Music in Pediatric Care

2009 Abstracts, compiled by Beverly Seng, CMP

1. School-aged children's experiences of postoperative music medicine on pain, distress, and anxiety. Nilsson S, Kokinsky E, Nilsson U, Sidenvall B, Enskär K. Paediatr Anaesth. 2009 Dec;19(12):1184-90. Epub 2009 Oct 23.

Department of Paediatric Anaesthesia and Intensive Care Unit, The Queen Silvia Children's Hospital, Sahlgrenska University Hospital, Göteborg, Sweden. stefan.r.nilsson@vgregion.se

AIM: To test whether postoperative music listening reduces morphine consumption and influence pain, distress, and anxiety after day surgery and to describe the experience of postoperative music listening in school-aged children who had undergone day surgery. BACKGROUND: Music medicine has been proposed to reduce distress, anxiety, and pain. There has been no other study that evaluates effects of music medicine (MusiCure) in children after minor surgery. METHODS: Numbers of participants who required analgesics, individual doses, objective pain scores (Face, Legs, Activity, Cry, Consolability [FLACC]), vital signs, and administration of anti-emetics were documented during postoperative recovery stay. Self-reported pain (Coloured Analogue Scale [CAS]), distress **(Facial Affective Scale [FAS**]), and anxiety (short State-Trait Anxiety Inventory [STAI]) were recorded before and after surgery. In conjunction with the completed intervention semi-structured qualitative interviews were conducted. RESULTS: Data were recorded from 80 children aged 7-16. Forty participants were randomized to music medicine and another 40 participants to a control group. **We found evidence that children in the music group received less morphine in the postoperative care unit, 1/40 compared to 9/40 in the control group. Children's individual FAS scores were reduced** but no other significant differences between the two groups concerning FAS, CAS, FLACC, short STAI, and vital signs were shown. Children experienced the music as 'calming and relaxing.' CONCLUSIONS: **Music medicine reduced the requirement of morphine and decreased the distress after minor surgery but did not else influence the postoperative care.**

PMID: 19863741 [Pub

2. Role of interactive music in oncological pediatric patients undergoing painful procedures. Bufalini A. Minerva Pediatr. 2009 Aug;61(4):379-389.

Ospedale Pediatrico Anna Meyer di Firenze, Firenze, Italia bufalini.alessandro@libero.it.

AIM: The present study has **examined whether interactive music may be considered an effective treatment for the attenuation of anxiety in oncological paediatric patients undergoing painful procedures** (lumbar injection, bone marrow aspiration, osteomedullary biopsy and arterial catheter). METHODS: Thirty-nine tumour patients aged between 2 and 12 were randomised into 2 groups: Music (M) (N. 20) and Controls (N. 19) and were treated by M: conscious sedation and intervention of interactive music and C: sedation. The following factors were assessed**: temperament on the Emotivity, Activity, Sociability scale, anxiety on the Yale preoperative anxiety scale (mYPAS), the induction compliance checklist (ICC**), parent anxiety by cataloguing the trait-state anxiety inventory, and the degree of satisfaction of children, parents and staff using the Barrera questionnaires. Data significance was accepted with values of P<0.05. RESULTS: **There was a fall in mYPAS values in M compared to C in the four phases of the process**: Phase 1 (P<0.05); Phase 2, 3 and 4 (P<0.01). For the ICC children with a score of =/<1, "collaborated", those with a score of >1 were "non collaborators"; in the music group the trend was for an increase in the number of collaborating children (P<0.07). CONCLUSIONS**: The M group presents a significant effect of attenuation of anticipatory anxiety and a tendency to great induction compliance compared to group C. T**he parents do not show any significant anxiety attenuation effect. The degree of satisfaction of children, parents and staff point to a positive role and a beneficial effect of interactive music on the occasion of painful procedures.

PMID: 19752847 [PubMed - as supplied by publisher]

3. Effects of music on anxiety and pain in children with cerebral palsy receiving acupuncture: a randomized controlled trial. Yu H, Liu Y, Li S, Ma X

Int J Nurs Stud. 2009 Nov;46(11):1423-30. Epub 2009 Jun 3.

Department of Acupuncture and Moxibustion, Traditional Chinese Medicine Hospital of Shenzhen, No. 1, Fu-hua Road, Fu-tian District, Shenzhen 518000, Guangdong Province, China.

