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Music Therapy and Story Telling: Nursing Interventions to Improve Sleep in Hospitalized Children

Shinta Widiastuty Anggerainy, Sp.Kep.An^{a,b}, Dessie Wanda, S.Kp., MN., Ph.D^a,
and Nani Nurhaeni, S.Kp., MN.^a

^aFaculty of Nursing, Universitas Indonesia, Depok, West Java, Indonesia; ^bNursing Academy of West Kalimantan Province, Sintang, West Borneo, Indonesia

ABSTRACT

Music therapy and story telling are examples of nursing interventions that facilitate the management of sleep disturbance in children. However, only a few studies have addressed the effectiveness of music therapy and storytelling on hospitalized children. This study aimed to examine the effect of music therapy and storytelling on sleep disturbance in hospitalized children for various medical conditions. This recent study was a preliminary study that included two intervention groups without a control group. This study involved 31 children with ages ranging from infancy to school age who were assigned to a 3-day music therapy or storytelling intervention group. Group 1 received music therapy ($n = 16$) and group 2 was provided with story telling ($n = 15$). Data collection was conducted from February through April 2018 in an infectious diseases ward of a hospital in Jakarta. Data related to sleep disturbance in children was collected using GATIA scale, an instrument measuring a sleep disturbance scale. Study results showed a significant change in the average of sleep disturbance scale score in both group 1 and group 2 ($p < \alpha$; $\alpha = .05$) which demonstrate that both music therapy and story telling improved scores on a sleep disturbance scale in hospitalized children. Music therapy and story telling were equally effective in managing sleep disturbance in children. Music therapy and story telling are safe, cheap, and convenient interventions that can improve the quality of sleep in children during hospitalization.

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KEYWORDS

Hospitalized children; music therapy; story telling; sleep disturbance

Introduction

Sleep and rest disturbance is common among children admitted in the hospital. The problem may affect children since the first day of hospitalization. Meltzer, Davis, and Mindell (2012) described that there are three types of sleep disorder in hospitalized children, including auditory (noises), discomfort or anxiety, and hospital-specific variables (pain, measurement of vital signs).

Sleep is a basic human need. Insufficient sleep can affect child's health. During hospitalization, a child may be affected by sleep disturbance

including alteration in pattern, quantity, and quality of sleep. Sleep disturbance in children is associated with anxiety and mood (Haney & Kott, 2014). Sleep insufficiency may be manifested by changes in cardiovascular, endocrine, immune, and nervous system (Haney & Kott, 2014). Sleep deficiency may affect human physiology, which includes immunodeficiency, altered memory, slower wound recovery, lack of vitality, increased insulin resistance, pain perception, and death (Tamrat, Huynh-Le, & Goyal, 2013).

These problems should be addressed to allow children to get adequate sleep throughout hospitalization. Music therapy is a nursing intervention that may be applied to manage sleeping disorder in children. It may be provided before they go to bed at night. Tamrat et al. (2013) classified music therapy as a relaxation technique that promotes the quality of sleep. Story telling is one of the activities before sleep is common, effective given parents to their children, and help their children sleep. Henderson and Jordan (2010), categorized reading a story into adaptive bedtime routines activities from caregivers of children ages 2–8 years.

Adequate sleep is essential for health and is especially during illness. McDowall, Galland, Campbell, and Elder (2017) revealed that problematic sleep affected around 14–45% of children aged 2–4 years and affected 37–62% of older children. The sleep disrupted in hospitalized children may be associated with pain, discomfort, noise, light, delayed bedtime, unfamiliar environment, and homesick (Meltzer et al., 2012). Meltzer, Davis, & Mindell, study examined multiple aspects of sleep for 72 non-intensive care pediatric inpatients and 58 rooming-in parents who completed a self-report survey of sleep at home and in the hospital, and sleep disturbances in the hospital. These disturbances may affect the quality of life of hospitalized children because everyone needs sleep and rest, especially sick children.

Reading, listening to music, and other light activities are common bedtime routines for children. Playing music before bedtime is a relaxation method that promotes sleep during hospital stays (Tamrat et al., 2013). Recorded music and Live music interventions were shown to improve sleep at hospitalized premature infant in the NICU between 24 and 40 weeks gestational age (Van der Heijden et al., 2016). In this study, Van der Heijden et al. (2016) found the frequency live music intervention varied between once daily and thrice weekly for 5–30 min, and the recorded music intervention was offered once or three times daily for 3–60 min during a period from 1 to 14 days. This was the first study to examine the effect of music therapy on hospitalized children with sleep disturbance. However, further research is necessary to investigate the effectiveness of music therapy on children with altered sleep in an infectious diseases ward.

