Effect of music on procedure time and sedation during colonoscopy: a meta-analysis

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CRD summary
This review concluded that listening to music was effective in reducing procedure time and amount of sedation used during colonoscopy, and should be promoted. The recommendation for promoting listening to music during colonoscopy should be regarded with some caution because the reduction in procedure time was fairly small and the analysis of the amount of sedation used had some limitations.

Authors' objectives
To assess the effectiveness of music in reducing procedure time and amount of sedation used during colonoscopy.

Searching
MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials, AMED and ACP Journal Club were searched up to March 2007 for English-language papers. Search terms were provided. ProQuest Dissertations and Theses database, Google and Yahoo were also searched, as well as the reference lists of papers obtained.

Study selection
Randomised Controlled Trials (RCTs) in which at least one of the comparison groups included the intervention of listening to music during colonoscopy were eligible for inclusion.

The included trials were undertaken in Europe, USA and Asia. The music was broadcast through headphones or as background music. Some trials provided patients with a choice of music but the majority did not. With the exception of one trial, the included trials reported that the colonoscopy was undertaken by experienced practitioners. The control groups in the included trials were colonoscopy under conventional conditions without music. Control groups in some trials also received sedation, either as standard procedure or on demand (midazolam, diazemuls or meperidine). The trials assessed a range of different outcomes including procedure time, physiological outcomes, anxiety, sedation dose consumed, request for sedation, pain, discomfort and patient satisfaction.

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Trials were assessed for reporting and appropriateness of randomisation, whether outcome assessors were blinded and whether this was appropriate, and whether the intervention and control group were balanced at baseline.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
The mean and standard deviation for length of surgery and sedation use were extracted for the intervention and control group, and the mean difference and 95% confidence interval calculated. The authors did not explicitly state the unit of measurement for length of surgery but the assumption has been made for this abstract that it was minutes.

Two reviewers independently extracted the data which was then summarised by one reviewer. Agreement was reached on the data prior to analysis.

Methods of synthesis
Studies were pooled in a meta-analysis using a random-effects model. The authors referred to a standardised difference between treatment and control groups being obtained, but the data presented did not appear to be standardised scores (see data extraction above). Statistical heterogeneity was assessed using the Q-test and I² statistic. Publication bias was assessed using Egger’s method.
Results of the review
Eight randomised controlled trials (RCTs) were included in the review (n=722 participants). Five trials reported the method of randomisation. Two trials had blinded outcome assessment. The intervention and control group were comparable at baseline in six trials.

Procedure time (seven RCTs): There was a statistically significant reduction in procedure time in the music group compared to control (mean difference -2.84 minutes, 95% confidence interval (CI): -5.61 to -0.08). There was possible statistical heterogeneity ($I^2 = 55\%$).

Sedation (six RCTs): There was a statistically significant reduction in sedation (midazolam) use in the music group compared to control (mean difference -0.46 mg, 95% CI: -0.91 to -0.01). There was strong statistical heterogeneity ($I^2 = 86\%$).

Publication bias was not detected based on Egger's Test.

The authors also stated in the discussion that there was a significant reduction in the anxiety score but only weak evidence was observed for the pain score, blood pressure and mean recovery time. However, these results were not provided.

Authors' conclusions
Listening to music was effective in reducing procedure time and amount of sedation during colonoscopy and should be promoted.

CRD commentary
There was a clearly stated review question and a number of appropriate sources were searched for trials. Because of the language restriction, at least one relevant trial was missed. Appropriate methods were used to reduce error and bias in data extraction, but it was unclear whether this was the case with quality assessment and study selection. Although quality was assessed and reported, it was not taken into account in the interpretation of the findings. The statistical pooling for procedure time seemed appropriate but the magnitude of the reduction in procedure time seemed very small. It may not have been clinically appropriate to pool trials where sedation was given on patient request in trials where it was given as standard in the control group (but not the intervention group), or it was given at clinician discretion. Also, the analysis seemed to only consider midazolam, whereas some trials also used other sedatives. This pooling had a high degree of statistical heterogeneity, which may be a reflection of the variation between trials. Additionally, the authors did not report the findings for other patient relevant outcomes such as pain and recovery time. Overall, this review has some limitations and the recommendation for promoting listening to music during colonoscopy should be regarded with some caution.

Implications of the review for practice and research
Practice: The authors stated that the role of music should be considered whenever applicable.

Research: The authors identified several areas for future investigation: choice of music, mode of broadcasting, the effect of playing audiovisual materials, and the interaction of the medical staff to the background music. They suggested some methodological improvements for future research: use of placebo for the control group and blinding of staff involved in the colonoscopy procedure.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.