



Letter to the Editor

# Anxiety can be reduced by music during colonoscopy examination, but the effect may be varied by musical styles



To the Editor,

We read the currently published article entitled “Effect of music on level of anxiety in patients undergoing colonoscopy without sedation”<sup>1</sup> with interest. Dr Ko and colleagues<sup>1</sup> conducted a “randomly assigned” study to evaluate the effect of music and/or music style in reducing anxiety in patients undergoing colonoscopy. This randomized study enrolled 138 patients who underwent colonoscopy. All patients had their anxiety levels assessed and scored using the State–Trait Anxiety Inventory (STAI). The authors found that the patients who listened to music could reduce their anxiety level during the colonoscopy procedure without sedation, compared to those patients without music (depression scores, 79.9 vs. 85.3;  $p = 0.054$ ). In addition, the authors found that different styles of music might play a critical role in determining whether exposure to such music can decrease the anxiety score. For example, the relaxing effects of music might be apparent by Kevin Kern's music [odds ratio (OR) = 0.34; 95% confidence interval (CI), 0.14–0.81]; by contrast, the effects might not be so obvious if David Tolley's music was used (OR = 0.70; 95% CI, 0.31–1.60).<sup>1</sup> We congratulate the authors on the success of this publication. This article is definitely interesting and worthy of further discussion.

First, as shown in our previous publication,<sup>2</sup> anxiety and/or pain are a complicated response in humans. Many factors, including endocrine, the nervous system, psychosocial relationships, personality, and other elements can be interwoven into an often very subjective determination of the levels of anxiety and/or pain. Therefore, it is important to mention the biological mechanisms involved in the interconnection between physiological effects of anxiety and/or pain perception.<sup>3</sup> Physiological response, including systolic pressure, diastolic pressure, heart rate, and respiratory rate, might be a better representative as an objective determination of the levels of anxiety and/or pain after procedure (colonoscopy). If the authors designed this study as a “randomized” study to evaluate the effect of music on the levels of anxiety for

patients undergoing colonoscopy, it would be interesting to know why authors failed to “evaluate” the “objective” physical response as shown above. Furthermore, because this study is “randomized,” it is reasonable to believe that this study was a “prospective” study. Therefore, the authors need to show the dropout rate of the patients during the study period.

Second, many outpatient and/or office minimally invasive procedures are not totally free of discomfort, which could result in anxiety and a phobia state of the patients prior to, during, and after the procedures.<sup>4–6</sup> In fact, many paramedical preparations were used prior to and during these procedures, and the effects varied considerably. One report showed that pain scores increased from baseline (prior to the procedure) across all study groups,<sup>3</sup> hinting that high pain and/or anxiety scores at the baseline might result in high pain and/or anxiety scores after the procedures. The study of Ko and colleagues<sup>1</sup> did not evaluate the STAI scores prior to the procedure; therefore, there is a possibility that the patients in a different group might have different baseline STAI scores. It is believed that a “randomized strategy” might ameliorate this potential bias. However, this speculation would require further confirmation from Ko and colleagues.<sup>1</sup>

Finally, it would be interesting to know how many physicians were involved in this procedure. How much time was needed for every procedure? Moreover, were any biopsies performed during the colonoscopy examinations? In addition, noise factors—such as amplification, voices in the environment, and discussion of the disease status between the staff—might also involve the patients' subjective and objective responses. Although the relationships between these factors and patients' anxiety levels were not examined by Ko et al, these might have a potential bias impact on the investigation for music effect in their study. Although the authors' excellent work in this study could indeed improve the quality of patient care, we are still looking forward to the authors' response.

## Acknowledgments

This article was supported by grants from the Ministry of Science and Technology, Executive Yuan (MOST 103-2314-B-010-043-MY3), and Taipei Veterans General Hospital

Conflicts of interest: The authors declare that they have no conflicts of interest related to the subject matter or materials discussed in this article.

<http://dx.doi.org/10.1016/j.jcma.2017.02.003>

1726-4901/Copyright © 2017, the Chinese Medical Association. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

(V105C-096; V106C-129; V106D23-001-MY2-1; and V106A-012). We appreciate the assistance of the Clinical Research Core Laboratory and the Medical Science & Technology Building of Taipei Veterans General Hospital for providing experimental space and facilities.

## References

1. Ko CH, Chen YY, Wu KT, Wang SC, Yang JF, Lin YY, et al. Effect of music on level of anxiety in patients undergoing colonoscopy without sedation. *J Chin Med Assoc* 2017;**80**:154–60.
2. Lee WL, Yen MS, Wang PH. Does a male operator increase the pain perception of women undergoing hysterosalpingography examination? *J Chin Med Assoc* 2015;**78**:427–9.
3. Tsivian M, Qi P, Kimura M, Chen VH, Chen SH, Gan TJ, et al. The effect of noise-cancelling headphones or music on pain perception and anxiety in men undergoing transrectal prostate biopsy. *Urology* 2012;**79**:32–6.
4. Lee FK, Lee WL, Wang PH. Is hysterosalpingography a good tool to confirm the patency of tubes? *J Chin Med Assoc* 2017;**80**:275–6.
5. Tonni G, Periti E, Rosignoli L. Hysteroscopic fetoscopy: a role as virtuopsy for parents who refuse full autopsy? A case of facial clefting, proboscis, and limb deformities. *Taiwan J Obstet Gynecol* 2015;**54**:608–11.
6. Wang PH, Tsui KH, Yang SH. Incomplete flexible sigmoidoscopy insertion after cesarean section. *J Chin Med Assoc* 2014;**77**:115–6.

Kuan-Chin Wang  
Department of Nursing, Oriental Institute of Technology,  
New Taipei City, Taiwan, ROC

Wen-Ling Lee  
Department of Medicine, Cheng-Hsin General Hospital,  
Taipei, Taiwan, ROC  
Department of Nursing, Oriental Institute of Technology,  
New Taipei City, Taiwan, ROC

Peng-Hui Wang\*  
Department of Obstetrics and Gynecology, Taipei Veterans  
General Hospital, Taipei, Taiwan, ROC  
Department of Obstetrics and Gynecology, National  
Yang-Ming University, Taipei, Taiwan, ROC  
Institute of Clinical Medicine, National Yang-Ming University,  
Taipei, Taiwan, ROC  
Department of Medical Research, China Medical University  
Hospital, Taichung, Taiwan, ROC

\*Corresponding author. Dr. Peng-Hui Wang, Department of  
Obstetrics and Gynecology, Taipei Veterans General Hospital,  
201, Section 2, Shi-Pai Road, Taipei 112, Taiwan, ROC.  
E-mail addresses: [phwang@vghtpe.gov.tw](mailto:phwang@vghtpe.gov.tw), [pongpong-wang@gmail.com](mailto:pongpong-wang@gmail.com), [phwang@ym.edu.tw](mailto:phwang@ym.edu.tw) (P.-H. Wang).