Methods

This was a preliminary study involving 31 children across various age groups, including infancy, toddlerhood, pre-school age, and school age, who were

assigned into two intervention groups. The participants were selected using a consecutive sampling technique with the following inclusion criteria: aged 4 months to 13 years, experiencing sleep disturbances, alert, not hearing disorder, willing to be a participant. Exclusion criteria: uncooperative children, severe shortness of breath. In this study got 34 participants, but 3 participants were drop out because did not complete the intervention for 3 consecutive days.

Group 1 ($n = 16$) was provided with music therapy and Group 2 ($n = 15$) was provided with story telling. The participants placed in the interventions group with alternately. The intervention was provided for 30 min before bedtime for 3 consecutive days. Music was consist of Lullabies music softly played through a tape recorder or mobile phone in the ward, and story telling was provided by the parent. Lullabies without lyric were played for music therapy, and story books (from a fictional series about Franklin the Turtle by Paulette Bourgeois and Brenda Clarck translated into Indonesian) were used for story telling.

Data collection occurred from February through April 2018 in an infectious diseases ward of hospital X in Jakarta. The sleep disturbance scale was administered before the intervention and within 5 days. A sleep disturbance scale for children (called GATIA scale) was developed by Allenidekania (2017)⁷ and possessed an r value of 0.409–0.604 (validity) and Cronbach's alpha of 0.706 (reliability). This scale was used to evaluate sleep disturbance in children in this study. The Scores ranged from 10 to 50, with a higher score indicating higher sleep quality.

Data were analyzed by difference of sleep disturbance scale score data pre- and post-intervention using the Wilcoxon test and comparison of sleep disturbance scale score between the two groups using the Mann–Whitney test. Univariate analysis examined the variables of age, gender, hospitalization experience, and medical diagnosis. For bivariate analysis, a dependent t -test was employed to analyze paired sample, and an independent t -test was performed to analyze unpaired samples.

Ethical clearance was obtained from the Ethical Committee of the Faculty of Nursing at Universitas Indonesia (No. 24/UN2.F12.D/HKP.02.04/2018) on February 7, 2018. This study complied with the research ethics requirement of autonomy, nonmaleficence, beneficence, and justice.

Results

Participants were an average of 32.52 months old with a standard deviation 36.86 months. The youngest participants were 4 months old and the oldest were 151 months old. Table 1 reports the gender, medical diagnosis, and history of hospitalization of participants.

Table 2 indicates that there was a significant change in average of sleep disturbance scale score in both groups 1 and 2 following the interventions

Table 1. Distribution of participants' characteristics.

Variable	Frequency (N = 31)	Percentage
Gender		
Male	16	51.6
Female	15	48.4
Total	31	100
Medical diagnosis		
Gastrointestinal diseases	14	45.16
Respiratory diseases	14	45.16
Urinary diseases	1	3.23
Immunology diseases	2	6.45
Total	31	100
History of hospitalization		
First history hospital	7	22.6
More than once	24	77.4
Total	31	100

Table 2. Pre- and post-intervention sleep disturbance difference.

Variable	Group	Measurement	Mean	SD	p-Value
Sleep Disturbance Score	Intervention 1	Pre	23.25	4.465	.0001
		Post	31.88	5.584	
	Intervention 2	Pre	26.07	8.379	.0001
		Post	31.93	9.996	

$p = .0001$. These results suggest that both music therapy and story telling had a significant positive impact on the scores of the sleep disturbance score.

Table 3 indicates that there was no significant difference in changes of sleep disturbance scale between groups ($p > .05$). Between music therapy and story telling are none the more superior, both equally effective.

Discussion

The study results demonstrated that both music therapy and story telling significantly improved sleep disturbance scale in hospitalized children. Music therapy can also be used to treat sleep disturbance, playing music before bedtime is a relaxation technique that promotes sleep during hospital stay (Tamrat et al., 2013). By listening to music, the child becomes relaxed and calm.

Music indirectly can distract the child from the pain that is suffered and can reduce the anxiety of the child and make the children fall asleep. Studies suggested that music is naturally soothing, relieves pain and anxiety, and promotes relaxation (Poulsen & Coto, 2018). Music can distract one's attention from physical and emotional pain, reduces stress, and facilitates sleeping

Table 3. Comparison of sleep disturbance scores between groups.

Variable	Group	Mean	SD	p-Value
Sleep Disturbance Score	Intervention 1	8.63	7.089	.203
	Intervention 2	5.87	4.257	

(Briggs, 2011). It diverts attention from pain and anxiety, suppresses feeling of uneasiness in unfamiliar environment, promotes adaptation to the environment, and assists in relaxation (Uğras, Yildirim, Yüksel, & Öztekin, 2018).

