

Impact of Dance Therapy on Comfort Based on Kolcaba's Nursing Theory in Children with Cerebral Palsy

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ABSTRACT

Background: Musculoskeletal disorders and balance difficulties are part of several multidimensional problems in children with cerebral palsy. The obligation to undergo physiotherapy has an emotional and painful impact, so there is a risk of affecting mental health. **Objective:** The study aims to collect evidence of the impact of dance therapy on providing comfort based on the taxonomic structure of Kolcaba's nursing theory. **Methods:** A literature review was done by exploring the Frontiers Database, Springer Link, Pub Med, and Research Gate published between 2017 and October 2022. The data were analyzed using deductive content analysis regarding the effect of the dancing intervention on the comfort of children with cerebral palsy after undergoing medical therapy. **Results:** Only seven articles were included for data extraction on dance therapy providing comfort. School-age children and adolescents dominate this study. In addition, researchers found that dance therapy also has a physiological, social, and psychological impact on children with cerebral palsy. **Conclusion:** Dance therapy is an alternative to provide comfort for children with cerebral palsy through transcendence, relief, and ease. In addition, this therapy is an inexpensive artistic innovation because it uses good music, timing, and minimal movement to stimulate children to participate.

Keywords: Cerebral Palsy; Dance Therapy; Kolcaba's Comfort Theory

INTRODUCTION

Cerebral Palsy (CP) occurs due to neurodevelopmental disorders that arise from antenatal to postnatal stage (Patel *et al.*, 2020). Children experience multidimensional problems such as neurological, cognitive, and psychosocial disorders (Cherriere *et al.*, 2020). Simpamba (2020) stated that the average prevalence of CP children worldwide is 2 per 1000 births. It is 2.11 per 1000 births in developed countries, and the highest rate in poor countries is 10 per 1000 births. As a developing country, Indonesia has recorded a prevalence of CP 5 children per 1000 births (Pujasari, Rusmil, & Somasetia, 2020). Children with cerebral Palsy need medical therapy, such as physiotherapy, to reduce multidimensional problems (Panteliadis & Vassilyadi, 2018). However, the phenomenon of crying, screaming, and a stiff body occurs because the child feels pain (Petigas & Newman, 2021). As a result, the effectiveness of physiotherapy is not optimal (Jadhav & Kanase, 2019). Therefore, nurses must be sensitive when caring for children with cerebral Palsy (Alligood, 2014; Mukesh *et al.*, 2016). Kolcaba's theory considers comfort to be the most critical aspect of all human life cycles. Comfort is essential in the range of sickness to health for children with cerebral Palsy (Roth *et al.*, 2022; Schuiling *et al.*, 2011). In addition, comfort is the final stage of the nurse's therapeutic action toward the patient. The nursing action approach with Kolcaba's theory of comfort is considered appropriate to see the structure of children's comfort as transcendence, relief, and ease (Alligood, 2014; Oliveira *et al.*, 2020). There are other alternative theories in practice which help in addressing of unresolved trauma, and the experience of personal growth among children. In this regard therapeutic play is widely considered as an essential, effective, and developmentally appropriate mental health treatment (Binti Awang, Dioso & Said, 2022). Relief is a state in which discomfort is reduced or a specific need is identified. Ease gives peace or satisfaction. Transcendence is the stage where a person can adapt to problems (Alligood, 2014). In addition, nurses must be able to analyze, in general, the benefits provided to individuals, health, nursing, and the environment (Oliveira *et al.*, 2020). Combining movement with music is an innovation to be reckoned with

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(Sarancha *et al.*, 2021). Dance therapy is an innovation that needs attention because this intervention is a body-oriented psychotherapy using movement, music, and focus (López-Ortiz *et al.*, 2019).

