Poltekita: Jurnal Ilmu Kesehatan
http://jurnal.poltekkespalu.ac.id/index.php/JIK

Vol.16 No.4 February 2023: Hal. 569-576
p-ISSN: 1907-459X e-ISSN: 2527-7170

Original Article

The Effectiveness of *Lullaby* Music Therapy on Cough Intensity in Toddlers with ARI

Mutarobin[1], Mukhamad Muqtafin[1], Suryani Manurung[1*]

[1]Department of Nursing, Poltekkes Kemenkes Jakarta 1, Jakarta, Indonesia

(Correspondence author's email, suryanimanurung19@gmail.com / +6281219969292)

ABSTRACT

ARI cases in the Banten area were 48,621 (53%). The age group that is most at risk of developing ARI is children under five (1-4 years) at 8.0%. The purpose of this study was to see the effectiveness of music therapy in reducing cough intensity. Quasi-experimental research method with pretest-posttest with the control group. The study sample consisted of 36 respondents (intervention and control groups). Inclusion criteria were patients with ARI, toddlers and preschoolers. place of research in the Banten regional hospital. Instruments are a scale for scoring cough and music Lullabies. Intervention and observation for the control group were carried out for 30 minutes 3 times with a pre and post-test. The analysis was carried out by frequency test and correlation test. Pre and post-cough intensity scores were analyzed using the dependent t-test. The results showed that Lullaby music therapy was effective on the cough intensity of children under five with ISPA (p<.05). Music therapy with complete administration has an effect on cough intensity (P<.05). Conclusion, music therapy is effective in reducing the cough intensity of toddlers with ARI.

Keywords : Music Therapy, Cough Intensity, ARI

https://doi.org/10.33860/jik.v16i4.2381

INTRODUCTION

The incidence of acute respiratory infections (ARI) in Indonesia is 4.4% with a total of 1,017,290 sufferers, and in the Banten region, it is 53% with a total of 48,621 sufferers. The age group that is most at risk for ISPA occurs in toddlers (1-4 years) at 8.0%.[1].

ISPA is grouped into three groups including mild, moderate, and severe ISPA. The mild group of ARI describes that the child has a cough, hoarseness, runny nose, fever or fever, and body temperature over 37 degrees. Symptoms of cough rarely or once in a while. The picture of moderate ISPA is stated by the child suffering from symptoms of respiratory problems such as moderate cough frequency, fast breathing (>60x per minute), body temperature exceeding 39 degrees Celsius, breathing sounds like snoring, earache or pus coming out of the ear canal, and red spots on the skin that looks like measles. The picture of severe ARI is expressed by complaints that the child is worried and fussy, symptoms of severe cough, difficulty breathing, lips or skin that turn blue, decreased consciousness, snoring breath sounds, looks restless, respiratory movements are visible, there is a pull on the chest wall, and a rapid pulse exceeds 160 beats per minute [2].

The worst symptom of ARI is coughing. Coughing can reduce other children's activities such as playing, eating and sleeping. This happens because when a child coughs,

there is a very strong reflex in the chest muscles and diaphragm muscles to expel secretions. Likewise, if there is a chronic cough, namely a cough that has symptoms for more than eight weeks. This cough is usually a sign or symptom of other, more severe diseases such as asthma, tuberculosis, bronchitis and soon[3] . Respiratory disorders that trigger coughing are due to the invasion of pathogenic germs which interfere with the immune system and trigger an inflammatory response in the respiratory tract. Inflammation of the lining of the respiratory tract produces secretions and stimulates a reflex mechanism to expel these secretions. These acute respiratory infections (ARI) include pharyngitis and sore throat. The viruses that most often cause ARI are respiratory syncytial virus (RSV) and influenza which cause cough symptoms [2].

