Reviewer's report

Title: Handgrip strength and balance in older adults following withdrawal from long-term use of temazepam, zopiclone or zolpidem as hypnotics

Version: 1 Date: 12 August 2014

Reviewer: Jorunn Helbostad

Reviewer's report:

The study is a secondary analysis of data from an RCT, and assesses the effect of short and long term withdrawal of benzodiazepine related drugs on handgrip strength and balance. The rationale for performing the study is that both benzodiazepines and muscles strength and balance are risk factors for falls, and that part of the reduction in balance and muscle strength seen in older persons at risk of falling can possibly be explained by use of hypnotic medication. The side effects of benzodiazepines on muscle strength and balance are sparsely documented, and the study therefore contributes with valuable information.

Major compulsory revisions

1 Introduction: The introduction has arguments for why assess the effect of withdrawals of benzodiazepines on balance but not on muscle strength. Please expand on the arguments for assessing effect on muscle strength.

2 Method: Even if most information about recruitment and the sample has been described in previous papers, some more information is needed here in order to be able to interpret findings from the study. E.g. more information on inclusion criteria, how the sample has been recruited and how long the participants have been on benzodiazepines.

Minor essential revisions

3 Abstract, background: add that physical function is also affected by use of benzodiazepines, as this is the main focus of the study, not falls.

4 “Stability” and “balance” are used interchangeably throughout the text. Choose one of the terms. I suggest to use “balance” as this is the term used when describing the Berg Balance Scale.

5 Introduction: last line in the second paragraph: Say more exactly limitations with previous studies in this area.

6 Methods, Hand grip strength and balance measurements, second paragraph: The rationale for the chosen cut-off point needs to be justified.

7 Methods, Statistical analysis: Add information about that can justify that the effect of the three medications were analyzed together.
8 Methods, Statistical analysis: Data on muscle strength were analyzed separately for men and women, while for balance the whole sample was analyzed together. The argument that there were gender differences in muscle strength is a valid argument here. However, it decreases the sample size, and this should be mentioned as a limitation of the study in the method discussion. Even if data are analyzed separately for men and women, figure 1 presents data for the whole sample. Please present the figure for men and women separately.

9 For balance it is not described whether there were gender differences at baseline. This should be added in order to support that the men and women were analyzed together.

10 Methods, Statistical analysis: It is not clear what “group” means here. Be more exact. The results demonstrate that the analyses have been performed separately for short and long term withdrawals.

11 Methods, Statistical analysis: Has correction for multiple comparisons been performed? In case it has not, argue why.

12 Results: It is described that many of the non-withdrawals had reduced their benzodiazepine use. Please add information for both genders on this, even if it has been published earlier.

13 Discussion: please discuss the limitation that you have no falls data to support whether the decreased medication use, improved strength and balance affected falls, as fall risk is the main argument behind the study.

14 Table 1: Describe changes in handgrip strength for long term withdrawals for between group differences, as has been done for short term withdrawals. I suggest presenting within-group changes in the text.

Discretionary revisions

15 Discussion, second paragraph: the handgrip strength results are argued to be comparable with reference values. Is this the baseline strength data?

16 Discussion: It is said that the effect of withdrawal of mediation on muscle strength and balance was small. Are there earlier data that can support whether the changes were clinically meaningful?

17 Table 1-3: I suggest using short and long term withdrawals in the table text, as this is what is used in figure 2 and in the text.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published
Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests: NO COMETETING INTERESTS