The presence of brain damage causes children to be more sensitive to feelings of stress due to pain while undergoing physiotherapy (Alligood, 2014; Adolfsson, Johnson, & Nilsson, 2019). Discomfort stress can significantly impair mental health if left untreated (Petigas & Newman, 2021). Due to the discomfort in children with Cerebral Palsy, it is essential to know the impact of dance therapy on the comfort of children with cerebral Palsy using a nursing approach.

METHODOLOGY

Study Design

A literature examination was conducted by delving into databases including Frontiers Database, Springer Link, Pub Med, and Research Gate, encompassing the period from 2017 to October 2022. The gathered information was subjected to deductive content analysis, focusing on the impact of dance interventions on the well-being of children diagnosed with cerebral palsy subsequent to receiving medical treatment. This is a literature review on the effectiveness of dance therapy on comfort in children with cerebral palsy. Research questions were developed following the PICO (population, intervention, control, and outcomes) guidelines as presented in Table 1 below.

Table 1: PICO Model

No	Author (s)	Publication	Sample / Respondent characteristics	Intervention / Group Control	Intensity Therapy (duration/frequency/time of meeting)	Aim	Main Results
1	Teixeira-Machado <i>et al.</i> (2017)	Research Gate	32 respondent 15 to 29 years GMFC levels II to V	Dance therapy / Kinesiotherapy	12 weeks, twice per week, 60 minutes	Physical functionality and psychosocial adjustment.	Dance therapy taught the children to be independent, have activities, and make psychosocial adjustments. Dance therapy affects the emotional and social aspects.
2	Withers, Muzzolon & Zonta, (2019)	Research Gate	18 respondent 6 to 18 years GMFC levels I to II	Hip-Hop Dance / Multidisciplinary Therapy	80 weeks, once per week, 60 minutes	Adaptation on quality of life and the biopsychosocial	Emotional problems, decreased anxiety or depression, enthusiastic responders, no somatic complaints (abdominal pain, headaches, muscle aches) during therapy, and self-confident.
3	Lakes <i>et al.</i> (2019)	Frontiers	8 participant 9 to 14 years Spastic diplegia and / or hemiplegia	Therapeutic ballet/ none	6 weeks, 3x per week, 60 minutes	Feasibility and effects interventions	At first, the respondents had difficulty following, but over time the children felt comfortable doing the movements for an average of 24 minutes per day.
4	Teixeira-Machado and DeSantana (2019)	Research Gate	26 respondent 15 to 29 years GMFC level III to V	Dance therapy / ROM (Range of Motion)	12 weeks, 2x per week, 60 minutes	comfort and ease of range of motion of the lower limbs	All joints of the lower limbs and axes of motion function after undergoing dance therapy, feeling ease and comfort and increasing self-esteem, self-confidence, and the respondent's well-being.

5	Joung <i>et al.</i> (2020)	Pub Med	10 respondent 13 to 20 years GMFC levels I to II	Creative Dance / Based Exercise	12 weeks, 2x per week, 90 minutes	The feasibility and potential of creative	Increased 98% attendance and satisfaction, increased walking speed, able to follow dance rhythms, step left and right, and make long strides.
6	Takahashi <i>et al.</i> (2020)	Springer Link	4 participant 5 to 10 years IQ <70 posture and body muscle disorders	Dance/Movement Therapy/none	5 weeks, 2x per week, 60 minutes	Comfort in maintaining body stability objectively	Positive behavioural changes in their children, willingness to participate in sports, feeling ease and comfort when doing activities, not experiencing somatic complaints such as headaches, joint or muscle pain, and anxiety or depression, and sharing a decrease in antisocial attitudes.
7	Lai <i>et al.</i> (2021)	Research Gate	58 respondent 10 to 19 years GMFC levels I to III and levels IV to V	A movement to Music (M2M) intervention group/ Waitlist Control (WC) group	4-week intervention, 3x per week, > 60 minutes	To test the efficacy, compare the therapy administration, program effects and perceived fatigue.	Enjoying Movement-to-Music (M2M) telehealth programs, LTPA behaviour enhancement, following ongoing programs, and modified alternatives for adolescents with severe mobility limitations

Search Strategy

Researchers have described it in Table 2.