Cough symptoms that appear to interfere with the child's respiratory tract need to be handled properly, namely pharmacological therapy and complementary therapy, namely music therapy. If not taken seriously, this respiratory tract disorder can have an impact on larger diseases such as bronchopneumonia and pneumonia[4]. Respiratory disorders that develop from ARI, namely Bronchopneumonia. This disease is an inflammatory process that results in increased secretion production which is more than mild ARI symptoms and causes more severe clinical manifestations including the amount of secreted secretions[5]. Another respiratory problem is pneumonia. This disease occurs due to an inflammatory process in the lung tissue or what is commonly called the lung parenchyma which can affect toddlers due to microbial invasion. Symptoms of this disease also show the presence of sputum secretion and produce a cough reflex [6].

ISPA disease has the potential to become severe, so it is necessary to pay attention to the handling mechanism. One of the interventions being considered is an attempt to treat cough. Cough symptoms can use pharmacological therapy and non-pharmacological therapy (complementary therapy). Pharmacological therapy that can be used is Bromhexine HCl, N-acetylcysteine, Glyceryl guaiacolate or guaifenesin (GG), Potassium iodide or Potassium iodide (KI) and Ammonium chloride while non-pharmacological therapy is music therapy [7]. Pharmacological therapy based on medical therapy that has been used is still not the full authority of a nurse. In addition, pharmacological therapy cannot be given for a long time. Several complementary therapies can be done independently, one of which is music therapy. Music therapy is not therapy to address the source of the disease but to relieve cough symptoms experienced by patients [8–10].

Music therapy is a therapy that uses regulated or controlled music for clinical changes. This therapy is also often done and has a very low risk. Music therapy is feasible for patients with other respiratory disorders and has been tested by previous investigators. Interventions in music therapy can be in the form of listening to music, singing and so on [11].

Previous information that music therapy also provides relaxation for children, the rhythm of music can create a pleasant atmosphere and is known to affect emotional, academic, and social interaction processes [12]. This therapy can also be applied to children who suffer from asthma. Previous research states that music therapy provides a positive response or impact for children and can help speed up the recovery process for their illness so that children will be discharged from the hospital more quickly [13].

Various types of music that can be enjoyed include classical music, rock, jazz, blues, metal and so on. Several types of music can be used for music therapy, especially for children, namely classical music. An example is lullaby music. Lullaby music is often used to help the healing process in children, this music is included in the classical music of Brahma or Mozart. This music can regulate children's behaviour to be able to focus on themselves and also soothe them emotionally [14].

Lullaby music is one of the best music for children. This music is used as a therapy that can improve and stabilize children's respiratory conditions and can help increase weight in premature babies [15]. Giving music therapy varies greatly from 15 minutes, 20 minutes, and 30 minutes [16–18].

Previous information stated that of the eight respondents who were given murotal therapy treatment, it was shown that most of the respondents in the treatment group had experienced a significant decrease in respiratory rate. The difference in decreased respiratory rate is six to twenty times per minute. The average reduction in respiratory rate in the treatment group was fourteen breaths

per minute. Whereas the eight respondents in the control group showed that most of the respondents experienced a decrease in respiratory rate, but the decrease in respiratory rate was less significant, namely between two to four times per minute, and some even experienced an increase in respiratory rate two to six times per minute. The average decrease in Respiratory Rate is zero points five times per minute. The results of the analysis using the Wilcoxon test showed a significant value with p<.001 [19].

The novelty of this study is providing lullaby music therapy interventions for children, especially for anal toddlers who have ARI. This music therapy is to reduce the intensity of coughing. So the purpose of this study was to assess the effectiveness of music therapy in toddlers with ARI with intervention and control patients. The hope is that cough symptoms can be minimized. Mothers can also care for their children by applying music therapy independently.

