably as the brain's perception changes during the hypnotherapy and post -hypnotherapy process.[16,17,18]Hypnotherapy is a mind-body therapy that has been clinically proven to be effective for pain, chronic pain, and mood disorders. Although hypnotherapy has been suggested to work through a placebo effect, recent research has found that it is a different phenomenon. Like cognitive behavioural therapy, it works on the individual's response to pain; however, unlike cognitive behavioural therapy, new ways of thinking and responding are implanted in the mind through suggestion so that new responses occur automatically rather than being learned or done with difficulty. Although the mechanism of action is not yet fully understood, brain imaging techniques show marked changes in neural activity while under hypnosis. Changes in neural activity are responsible for increased focus, somatic and emotional regulation, decreased self-awareness, and increased capacity to respond to suggestions are characteristic of hypnosis.[19,20]

Limitation

The experimental design without a control group limits our ability to definitively attribute the observed pain reduction solely to the hypnotherapy intervention. Future research using randomised controlled trials would provide stronger evidence of causality. Additionally, while our study demonstrated short-term effects, longer-term follow-up would be valuable to assess the durability of pain reduction and the potential cumulative effects of repeated hypnotherapy sessions. Future studies should also explore the impact of hypnotherapy on other cancer-related symptoms and quality-of-life measures.

Conclusion

This study provides evidence for a significant association between hospital-based hypnotherapy and pain reduction in paediatric cancer patients in Indonesia. While further research is needed to establish causality, these findings suggest that hypnotherapy can be an effective pain management strategy in paediatric oncology care. Future studies should employ more robust designs to confirm these results and explore the long-term effects of hypnotherapy on pain and other symptoms in this vulnerable population.

Table 2 Pain levels before and after (post 1 and post 2) hypnotherapy to cancer children at the paediatric oncology unit of Central General Hospital, Dr. Kariadi Semarang, Indonesia (n=60)

Pain level	Number (%)			*P*
	Pre	Post 1	Post 2	
Mean (SD)[a] pain score	4.7 (1.9)	2.7 (1.6)	0.8 (1.1)	<0.001
Pain categories				
No pain (0)	-	1 (1.7)	31 (51.7)	<0.001
Mild pain (1-3)	15 (25.0)	43 (70.0)	27 (45. 0)	
Moderete pain (4-6)	37 (61.7)	15 (25.0)	2 (3.3)	
Severe pain (7-10)	8 (13.3)	2 (3.3)	-	

[a]Pain scores according to the visual analogue scale raging from 0 to 10; SD indicates standard deviation

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Acknowledgments

We thank all participants of this study.

Author contributions

Conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: SHMA, NN, SP, MO. *Drafting the work or reviewing it critically for important intellectual content:* SHMA, SPK. *Final approval of the version to be published:* SHMA, NN, SP. *Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved:* SHMA.

Conflict of interest

We do not have any conflict of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

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