Table 2: Article Characteristics Identification

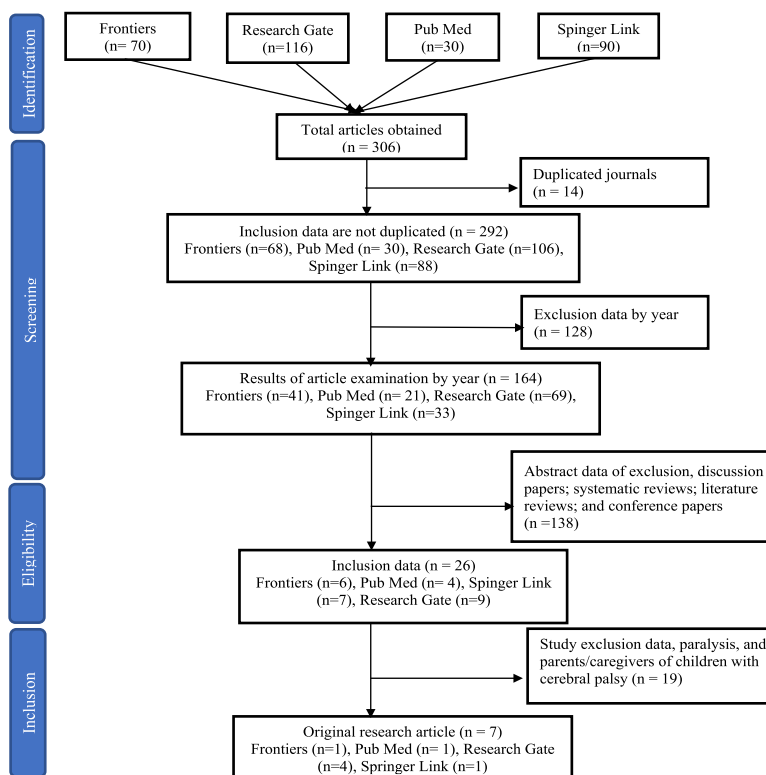
Research Title	Impact of Dance Therapy on Comfort Based on Kolcaba's Nursing Theory in Children CP							
PICO questions	Is the administration of dance therapy effective in providing comfort according to the structure of Kolcaba's theory in children's CP? Does dance therapy impact comfort according to Kolcaba's theory's structure in children's CP?							
Research Topics Component		P (POPULATION)		I (INTERVENTION)		C (COMPARATION)		O (OUTCOME)
Key Term		“Children with Cerebral Palsy”	AND	“Dance Therapy”	AND	“Service Standards”	AND	“Comfort”
Alternative Term	OR	Cerebral Palsy Spastic	OR	Dancing	OR	-	OR	Happy
Alternative Term	OR	Brain Injury in Child	OR	Dance Movement	OR	-	OR	Fatigue
Alternative Term	OR	Stroke in Children	OR	Ballet	OR	-	OR	Pain

Selection Criteria

The inclusion criteria for this study comprised of a collection of journals from 2017 to 2022. The study considered quantitative and qualitative research using only original, full-text research, children with cerebral

palsy, musculoskeletal problems, able to walk, and still undergoing physiotherapy. Exclusion criteria included conference papers, symposiums, discussion papers, systematic reviews, literature reviews, and parents or caregivers of children with cerebral palsy and paralysis. Researchers have described filters in Flowchart 1. A total of 7 articles were included in the review.

Flowchart 1: Journal Research Strategy



RESULTS

After reviewing journals on published research and looking at the characteristics, methodologies, and different research results it was found that dance therapy is recommended to comfort children with cerebral palsy. Seven selected studies written in English were chosen for the present study. This type of patient intervention was carried out in several countries, including Korea, Japan, the United States, and the United States. Only Brazil, representing a developing country, discussed the effect of dance therapy on children with cerebral palsy. None of the articles came from nursing journals. Randomized controlled trials, pilot studies, and one cohort study were used for the study design. Respondents also participated in physiotherapy in this study. Six articles used two groups: the experimental group and the control group. The experimental group was given the intervention of several types of dance therapy. The control group was assigned the standard intervention. One article uses three groups: the dance group, the movement group, and the no-treatment group.