OBJECTIVES: To study the effects of music on anxiety and pain in children with cerebral palsy receiving acupuncture daily in a clinical setting. DESIGN: A

randomized controlled trial. SETTING: Acupuncture Unit at Shenzhen Hospital of Traditional Chinese Medicine in Shenzhen City of China. PARTICIPANTS: Sixty children with cerebral palsy undergoing acupuncture. METHODS: Intervention: Children listened to their favorite music or a blank disc for 30 min. Measurements: (1) **the modified Yale preoperative anxiety scale for children's anxiety (mYPAS); (2) children's hospital of eastern Ontario pain scale (CHEOPS) and Wong-Baker faces pain rating scale** (FACES) for pain intensity; (3) vital signs including **mean arterial blood pressure (MAP), heart rate (HR) and respiratory rate (RR).** RESULTS: An independent sample t-test showed significantly lower mYPAS scores in the music group 30 min after the intervention compared with the control group (t=4.72, P=0.00). Significant differences between groups were found in mYPAS scores (F=4.270, d.f.=1, P=0.043, Partial eta(2)=0.069) and over treatment duration (F=143.421, d.f.=1.521, P=0.000, Partial eta(2)=0.712). A significant interaction was also found (F=4.298, d.f.=1.521, P=0.025, Partial eta(2)=0.069). LSD's post hoc testing confirmed that the mYPAS scores significantly increased from the baseline to 1 min (P=0.000, 95% CI 14.913, 20.257) and then gradually decreased from 1 to 30min (P=0.000, 95% CI -18.952, -13.714). For pain intensity scores, a highly significant time effect was found in both the CHEOPS (F=87.347, d.f.=2, P=0.000, Partial eta(2)=0.601) and FACES (F=225.871, d.f.=1.822, P=0.000, Partial eta(2)=0.796), and a significant interaction effect was found as well (F=4.369, d.f.=2, P=0.015, Partial eta(2)=0.070; F=5.859, d.f.=1.822, P=0.005, Partial eta(2)=0.092). However, no significant difference between groups was present (F=2.343, d.f.=1, P=0.131, Partial eta(2)=0.039; F=3.738, d.f.=1, P=0.058, Partial eta(2)=0.061). Significant differences between groups were found in MAP and HR (P<0.05) and over time (P<0.05), but no significant effects in RR were apparent (P>0.05). A significant interaction effect was found in HR (P<0.05), but not in MAP or RR (P>0.05). CONCLUSIONS: This study demonstrates that **listening to music while receiving acupuncture can relieve anxiety among children with cerebral palsy; however, no effect was observed in terms of pain reduction.** Further research is needed to explore the types of music which best impact an individual's treatment. Whether music results in fewer accidents and side effects of acupuncture should be investigated. Music can be considered as adjunctive therapy in clinical situations that may be anxiety-provoking for children.

4. Effect of sensory adaptation on anxiety of children with developmental disabilities: a new approach. Shapiro M, Melmed RN, Sgan-Cohen HD, Parush S.

Pediatr Dent. 2009 May-Jun;31(3):222-8.

Issie Shapiro Center, Raanana, Israel. micheles@beitissie.org.il

PURPOSE: The aim of this study was to evaluate the **effect of a sensory-adapted dental environment (SADE) on anxiety, relaxation, and cooperation of children with developmental disabilities (CDDs).** Pharmacological treatment has been widely used to reduce anxiety, but nonpharmacological methods may be similarly effective. The standardized clinical situation chosen was a dental hygiene cleaning. METHODS: A SADE was structured. Sixteen CDDs participated in an open cross-over intervention trial measuring behavioral and psychophysiological variables. RESULTS: **There was a substantial increase in relaxation and cooperation in the SADE as opposed to the regular dental environment (RDE).** This was reflected by: mean duration of anxious behaviors (SADE = 9.04 minutes vs. RDE = 23.44 minutes; P < .01); mean magnitude of anxious behaviors (SADE = 8.49 vs. RDE = 15.50; P < .01); cooperation levels (SADE = 331 vs. RDE = 1.94; P < .01); mean electrodermal activity (EDA; SADE = 1230 vs. RDE = 446; P < .001); and difference in degree of relaxation by EDA (SADE=2014 vs. RDE=763; P < .004). CONCLUSIONS: The findings indicate the potential importance of considering the sensory-adapted environment as a preferable dental environment for this population.