METHOD

The research design used in this study was Quasi Experiment with a pretest-posttest with a control group research design, where there were two groups, namely the intervention group and the control group as a comparison group. The population of this study were toddlers with ARI who were hospitalized. The number of samples was calculated using the Federer formula so that the sample for this study was taken based on a population of 36 respondents (intervention and control groups). Inclusion criteria were patients with ARI, patients with toddler and preschool age, and parents of children who were willing to be respondents and did not have the disease complications. Meanwhile, the exclusion criteria were patients under 1-year-old who were not willing to be respondents and patients with hearing loss. The sampling technique used purposive sampling.

The study was conducted at the Banten Hospital for 2 months (March-April 2023). The research instrument consisted of demographic data (identity, gender, age, length of stay, ward environment), music therapy SOPs and a scale for scoring cough adopted from previous researchers [20].

The trial of lullaby music therapy which was given to the intervention group with a duration of 30 minutes was carried out 3 times a day with a music volume of 40 dB. Pre-test and post-test cough intensity scale with a scale for scoring cough for the intervention group and the control group with observation. The duration of the observations of the intervention group and the control group was measured by implementation and it was concluded that it was complete, complete with pauses or incomplete. The control group had no treatment, only observations were made. The observation was only for measuring the child's cough intensity for 30 minutes, then measuring the cough intensity again in the post-test period. Observation events are declared complete, complete with pauses or incomplete. It is necessary to group observation activities considering the many inhibiting factors, namely the administration of drug therapy, the oxygen tube being detached and the child no longer wanting to be observed or given music therapy.

Analysis using the SPSS 21 application for Windows. Data were analyzed by frequency test and correlation test. Numerical data is the score of cough intensity pre and post-test which is done by t-test dependent test. The data normality test was carried out with the Shapiro-Wilk test. The results of normal data distribution P-Value > 0.05 so the correlation test uses the dependent t-test.

This research has gone through an ethical test. The ethical test study has been carried out and declared to have passed ethics with a number: 189/KEPK-TJK/III/2023.

RESULTS

Table 1. Distribution of the Characteristics of Toddlers with ISPA (n = 36).

Variable	Intervention Group	Control Group
	n (%)	n (%)
Age		
1-3 years	11 (61.1%)	14 (77.8%)
3-5 years	7 (38.8%)	4 (22.2%)
Total	18 (100%)	18 (100%)
Gender		
Man	12 (66.7%)	10 (55.6%)
Woman	6 (33.3%)	8 (44.4%)
Total	18 (100%)	18 (100%)
Long sick		
< 3 day	8 (44.4%)	2 (11.1%)
> 3 day	10 (55.6%)	16 (88.9%)
Total	18 (100%)	18 (100%)

Table 1 shows the distribution of the characteristics of respondents in the intervention group, the highest age of the respondent, namely 1-3 years old, was 11 (61.1%), the most sex was male, 12 (66.7%) and the longest illness was > 3 days, totalling 10 (55.6%)). The control group with the most age was 14 (77.8%), the most gender, namely men, was 10 (55.6%), and the highest length of illness was 16 (88.9%).

Table 2 Distribution of Music Therapy Intervention Group and Observation Control Group in Toddlers with ISPA (n = 36).

Giving music therapy intervention group	**n (%)**
The First Therapy is Given by:	
Complete	17 (94.4%)
Finish with Pause	1 (5.6%)
Total	18 (100%)
The Second Therapy is Given by:	
Complete	17 (94.4%)
Not Finished	1 (5.6%)
Total	18 (100%)
The Third Therapy is Given by:	
Finish	16 (88.9%)
Finish with Pause	2 (11.1%)
Total	18 (100%)
The First Observation of The Control Group Was Carried Out by	
Complete	16 (88.9%)
Finish with Pause	1 (5.6%)
Not Finished	1 (5.6%)
Total	18 (100%)
Observation of The Two Control Groups Was Carried Out by	
Complete	17 (94.4%)
Finish With Pause	1 (5.6%)
Total	18 (100%)
Observation of The Three Control Groups Was Carried Out by	
Complete	17 (94.4%)
Finish With Pause	1 (5.6%)
Total	18 (100%)

Table. 2 shows the provision of music therapy in the intervention group and the control group observation in toddlers with ARI. Most giving of music therapy is given thoroughly in both the first the third therapy. Then the most observations in the control group were carried out thoroughly both in the first the third observation.