The implementation of the research can be seen in one article that met once a week for 87 weeks, four articles that met twice a week for 4 to 12 weeks, and two articles that met three times a week for 4 to 6 weeks. The duration of dance therapy for each meeting is 60 minutes. All articles assess musculoskeletal problems with Gross Motor Function Classification (GMFC) levels I to V; children can stand and sit; and all respondents in the article follow physiotherapy. Dance therapy is an additional activity for CP children to overcome their discomfort while undergoing physiotherapy. The results of the analysis can be seen in Table 3. All research articles answered the objectives, and it was found that giving dance therapy to children with cerebral palsy improved motor function. In addition, giving dance therapy to CP children reduces somatic Complaints and emotions, according to the implementation results in Table 4.

Table 3: Results of the Implementation of Dance Therapy

No	Assessment Instruments	Teixeira-Machado <i>et al.</i> (2017) (<i>p</i> -value)	Withers, Muzzolon & Zonta (2019) (<i>p</i> -value)	Lakes <i>et al.</i> (2019) (<i>p</i> -value)	Teixeira-Machado & DeSantana (2019) (<i>p</i> -value)	Joung <i>et al.</i> (2020) (<i>p</i> -value)	Takahashi <i>et al.</i> (2020) (Theme)	Lai <i>et al.</i> (2021) (<i>p</i> -value)
1	International Classification of Functioning, Disability, and Health (ICF) - Functioning - Independence function - Self-care	0.001 0.004 0.01	-	-	-	-	-	-
	Functional independence measure (FIM) - Mobility - Locomotion - Communication - Psychosocial Adjustments - Cognitive function	0.008 0.01 0.02 0.04 0.03	-	-	-	-	-	-
2	Child Behavior Checklist - good quality of life (QoL) - Anxious/Depressed - Somatic Complaints - Aggressive Behavior - Externalizing Problems	-	0.03 0.49 0.01 <0.001	-	-	-	“Feel the ease of moving, no complaints, and can learn to get to know other people”	-
3	Spatiotemporal gait parameters - step length(cm) on right - step length(cm) on left - ambulation - Opposite foot off -First double-limb support - Single-limb support - Cadence	-	-	0.027 0.027 0.02 - - - -	-	0.005 0.005 0.005 0.028 0.028 0.022 0.009	-	-
4	Passive ROM levels used Sany®. pendular pleximeter - Hip * Right flexion (flexioned knee) * Left flexion (flexioned knee) * Right extension * Right abduction * Left abduction * Right adduction * Left adduction * Right external rotation * Left external rotation - Ankle * Right dorsal flexion * Left dorsal flexion * Right plantar flexion * Left plantar flexion * Right inversion * Left inversion * Right eversion * Left eversion	-	-	-	0.04 0.01 0.03 0.0006 0.02 0.02 0.02 0.01 0.01 0.04 0.04 0.004 0.0008 0.006 0.04 0.0008 0.0008	-	-	-
5	Body Cathexis Scale (BCS)	-	-	-	-	0.005	-	-
6	Children's Assessment of Participation and Enjoyment (CAPE) - Children's Assessment of Active Physical Recreation Participation and Enjoyment (CAPE-APR) - CAPE-APR-Intensity Pain Fatigue	0.001	-	-	-	-	-	0.02 0.02 0.19 0.88

The Kolcaba Comfort Theory emphasizes the role of the nurse in assessing, planning, implementing, and evaluating interventions to enhance the patient's comfort. By addressing these different dimensions of comfort, nurses aim to promote a holistic sense of well-being and quality of life for patients (Kolcaba, 1994).