PMID: 19552227 [PubMed - indexed for MEDLINE]

5. Music therapy may reduce pain and anxiety in children undergoing medical and dental procedures. Bekhuis T.

J Evid Based Dent Pract. 2009 Dec;9(4):213-4.

Center for Dental Informatics School of Dental Medicine, University of Pittsburgh, Pittsburgh, PA 15261, USA. tcb24@dental.pitt.edu

Comment on:

Ambul Pediatr. 2008 Mar-Apr;8(2):117-28.

PMID: 19913737

6. Music therapy in an integrated pediatric palliative care program.

Knapp C, Madden V, Wang H, Curtis C, Sloyer P, Shenkman E. Am J Hosp Palliat Care. 2009 Dec-2010 Jan;26(6):449-55. Epub 2009 Aug 7.

Departments of Epidemiology and Health Policy Research, University of Florida, Gainesville, FL, USA. cak@ichp.ufl.edu

National experts have recommended that children with life-limiting illnesses receive integrated palliative and medical care. These programs offer a variety of services, including music therapy. Using survey data from parents whose were enrolled in Florida's Partners in Care: Together for Kids (PIC:TFK) program, this study investigates parents' experiences with music therapy. About 44% of children with life-limiting illnesses and 17% of their siblings used music therapy. **For children who used music therapy, multivariate results suggest that their parents were 23 times as likely to report satisfaction with the overall PIC:TFK** program ($P < .05$) versus parents whose children did not use music therapy. **Pediatric palliative care programs should include music therapy, although recruiting licensed music therapists may be challenging.**

PMID: 19666889 [PubMed - in process]

7. Music may reduce anxiety during invasive procedures in adolescents and adults.

Newton JT. Evid Based Dent. 2009;10(1):15.

King's College London, London, UK.

Comment on:

J Clin Nurs. 2008 Oct;17(19):2654-60.

DESIGN: A block randomised controlled trial was conducted. INTERVENTION: Patients in the music (test) group listened to selected sedative music using headphones throughout the root canal treatment procedure. The control group subjects wore headphones but without the music. OUTCOME MEASURE: **Anxiety was measured before the study and at the end of the treatment procedure.** Patients' heart rate, blood pressure and finger temperature were measured before the study and every 10 min until the end of the root canal treatment procedure. RESULTS: The results revealed that there were no significant differences between the two groups for baseline data and procedure-related characteristics, except for gender. **The subjects in the music group, however, showed a significant increase in finger temperature and a**

decrease in anxiety score over time compared with the control group. The effect size for state anxiety and finger temperature was 0.34 and 0.14, respectively. CONCLUSIONS: Relaxing music administered through headphones to subjects during root canal treatment decreased the procedure-related anxiety of the patients and significantly increased finger temperature, but **does not significantly affect blood pressure and heart rate over the procedure.**

PMID: 19322222 [PubMed]

8. Exploring the feasibility of a therapeutic music video intervention in adolescents and young adults during stem-cell transplantation.

Burns DS, Robb SL, Haase JE. Cancer Nurs. 2009 Sep-Oct;32(5):E8-E16.

Department of Music and Arts Technology, Purdue School of Engineering and Technology, Indiana University-Purdue University Indianapolis, 535 W. Michigan St., IT 379, Indianapolis, IN 46202, USA. desburns@iupui.edu

The purpose of this study was to explore the feasibility and preliminary efficacy of a therapeutic music video (TMV) intervention for adolescents and young adults (AYAs) undergoing stem-cell transplantation (SCT). Twelve AYAs (aged 11-24 years) were randomized to the TMV or an audio-book protocol. The TMV was designed to diminish symptom distress and improve coping, derived meaning, resilience, and quality of life by supporting AYAs in exploring thoughts and feelings. Six sessions with a board-certified music therapist were held twice a week for 3 weeks. The Adolescent Resilience Model guided the selection of a large, comprehensive battery of outcome measures. Major data collections occurred before admission, after intervention, and at 100 days after transplantation. Participants completed a brief set of measures at presession/postsessions 2, 4, and 6. Rates of consent, session completion, and questionnaire completion supported feasibility. Immediate follow-up measures **suggest positive trends in the TMV group for hope, spirituality, confidence/mastery, and self-transcendence. Positive trends at 100 days include MOS, symptoms distress, defensive coping, spirituality, and self-transcendence.** Therapeutic music video participants also demonstrated gains in quality of life. The TMV intervention may buffer the immediate after-effects of the stem-cell transplantation experience, and a larger study is warranted.