Table 3. Effect of Complete Music Therapy in the Intervention Group on Cough Intensity in Toddlers with ISPA (n = 17).

Variable	**n**	**Mean ± SD**	**p-value**	**mean difference (CI 95%)**
Complete music therapy				
Pre-test 1	17	.64 ± 0.862	.007	.6 (0.204-1.090)
Post-test 1				
Pre-test 2	17	.94 ± 0.712	.001	.9 (0.444-1.438)
Post-test 2				
Pre-test 3	17	1.37 ± 0.619	.000	1.3 (1.045-1.705)
Post-test 3				

Table 3 describes the first to third music therapy given completely to toddlers with ARI. The results of the pre-test and post-test showed a significant relationship (p-value <.05). The mean difference between the first and third treatments ranged from .64 - 1.37. The 95% CI was .204-1.090, the second therapy was 95% CI was 0.444-1.438, and the third therapy was 95% CI was 1.045-1.705.

Table 4. Effect of Control Group Observation on Cough Intensity in Toddlers with ISPA.

Variable	**n**	**Mean ± SD**	***P-value***	**Mean difference (CI 95%)**
Observasi				
Pre-test 1	16	.18 ± 1.109	.509	.1 (-.403-.778)
Post-test 1				
Pre-test 2	17	.23 ± 0.970	.332	.2 (-.264-.734)
Post-test 2				

Pre-test 3 Post-test 3	17	-.17 ± 1.237	.565	-.1 (-.812-.459)

Table 4 describes the first to third observations given completely to toddlers with ARI. The results of the pre-test and post-test have a significant relationship (p-value> .05). The difference in mean of the first to third therapy ranged from .18 - -.17, and the 95% CI value was -.403-.778, the second therapy was 95% CI was -.264-.734, and the third therapy was 95% CI was -.812-.459.

Table 5. Effect of Music Therapy on Cough Intensity in Toddlers with ISPA (n = 36)

Variable	n	Intervention Group			n	Control group		
		Mean ± SD	*p-value*	Mean Difference (CI 95%)		Mean ± SD	*p-value*	Mean Diffrence (CI 95%)
Pre-test 1 Post-test 1	18	2.56 ± .616	.007	.6 (.188-1.034)	18	4.94 ± .707	.386	.2 (-.305 – .749)
Pre-test 2 Post-test 2	18	2.28 ± .752	.000	.9 (.584-1.305)	18	5.22 ± .808	.331	.2 (-.247 – .691)
Pre-test 3 Post-test 3	18	2.67 ± .485	.000	1.3 (1.038-1.629)	18	5.00 ± .907	.564	-.1 (-.764 – .430)

Table 5 shows a significant difference in the mean score of cough intensity in the intervention group before and after being given music therapy. The pre-test and post-test results showed a significant relationship (p-value <.05%) 95% CI was .188-1.034. In the second act, the 95% CI was .584-1.305 and in the third act, the 95% CI was 1.038.-1.629

DISCUSSION

The results of the current study show that music therapy has an effect on the cough intensity of toddlers with ARI. Previous information that music therapy affects the oxygen saturation of patients with respiratory problems. Music therapy has a short-term positive effect on the problem breathing like coughing and has no side effects long-term and this therapy can also be given to children who are resistant to treatment approaches [21].

Other music therapy such as murotal therapy can be used to restore the baby's breathing function with significant value. This therapy also provides a calming and comforting effect on children. In addition, this therapy is one of the most accessible media to help the healing process of the disease[19].