Table 4: Context and Taxonomy of Kolcaba's Theory in Each Group

Taxonomy Context	Relief	Ease	Transcendent
Physical	Joung <i>et al.</i> ; Teixeira & DeSantana; Lakes <i>et al.</i> ; Teixeira <i>et al.</i>	-	-
Psychospiritual	-	Lai <i>et al.</i> ; Withers, Muzzolon & Zonta	Lai <i>et al.</i> ; Withers, Muzzolon & Zonta
Psycocultural	-	Withers, Muzzolon & Zonta ;Teixeira <i>et al.</i>	Takahashi <i>et al.</i> ; Teixeira <i>et al.</i>
Environment	-	Withers, Muzzolon & Zonta; Teixeira <i>et al.</i> ; Takahashi <i>et al.</i>	Teixeira <i>et al.</i> ; Takahashi <i>et al.</i>

DISCUSSION

The incidence of children with CP in Indonesia has increased every year. Cerebral palsy cases were recorded in children aged 24-59 months—as many as 0.09% of the living children (KEMENKES RI, 2018). Of the seven studies that have been reviewed, it has been proven that the effectiveness of dance therapy improves motor skills in children. All reviews were performed for at least 4 to 80 weeks (Lai *et al.*, 2022; Withers, Muzzolon, & Zonta, 2019). Performance of dance therapy by modifying white and gray matter memory in various brain regions that integrates other brain functions, such as kinesthetic (perception of one's body movements), musical (interpretation of sound), and emotional (the extent to which music and movement are expressed) (Joung *et al.*, 2020) is beneficial for comforting. In this study, dance therapy can be used as a reference for nursing interventions by applying the concept of child comfort based on Kolcaba's comfort theory approach. Application of the comfort to nursing care for children with cerebral palsy with dancing therapy was found to be effective.

Kolcaba's theory prioritizes comfort as an essential need in illness and health when nurses perform therapeutic actions on patients (Alligood, 2014; Wirastri, Nurhaeni, & Syahreni, 2017). According to Kolcaba, comfort has a holistic and complex meaning, including relief, ease, and transcendence. This comfort will shape the physical, psychospiritual, sociocultural, and environmental context (Alligood, 2014; Oliveira *et al.*, 2020). According to Kolcaba, the physical context is a physiological assessment or bodily sensation (Alligood, 2014; Sulistyawati, Aprilia, & Bangun, 2023). This means that nurses must be sensitive to the physiological state of the patient's body by looking at the results of a physical examination and body changes that occur in the limbs. The psycho-spiritual context is related to internal self-awareness, including self-esteem, concepts, sexuality, the meaning of one's life, and relationships with higher orders or beings, such as self-confidence and increased quality of life (Talukdar, Mahmud, & Rashid, 2018; Yeni, 2017). The environmental context describes things related to the external environment, its conditions, and its influences. Influence is defined as influencing positive behavior by examining the passion or struggle of the patient. The social context describes interpersonal, family, and community relationships (Alligood, 2014; Lin, Zhou, & Chen, 2023). With this theory, the benefits of dance therapy (Table 4) can be known from the present study. Relief and comfort in Kolcaba's Theory are Related to Dance Therapy.

Providing dance therapy for children with cerebral palsy, the four articles revealed that dance therapy offers relief from physical discomfort by evaluating the range of motion and restoring the muscle movement system (Joung *et al.*, 2020). Dance therapy stimulates the brain's neural plasticity and its interaction with behavior.

Children with chronic movement disorders and non-progressive postures can minimize muscle shortening by expanding their range of motion, which is an achievement (Lakes *et al.*, 2019). Four articles suggested that caution must be taken in determining steps and movements to reduce the risk of fractures and pain when given an activity (Sarancha *et al.*, 2021; Stribling & Christy, 2017). Giving cheerful music stimulates movement and makes it a daily activity (Joung *et al.*, 2020).