PMID: 19661790 [PubMed - in process

9. Acupuncture combined with music therapy for treatment of 30 cases of cerebral palsy. Yu HB, Liu YF, Wu LX.

J Tradit Chin Med. 2009 Dec;29(4):243-8.

Department of Acupuncture, Shenzhen TCM Hospital of Guangdong Province, Shenzhen 518000, China.

OBJECTIVE: To observe clinical therapeutic effects of acupuncture combined with music therapy for treatment of cerebral palsy. METHODS: Sixty children with cerebral palsy were randomly divided into an acupuncture group (Group Acup.) and an acupuncture plus music group (Group Acup.+ M). Simple acupuncture was applied in Group Acup., and acupuncture at 5 groups of points plus music were applied in Group Acup. +M. The treatment was given once every two days with 3 treatments weekly, and 36 treatments constituted a therapeutic course. Therapeutic effects including movement improvement were observed for comparison after 3 courses of treatments. RESULTS: The comprehensive functions were elevated in both groups, and the total effective rate in Group Acup. + M was obviously better than that in Group Acup ($P < 0.05$). Movement functions were also improved in both groups, but the differences in improvement of creeping and kneeling, standing, and walking were significant between the two groups ($P < 0.01$), showing the effect in Group Acup. + M was better than that in Group Acup.. CONCLUSION: **The therapy of acupuncture plus music gained better therapeutic effect on cerebral palsy than simple acupuncture**, which provided new thoughts for treating the disease by comprehensive therapies.

PMID: 20112480 [PubMed - in process]

10. Hearing threshold of Korean adolescents associated with the use of personal music players. Kim MG, Hong SM, Shim HJ, Kim YD, Cha CI, Yeo SG.

Yonsei Med J. 2009 Dec 31;50(6):771-6. Epub 2009 Dec 18.

Department of Otolaryngology, Masan Samsung Hospital, School of Medicine, Sungkyunkwan University, Masan, Korea.

PURPOSE: Hearing loss can lead to a number of disabilities and can reduce quality of life. Noise-induced hearing losses have become more common among adolescents due to increased exposure to personal music players. We, therefore, investigated the use of personal music player among Korean adolescents and

the relationship between hearing threshold and usage pattern of portable music players. MATERIALS AND METHODS: A total of **490 adolescents were interviewed personally regarding their use of portable music players, including the time and type of player and the type of headphone used**. Pure tone audiometry was performed in each subject. RESULTS: Of the 490 subjects, 462 (94.3%) used personal music players and most of them have used the personal music player for 1-3 hours per day during 1-3 years. The most common type of portable music player was the MP3 player, and the most common type of headphone was the earphone (insert type). **Significant elevations of hearing threshold were observed in males, in adolescents who had used portable music players for over 5 years, for those over 15 years in cumulative period and in those who had used earphones.** CONCLUSION: Portable music players can have a deleterious effect on hearing threshold in adolescents. To preserve hearing, **adolescents should avoid using portable music players for long periods of time and should avoid using earphones**.

PMID: 20046416 [PubMed - in process]

11. Influence of environmental factors on food intake and choice of beverage during meals in teenagers: a laboratory study.

Péneau S, Mekhmoukh A, Chapelot D, Dalix AM, Airinei G, Hercberg S, Bellisle F.

Br J Nutr. 2009 Dec;102(12):1854-9.

INSERM U557, INRA U1125, CNAM EA3200, Université Paris 13, CRNH IdF, Unité de Recherche en Epidémiologie Nutritionnelle, Bobigny, France.