Sound can reduce stress hormones in children, activate natural endorphins, increase feelings of relaxation, divert attention from fear and can correct abnormal breathing frequencies. When a child reaches a point of comfort that is felt, it will affect the body's production of endorphins, this will make the body's system improve, and the respiratory rate will also improve. The comfort that is felt will affect the body's production of endorphins, this will improve the body's system, and the respiratory rate will also improve [19,22].

This music therapy has also been shown to show changes in respiratory rate with a significance value of 0.04 (p-value <0.05) which is highly related to the incidence of coughing in children where the sound of music increases vital signs such as respiratory rate in infants and gets a relaxing effect from the sound. In this case, the study mentions a decrease in respiratory frequency so that cough symptoms can be overcome by giving music therapy [23].

Another thing that was informed by previous researchers is that music has an effect on oxygen saturation. Music has a short-term positive effect on respiratory problems in meeting oxygen needs. The lighter the intensity of the cough, the more oxygen the child needs to be fulfilled. This triggers more oxygen saturation in the body's tissues [24]. Music therapy has no effect on children who are resistant to one drug therapy

Changes in cough intensity are reflected by the value of the frequency and

depth of breathing and other vital signs[23]. The occurrence of these changes is the impact of musical stimulus on the vestibulocochlear nerve. Sound waves delivered by music are captured by the coclearis and vestibulocochlear nerves. Then the waves are sent to the thalamus and produce a response, namely frequency following response (FFR). Another effect is that the release of adrenaline hormones is inhibited and releases endorphins in the body. The impact makes the respiratory and heart muscles relax and is automatically controlled. So that people feel better in breathing, decreased cough intensity, and decreased heart rate. These changes are the influence of the relaxing effect of the sound of music that children enjoy. The emergence of these changes is stated that music can control coughing attacks [25].

Likewise, the maximum effect of music can be obtained if the duration of giving music is fulfilled according to the results of previous observations. Based on the results of research that has been done that the first to third music therapy by giving complete music therapy gives the maximum effect on cough intensity.

This is supported by previous information that some of the children will enjoy and listen to music without fully realizing the effects of music that will arise. Music is a healing medium that can produce effects on the mental and physical. Music can mask unpleasant feelings, slow down and balance brain waves, affect feelings, affect heart rate, pulse, respiration and blood pressure, as well as reduce muscle tension and improve body movement and coordination[10,21].

Music can also increase the level of endorphins in the body. The effect of soft music on children's brain development has a positive influence on the maturation process of children's brain development. When a child listens to music, he can regulate his pulse and respiratory rate, and the electrical resistance of the child's skin and blood vessels will change, it has even been proven that the heart rate will adjust to the rhythm he hears, so the child will enjoy the music he is hearing[21].

These results are supported by previous information which says that when children are given music therapy they will get their own experience and pleasure. It is proven that children want and enjoy music therapy to help with the treatment process [26].

But sometimes children also refuse to be given music therapy. Previous studies and information state that children who are sick and hospitalized (hospitalized), are very vulnerable to stress, experience a change in condition from healthy to sick and a boring environment, limited coping mechanisms. Anxiety in children due to hospitalization occurs due to bodily injuries, pain, ward conditions, medical procedures and separation. The childcare room is facilitated with a playroom so that it is even more relaxed accompanied by music [27].

CONCLUSIONS

This study shows that music therapy is effective in reducing cough intensity in toddlers with ARI. Music therapy given thoroughly for a predetermined duration has an effect on cough intensity in toddlers with ARI. This research supports providing education to parents in applying music therapy. The results of the current study are used as a consideration for the hospital to add independent interventions to improve the quality of health services. It is hoped that it can become a source of information for the wider community regarding the effectiveness of music therapy on cough intensity in toddlers by supporting research to develop related topics for further research.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