Participants in this study listening music was played through external speakers on a tape recorder and mobile phone and was perceived to be comfortable enough to be heard. This is supported by Archana and Sia's study (2013), which used recorded music that was played through external speakers on mobile phone or audio system, and the volume was perceived to be comfortable enough (to be heard) by the mothers. However, music that is heard in this way is considered to be effective in improving child's sleep.

Archana and Sia's study (2013) used lullabies to calm infant in their own houses and infants aged 4–10 months who were throwing fits, seeking attention, and acting restless before sleep. They found that lullabies reduced restlessness and enhanced sleep. The slow and soothing tempo of lullabies facilitates relaxation and induces sleep by stimulating parasympathetic nerves, which reduces anxiety, relaxes muscles, distracts individuals, and lowers blood pressure and pulse and respiratory rates. These results can positively affect sleep quality (Lafçi & Öztunç, 2015).

Additionally, music therapy can be used as a pleasant bedtime routine at everybody. Music is a therapeutic and beneficial technique that can be implemented in normal daily life and at an early age (Archana & Sia, 2013). Wang, Sun, and Zang (2014) found that playing music for 45 min during bedtime facilitated relaxation in one's sleep for acute and chronic sleep disorder in adult at the hospital and community. Music therapy also helps children to feel more relaxed and prepared to sleep.

In the current study, lullabies without lyrics were played via a tape recorder or mobile phone 30 min before bedtime for three consecutive nights. Mindell and Williamson (2017) claimed that singing lullabies may reduce children's temper, encourage relaxation (which promotes sleep), and serve as part of a behavior chain associated with inducing sleep. Singing softly is a bedtime routine that positively impacts sleep duration in children (Allen, Howlett, Coulombe, & Corkum, 2016). Music therapy also stimulates hearing function, which contributes to nerve development, proper pulsation, and better sleep quality (Van der Heijden et al., 2016). And in Roslita, Nurhaeni, and Wanda (2017) study found that significant average differences before and after music therapy in oxygen saturation, heart rate, and respiratory rate in infants using mechanical ventilation.

Music is one method that nurses can use to improve sleep hospitalized children. Music therapy is a relaxation technique and classified as a non-pharmacological and independent nursing intervention. It is a non-invasive, well tolerated, and cheap intervention which is feasible to be performed by nurse or patient independently (Hole, Hirsch, Ball, & Meads, 2015). Poulsen

and Coto (2018) stated that music therapy was appropriate to be applied in the nursing level as it was safe and non-invasive.

Story telling is another common soothing bedtime routine for children that uses pictures and writing. It is also a nursing intervention that can be implemented to comfort hospitalized children with acute illness and increase enthusiasm. In Yuniartini, Widastra, and Utami (2012) study found that there is the influence of storytelling therapy before sleep in sleep quality to preschool age children undergoing hospitalization. Based on the results of this study, it is suggested to the nurse to using storytelling therapy to improve the sleep quality of children during hospitalization. Story telling excites the superior part of the brainstem, activating the cerebral cortex by decreasing stimulation of the reticular activating system (RAS), which regulates consciousness. Reduced stimulation of the RAS leads to serotonin secretion by the bulbar synchronizing region cells, which induces sleep.

Story telling by their parents makes children feel comfortable and calm. children feel at home, and listening to story can reduce anxiety and that is one of the habits of children at home. Story telling is a recommended activity that enhances sleep duration in children (Allen et al., 2016). Furthermore, it is considered a positive bedtime routine, in addition to praying and brushing teeth, compared to maladaptive bedtime routine, such as watching television, playing with gadgets, and playing games with high-level activities (Henderson & Jordan, 2010).

Bedtime routine reflects the quality of parenting and the level of early stimulation, which is important and beneficial for children and their family (Mindell & Williamson, 2017). This study has shown that soothing music and story telling help children sleep. The current study further support that story telling and music therapy help parents communicate with and be present for their children. Furthermore, parents were involved in scheduling routines and activities for implementing music therapy and story telling. Developing bedtime and wake-up routines and performing consistent, daytime activities are recommended sleep disturbance (Allen et al., 2016).

Conclusion

Music therapy and story telling were effective in treating sleep disturbance in hospitalized children. Music therapy and story telling are none the more superior, both equally effective. The authors recommend the use of music therapy and story telling as nursing interventions for hospitalized children. They are cheap, effective, and feasible in managing sleep disturbance.

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Disclosure Statement

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