

Malik, Sadaf et al "Cognitive-behavioural therapy combined with music therapy for chronic fatigue following Epstein-Barr virus infection in adolescents: a randomised controlled trial." *BMJ Paediatrics Open* 4.1 (2020): e000797. Web. 27 Oct. 2020.
<https://bmjpaedsopen.bmj.com/content/4/1/e000797> doi: 10.1136/bmjpo-2020-000797

Serious concerns

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October 27, 2020

In April 2020, *BMJ Paediatrics* published an article about a Norwegian study in which adolescents with chronic fatigue after EBV infection were treated with a combination of cognitive and music therapy (1). An analysis shows that the article is full of contradictions and illogical conclusions, and that the results disprove the researchers' hypotheses (2).

On October 21st, 2020, the study was retracted (3), because the study was presented as a feasibility study, while the original design was for a fully powered trial. The journal refers to this as an editorial error, and it is emphasized that the authors made no mistake, although they had misled the editors and readers in the original presentation of the study. The same day, a revised article was published with a new DOI (4).

The original article is not mentioned in the publication history thus readers are not made aware that this is an amended, republished version of a retracted paper until in a footnote at the very end of the paper. The new peer-review has not been published.

A number of significant changes has been made in this new version, in particular, the original (false) claim about positive effects has been removed. The original conclusion was: "The tendencies towards positive effects on patients' symptoms and recovery might justify a full-scale clinical trial." This sentence has been replaced by: "A fully powered trial is needed to evaluate efficacy."

The main hypothesis was that music therapy should increase the level of function, measured in the number of steps/day (the primary endpoint). The outcome results and illustrations have been altered in the new version. It was originally reported that for the intervention group steps/day declined from 7 998 at baseline to 7 165 at 15 months follow-up.

The revised article reveals that the number of steps/day was reduced from 7 998 to 5 680 steps/day. Thus the objectively measured activity level was reduced, not by 11% but by 29% in the intervention group. The gap between the intervention and control group also increased, from 874 at baseline to 1 908 steps/day at 15 months. The illustration for post-exertional malaise (PEM) has been deleted and the results are changed. In fact, all the figures (except one) in Table 3: "Outcome of the mental training program intervention", in the "Intention to Treat" columns at 3 months and 15 months are changed. The readers are not provided with any explanations for these changes, as the review and editing history is lost. Although the conclusion is toned down, the fundamental flaws in the interpretation of results are still there, and the gap between the results and the conclusion is even more evident in the revised version.

Moreover, there are other serious concerns with this trial.

First, it was approved and funded as a CFS/ME study although only 14% of the participants in the intervention group met strict CFS/ME diagnostic criteria. Several places in the article the refers to their results as if valid for CFS/ME patients in general, which is incorrect. The

participants' level of function at baseline was 8 000 steps/day, close to twice as many as typical for someone with ME of mild degree.

The researchers also seem oblivious to the fact that sensitivity to noise is common in CFS/ME and that music can potentially have negative effects. Some participants in the intervention group became more depressed, more fatigued, had more pain and a lower level of function. 8 of the 21 participants in the group withdrew, which is solely explained by fear of missing school.

Second, during the program, the focus was directed towards the children's personality, thoughts and feelings, as well as their parents and the family dynamics. Both the participants and the parents were thus implicitly made co-responsible for the "situation" and for the outcome of the therapy. The "situation", which was a long-term fatigue after an infection, is described by the research team as negative illness behavior, disease attribution and "avoidance" (5). Relatedly, the therapy tested has several similarities with the controversial and pseudo-scientific method Lightning Process (LP). According to the researchers, representatives from Recovery Norway were involved in the design of the study design. The organization was started by, inter alia, a group of instructors of the and serves as a marketing and lobbying group for LP. And interestingly, this organization was formally founded in January 2018, while the study design is dated June 2015.

Third, the results of extensive clinical examinations and disease markers, as described in the research protocol, are not included in the article. Instead, the article defines "recovered" as a certain fall in subjectively reported fatigue. The results show that 8 participants in the intervention group were "recovered", compared with 7 in the control group.

In summary, the results of the study mainly disprove the researchers' own hypotheses about the benefits of cognitive and music therapy - without this being commented on in the article. Lack of results in a feasibility study normally means that the project is shelved. Here, the logic is turned upside down, and lack of results is used as a justification for even more research!

The researchers seem convinced that the therapy works, regardless of what their own research shows. The study thus becomes another example of poor CFS/ME research that reflects the researchers' predetermined psychosomatic view, rather than an honest scientific investigation.

BMJ Pediatrics Open is dedicated to being a strong advocate for children's health, and especially for the neglected diseases such as CFS/ME. This study can potentially lead to children with CFS/ME being treated with a mental training program that is not only ineffective but also manipulative and victim-blaming.

References

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