REFERENCE

1. Kementrian Kesehatan RI. Laporan Nasional Riskesdas 2018. Kementrian Kesehatan RI, Jakarta: Balitbangkes; 2018.
2. Lestari Y, Subardiah I, Haryanti RP. Keperawatan anak I. 1st ed. Redaksi T, editor. Pekalongan; 2022.
3. Suswitha D, Arindari DR, Aini L, Astuti L. Pemanfaatan jahe madu terapi komplementer pada penyakit infeksi saluran pernafasan akut (ISPA) di Desa

Bangun Sari Kecamatan Tanjung Lago. J Malahayati [Internet]. 2022;5(7):2266–74. Available from: https://ejurnalmalahayati.ac.id/index.php/kreativitas/article/view/6329/pdf
4. Mujiati S, Hidayati IR, Atmadani RN. Effect of cough medicine advertisement on electronic media towards self-medication. J Ilm Kesehat Sandi Husada [Internet]. 2022;11(2):113–24. Available from: https://akper-sandikarsa.e-journal.id/JIKSH/article/view/695
5. Smeltzer SC, Bare BG, Hinkle JL, Cheever K. Brunner & Suddarth textbook of medical-surgical nursing. Jakarta: Wolters Kluwer Health; 2018.
6. Ifalahma D, Sulistiyanti A, Arini liss dyah dewi. Pengetahuan ibu tentang pneumonia pada balita di puskesmas Jatinom Klaten. J midwifery Heal Sci [Internet]. 2022;2(2):102–10. Available from: https://ojs.udb.ac.id/index.php/ovum/article/view/2368
7. Imani lisna nur, Lestari K, Mulyaningsih W. Review Artikel: Kajian Farmasi Klinis Penggunaan Obat Batuk "X" Dengan Kandungan Bromheksin HCl Untuk Pengencer Dahak Pada Anak. J Pharm Sci [Internet]. 2023;6(1):315–21. Available from: https://www.researchgate.net/publication/368588834_Kajian_Farmasi_Klinis_Penggunaan_Obat_Batuk_X_Dengan_Kandungan_Bromheksin_HCl_Untuk_Pengencer_Dahak_Pada_Anak
8. Witusik A, Pietras T. Music therapy as a complementary form of therapy for mental disorders. Pol Merkur Lek [Internet]. 2019;47(282):240-243. Available from: https://pubmed.ncbi.nlm.nih.gov/31945027/
9. Segall LE. Music Therapy and Wellness. In: Music therapy : Research and evidance Practice [Internet]. USA: Elsevier Inc. All; 2018. p. 111–24. Available from: https://www.sciencedirect.com/science/article/abs/pii/B9780323485609000085
10. Hawgood S. Health benefits of music therapy [Internet]. 1st ed. London: Peterson Family Foundation; 2019. Available from: https://petersonfamilyfoundation.org/news/health-benefits-of-music-therapy/
11. Suardana IW, Marthasari NKP, Dewi PIS, Widiarta GB. Aplikasi terapi komplementer bagi tenaga kesehatan [Internet]. Martini M, editor. Bali: media sains indonesia; 2022. Available from: https://www.researchgate.net/publication/362152881_Aplikasi_Terapi_Komplementer_Bagi_Tenaga_Kesehatan
12. Padila, Setiawati, Inayah I, Mediani henny suzana, Suryaningsih C. Emosi dan hubungan antara sebaya pada anak tunalaras usia sekolah antara terapi musik klasik (mozart) dan murrotal (surah ar-rahman). J Keperawatan Silampari [Internet]. 2020;3(2):752–63. Available from: https://journal.ipm2kpe.or.id/index.php/JKS/article/view/1276
13. Loewy J, Goldsmith C, Deshpande S, Sun A, Harris J. Music therapy in pediatric asthma improves pulmonary function while reducing hospitalizations. J Asthma [Internet]. 2021;58(5):674–82. Available from: https://pubmed.ncbi.nlm.nih.gov/31906748/
14. Chakravarty R, Mehta N, Vir D. Effect of Music Therapy on Oxygen Saturation Level: A Literature Review. Harmon J Arts Res Educ [Internet]. 2022;22(1):37–47. Available from: http://dx.doi.org/10.15294/harmonia.v22i1.36232
15. Bratha SDK. Pengaruh terapi musik lullaby terhadap berat badan bayi. J Kesehat Maharatu [Internet]. 2022;3(1):106–15. Available from: https://ojs.stikestengkumaharatu.ac.id/index.php/JKM/article/view/57
16. Kobus S, Buehne AM, Kathemann S, Buescher AK, Lainka E. Effects of music therapy on vital signs in children with chronic disease. Int J Env Res Public Heal [Internet]. 2022;19(11):6544. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9180355/
17. NN. Tuning in: How music may affect your heart. The President and Fellows of Harvard College; 2021 p. 1–4.