Table 5: Advantages and Disadvantages of Dance Therapy

Advantage	Disadvantage
<p>Low cost (Takahashi <i>et al.</i>, 2020), provides movement and music (Withers, Muzzolon & Zonta, 2019), Improves motor function (Joung <i>et al.</i>, 2020; Takahashi <i>et al.</i>, 2020; Teixeira - Machado <i>et al.</i>, 2017; Withers, Muzzolon & Zonta, 2019), Reduces aggressive behavior (Withers, Muzzolon & Zonta, 2019), Comfort (Teixeira-Machado <i>et al.</i>, 2017), Improves communication in children (Teixeira-Machado <i>et al.</i>, 2017), Increases self - confidence (Teixeira-Machado <i>et al.</i>, 2017), Increases independence (Teixeira -Machado <i>et al.</i>, 2017), Decrease s somatic behavior (Withers, Muzzolon & Zonta, 2019), Reduces pain (Lai <i>et al.</i>, 2022), Not easily emotional (Teixeira-Machado <i>et al.</i>, 2017), children become obedient (Withers, Muzzolon & Zonta, 2019), Build responsible attitudes (Joung <i>et al.</i>, 2020)</p>	<p>Cannot be given in a short time (Lai <i>et al.</i>, 2022); A maximum of only 1 hour to avoid child fatigue (Lai <i>et al.</i>, 2022); Must be accompanied by a professional physiotherapist (Lakes <i>et al.</i>, 2019); Only be given to children who can stand and sit (Joung <i>et al.</i>, 2020); Unable to provide more movement due to risk of fracture (Joung <i>et al.</i>, 2020; Takahashi <i>et al.</i>, 2020; Teixeira-Machado <i>et al.</i>, 2017) It can't be done every day considering that most children with cerebral palsy are at risk of osteoporosis (Takahashi <i>et al.</i>, 2020)</p>

Kolcaba's Theory of Comfort in the Ease of Dance Therapy

Dance therapy is proven to provide ease and comfort. It is proven that dance therapy makes respondents happy and satisfied psychospiritually (Roth *et al.*, 2022; Teixeira-Machado *et al.*, 2017). Psychosocial context: children can interact with the people around them; environmental context: no somatic issues. There is an increase in cognitive function, self-confidence, joy, independence, and zest for life (Kisvetrová, Vévodová & Školoudík 2018; Takahashi *et al.*, 2020). The extraordinary impact of dance therapy in a psychospiritual, psychosocial, and environmental context occurs when, on stage, children feel the audience's attention, enthusiasm, and standing applause. This attitude indeed comforts the soul emotionally (Wirastri, Nurhaeni, & Syahreni, 2017).

Kolcaba's Theory of Comfort in the Transcendence of Dance Therapy

The theory of transcendence in Kolcaba's emphasizes how a person can adapt to his problems when given an intervention marked by respondents enjoying the time during therapy accompanied by obedience and enthusiasm. Dance therapy provides an opportunity to socialize and involves respondents by giving them the confidence to participate in performances (Takahashi *et al.*, 2020; Teixeira-Machado *et al.*, 2017). Environmental contexts increase cognitive function (Joung *et al.*, 2020; Takahashi *et al.*, 2020).

The limitation of this research, in general, is that it only explains the taxonomy of Kolcaba's theory. Further review is expected to be able to carry out nursing care in providing dance therapy based on Kolkaba's theory using physical assessment instruments and quality of life in children with cerebral palsy.

CONCLUSION

Dance therapy effectively improves motor function, emotion, communication, relationships, self-confidence, and independence in children with cerebral palsy. Dance therapy is an alternative to provide comfort for children with cerebral palsy through transcendence, relief, and ease.

Therefore, it is recommended that the physiotherapy unit modify this intervention by adding music and simple movements and providing opportunities for respondents to appear in performances. Dance therapy cannot be provided in a short time because it will reduce the cognitive and motor qualities that have begun to form.

Conflict of Interest

The authors declare that they have no conflict of interest.

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