Environmental conditions influence meal size in adults and children. Intake of sweet drinks could contribute significantly to energy intake and potentially affect body weight, particularly in young individuals. The objectives of the present study were to measure the lunch intake of food and drinks under controlled laboratory settings in teenagers and to compare the influence of different meal conditions. Normal-weight adolescents (fourteen males and fifteen females) participated in four standardised lunches, scheduled 1 week apart. The same popular items (meat dish, dessert, water, juice, soda) were served at all meals. Ad libitum intake was measured under four conditions: subjects ate alone; in groups; alone while viewing television; alone while listening to music. Visual analogue scales

were used to assess pre- and post-meal hunger and thirst and meal palatability. Energy, solid food and fluid intake was different (significantly lower) only in the 'eating in group' condition, **in spite of identical intensity of pre-meal hunger. More soda was consumed when participants were watching television, and more water was consumed while listening to music**. Across all conditions, more soda than water was consumed. Post-meal ratings of hunger, thirst and palatability did not differ between conditions. We concluded that, in teenagers, a 'social inhibition' effect appears rather than the 'social facilitation' previously reported in adults. Although teenagers do not respond to the presence of television or another 'distractor' such as music by eating more, they do ingest more soda when the television is on. The social significance of meals, conditioned responses and habituation to 'distractors' may be different between adolescents and adults.

PMID: 19682398 [PubMed - in process]

12. From the American Academy of Pediatrics: Policy statement--Impact of music, music lyrics, and music videos on children and youth.

Council on Communications and Media. Pediatrics. 2009 Nov;124(5):1488-94. Epub 2009 Oct 19.

Music plays an important role in the socialization of children and adolescents. Popular music is present almost everywhere, and it is easily available through the radio, various recordings, the Internet, and new technologies, allowing adolescents to hear it in diverse settings and situations, alone or shared with friends. Parents often are unaware of the lyrics to which their children are listening because of the increasing use of downloaded music and headphones. Research on popular music has explored its effects on schoolwork, social interactions, mood and affect, and particularly behavior. The effect that popular music has on children's and adolescents' behavior and emotions is of paramount concern. Lyrics have become more explicit in their references to drugs, sex, and violence over the years, particularly in certain genres. A teenager's preference for certain types of music could be correlated or associated with certain behaviors. As with popular music, the perception and the effect of music-video messages are important, because **research has reported that exposure to violence, sexual messages, sexual stereotypes, and use of substances of abuse in**

music videos might produce significant changes in behaviors and attitudes of young viewers. Pediatricians and parents should be aware of this information. Furthermore, with the evidence portrayed in these studies, it is **essential for pediatricians and parents to take a stand regarding music lyrics.**

PMID: 19841124 [PubMed - indexed for MEDLINE]

13. Exposure to cannabis in popular music and cannabis use among adolescents.

Primack BA, Douglas EL, Kraemer KL.

Addiction. 2009 Dec 22. [Epub ahead of print]

Division of General Internal Medicine, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA.

ABSTRACT Background Cannabis use is referenced frequently in American popular music, yet it remains uncertain whether exposure to these references is associated with actual cannabis use. We aimed to determine if exposure to cannabis in popular music is associated independently with current cannabis use in a cohort of urban adolescents. Methods We surveyed **all 9th grade students at three large US urban high schools.** We estimated participants' exposure to lyrics referent to cannabis with overall music exposure and content analyses of their favorite artists' songs. **Outcomes included current (past 30 days) and ever use of cannabis.** We used multivariable regression to assess independent associations between exposures and outcomes while controlling for important covariates**. Results Each of the 959 participants was exposed to an estimated 27 cannabis references per day** [correction added on 19 January 2010, after first online publication: 40 has been changed to 27**] (standard deviation = 73** [correction added on 19 January 2010, after first online publication: 104 has been changed to 73]). Twelve per cent (n = 108) were current cannabis users and 32% (n = 286) had ever used cannabis. **Compared with those in the lowest tertile of total cannabis exposure in music, those in the highest tertile of exposure were almost twice as likely to have used cannabis in the past 30 days** (odds ratio = 1.83; 95% confidence interval = 1.04, 3.22), **even after adjusting for socio-demographic variables, personality characteristics and parenting** style. As expected, however, there was no significant relationship between our cannabis exposure variable and a

sham outcome variable of alcohol use. Conclusions This study supports an independent association between exposure to cannabis in popular music and early cannabis use among urban American adolescents.

PMID: 20039860 [PubMed - as supplied by publisher]