18. Ghetti C. The future of medical music therapy for children and adolescents. In: Dileo C, editor. Envisioning the Future of Music Therapy [Internet]. London: Temple University; 2016. p. 1–158. Available from: https://scholarshare.temple.edu/bitstream/handle/20.500.12613/6287/Dileo-Monograph-2016.pdf?sequence=1&isAllowed=y
19. Kristyaningsih P, Rahmawati I. Terapi musik untuk mengembalikan fungsi pernapasan pada bayi. J Ners dan Kebidanan [Internet]. 2019;6(3):263–7. Available from: http://jnk.phb.ac.id/index.php/jnk/article/view/491/0
20. Wang Z, Wang M, Wen S, Xu X. Types and applications of cough-related questionnaires. J Thorac Dis [Internet]. 2019;11(10):4379–4388. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6837954/#:~:text=Cough symptom score (CSS),-In the CSS&text=The CSS is a two,indicating the most severe cough.
21. Sondang E. Penggunaan musik klasik sebagai media dalam meningkatkan kecerdasan emosional terhadap anak usia balita 0-5 tahun. J Teknol dan Pendidik kristiani [Internet]. 2022;3(2):102–22. Available from: https://sttkerussoindonesia.ac.id/e-journal/index.php/redominate/article/view/29
22. Rahman JS, Caldwell S, Jones R, Gedeon T. Brain melody interaction: understanding effects of music on cerebral hemodynamic responses. Multimodal Technol Interact [Internet]. 2022 [cited 1BC Jan 22];6(5):35. Available from: https://www.mdpi.com/2414-4088/6/5/35
23. Naulia RP, Allenidekania, Hayati H. The Effect of music therapy on sleep quality among children with chronic disease. Int J Nurs Heal Serv [Internet]. 2019;2(1):15-20. Available from: https://media.neliti.com/media/publications/277787-the-effect-of-music-therapy-on-sleep-qua-290aa12d.pdf
24. M. A, Raharjo, Suradi S, Aphridasari J. The effect of harmonica exercise on inspiratory capacity, dyspnea, exercise capacity and quality of life of chronic obstructive pulmonary disease patients. J Respirologi Indones [Internet]. 2019;39(1):1–13. Available from: https://www.jurnalrespirologi.org/index.php/jri/article/view/42
25. Limb CJ, Jiam NT. Rhythm processing in cochlear implant-mediated music perception. Ann N Y Acad Sci [Internet]. 2019;145(1)::22-28. Available from: https://pubmed.ncbi.nlm.nih.gov/31168793/
26. Klyve GP, Rolvsjord R. Moments of fun: Narratives of children's experiences of music therapy in mental health care. Nord J Music Ther [Internet]. 2023;32(2):100–20. Available from: https://www.tandfonline.com/doi/full/10.1080/08098131.2022.2055114
27. Novitasari S, Sulaeman S, Purwati NH. Pengaruh terapi musik dan terapi video gameterhadap tingkat nyeri anak usia prasekolahyang dilakukan pemasangan infus. J Telenursing [Internet]. 2019;1(1):168–77. Available from: https://journal.ipm2kpe.or.id/index.php/JOTING/article/view/510