The Effect of **Music Therapy for Children** on Pain Release

A Systematic Review and Meta-analysis

Berne Ting^{1,2,} Chia-Lin Tsai^{1,2,} Wei-Ti Hsu^{1,3,} Mei-Ling Shen^{4,} Kuan-Pin Su^{1,2,3,5*,} Li Jingling^{1*}

¹College of Medicine, China Medical University, Taichung, Taiwan., ²Mind-Body Interface Laboratory (MBI-Lab), China Medical University Hospital, Taichung, Taiwan., ³China Medical University Hospital, Taichung, Taiwan., ⁴Taichung Tzu-Chi Hospital, Taichung, Taiwan., ⁵An-Nan Hospital, China Medical University, Tainan, Taiwan



INTRODUTION

Pain is a common complaint affecting patients across all ages, Infants and children can especially benefit from pain treatment as it pertains to their growth and development. Music intervention has been shown to be considered an effective non-pharmacological treatment with no significant side effects. This meta-analysis aimed to assess the efficacy of music intervention for the pediatric population, as quantified by pain intensity and vital signs.

METHODS

PubMed, EMBASE, Web of Science, and Cochrane Library databases from inception up to December 2020 were searched to identify randomized controlled trials (RCT) with the keywords "pain AND music therapy". Primary outcomes were pain intensity and vital signs.

Age Group / Source	Statistics for each study			Std diff in mean and 95% CI	Relative Weight
Newborn	SMD	Low. L	Up. L	Favor Music IX : Favor Cont	ro %
Tekgunduz.et al. 2019	-0.12	-0.58	0.34		9.57
Badr et al. 2017-2	-0.36	-1.09	0.36		9.59
Shukla et al. 2018	-0.42	-0.82	-0.02		9.24
Corrigan et al. 2020	-0.44	-0.85	-0.04		9.43
Bergomi et al. 2013	-0.52	-1.09	0.06		9.68
Badr et al. 2017-1	-0.64	-1.41	0.14		5.73
Barandouzi et al. 2019	-0.81	-1.34	-0.28		9.71
Uematsu et al. 2019	-0.96	-1.74	-0.18		8.93
Tang et al. 2018	-1.81	-2.41	-1.21		9.48
Zhu et al. 2015	-1.89	-2.31	-1.46		9.01
Shabani et al. 2016*	-5.72	-8.73	-2.72	←	9.62
Random effects model	-0.89	-1.32	-0.45		100
Infants / Children				• • •	
Nilsson et al. 2009*	0.39	-0.06	0.83		5.77
Heijden et al. 2018	-0.05	-0.38	0.29		5.72
Kuhlmann.et al. 2020	-0.07	-0.43	0.29		5.08
Antonelli, E., et al. 2019	-0.10	-0.49	0.28		5.60
Longhi et al. 2015	-0.16	-0.69	0.37		5.38
Hartling et al. 2013	-0.25	-0.86	0.35		5.67
Noguchi et al. 2006	-0.31	-0.93	0.31		4.25
Bakl et al. 2018	-0.35	-0.90	0.21		4.88
Aydin et al. 2017	-0.39	-0.79	0.01		4.88
Yinger et al. 2016	-0.50	-1.04	0.04		5.93
Heijden et al. 2019	-0.50	-0.98	-0.03		5.43
Yu et al. 2009	-0.73	-1.25	-0.20		5.84
Bulut et al. 2020	-0.74	-1.22	-0.25		5.49
Suresh et al. 2015	-0.88	-1.56	-0.21		4.66
Eid et al. 2020	-1.05	-1.81	-0.28		5.55
Nguyen et al. 2010	-1.05	-1.71	-0.39		4.85
Balan et al. 2009	-1.25	-1.68	-0.82		4.60
Duymaz 2018	-1.56	-1.97	-1.15		5.17
Hatem et al. 2006	-1.96	-2.57	-1.35		5.23
Random effects model	-0.59	-0.85	-0.32		100
Adolescent				•	
Kristjansdottir et al. 2011-1	0.01	-0.53	0.55		49.08
Kristjansdottir et al. 2011-2	-0.09	-0.63	0.46		50.92
Random effects model	-0.04	-0.42	0.34	•	100
Overall	-0.64	-0.87	-0.42		

	RESU	LTS				Antonel Longhi e Hartling			
entification	Recor databa	ds identified through ase searching <i>n</i> = 3893		Additi throug	Noguch Bakl et a Aydin et Yinger e				
<u>Id</u>	3893	Records identified				Heijden Vu ot al			
eening	2204	Records after duplicates removed		1609	Duplicated records excluded	Bulut et Suresh (
Scr	2284			2226	Excluded by title and abstract	Eid et al Nguyen			
igibility	58	Full-text articles assessed for eligibility		Article	es 28 excluded	Balan et Duymaz			
	30	Studies included in current meta-analysis		accor 3 Not 3 Full	Hatem e Random e Adolesc				
lude					2 Not music therapy				
lnc	2124 32	Participants Included studies		6 No 14 Ins	pure control group sufficient date	Kristjans Random			
						Overall			

Figure 1. Flowchart of the selection strategy and inclusion and exclusion criteria for this meta-analysis.

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Note. SMD: standardized mean difference., Low. L: lower limit., Up. L: upper limit., IX: intervention .

Figure 2. Meta-analysis forest plot of effects of music on pain score.

CONCLUSION

Our comprehensive meta-analysis provides evidence supporting that music intervention can release pain in both psychological and physical aspects in the pediatric population.

KEYWORDs: music intervention; pain, infant; children; pediatric.

REFERENCE: ¹CMA V3 software.,²Photo from Dr. CL Tsai. ³Poster design by Berne Ting.

Table 1. Effect of music on vital signs.

Outcomes	k	N	Effect size	95% (<i>p</i> value	I ² (%)		
Blood Pressure	4	229	-0.26	-0.54	0.01	0.06	0		
Heart Rate	13	857	-0.62	-0.99	-0.26	< 0.01	84		
Respiratory Rate	5	347	-0.33	-0.67	0.01	0.06	56		
SpO2	9	583	0.53	0.29	0.76	< 0.01	47		
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Note. k: number of studies., N: number of participants., CI: confidence interval., I²: heterogeneity testing., SpO2: peripheral capillary oxygen saturation.