Reviewer's report

Title: The Association of Quality of Life with Potentially Remediable Disruptions of Circadian Sleep/Activity Rhythms in Patients with Advanced Lung Cancer

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Reviewer: Jim Waterhouse

Reviewer's report:

The manuscript reads well. There are some minor comments that the authors might like to address. They are not difficult to deal with and, I suggest, will make the manuscript slightly easier to read and appreciate. That is, they are mainly "discretionary", but I hope that some would be regarded as of value, and those starred (**) will be seen as closer to "necessary revision".

Abstract:
Clear

Introduction:
Page 4, sentence 1: remove comma.
Page 4, sentence 2: “as well as psychological”
Page 5, last sentence of first paragraph: this needs splitting up or a change in punctuation.
** Page 5, last paragraph. Could this be elaborated upon slightly – particularly with regard to the aspects of “circadian organization” that were measured by the wrist actigraph? Variations of this point are mentioned again, below.

Methods:
** Page 8, bottom: I suggest that more details of the type of output of the software associated with the actiwatch data are required - particularly, the measures of circadian rhythmicity that you use. I note (pages 9-10) that you use cosinor analysis of the rhythms of the activity, but other (similar) studies have devised their own indices of rhythmicity (see references 14 and 20, for example). At some point in the manuscript, you need to justify your use of cosinor analysis for a profile that can be far from sinusoidal.
Page 10, bottom: “…factors – namely, performance status…..quality of life – were examined….” is easier to follow, I suggest.

Results:
Reference in text to Table 4: First, is “of” extra or does it indicate that something is missing? Second, it would help to have the statistics for patients vs. healthy somewhere in the Table (in the legend?), a comment that applies also to Table 5. Table 6, for example, covers this point fully.
Table 6: The bottom three entries (the two quotients and autocorrelation) need to be explained (see comment, above, about details of the actimetry analysis).

Pages 13, Correlation of QoL and Actigraphy in Inpatients up to end of Page 15: First, a comparatively trivial point - in my copy of Figure 2 there seemed to be poor positioning of the letters A-E and the diagrams, as well as evidence that diagram E was duplicated. More importantly, this section forms one of the most important parts of the manuscript, and so it requires continual reference to Figure 2 as well as giving the reader many statistical results. Fine – but on reading (and re-reading) this section, I found that Figure 2 did not include illustrations of some of the important findings. I suggest that all the main points are illustrated. Moreover, since there are so many results, I wonder if a summary Table, indicating the main correlations, could be added to the end of the Results section? If these two points were carried out, I think that things would be made easier for the reader, particularly when following your Discussion (later).

**Figure 3 and associated text. The Figures are impressive, but the exact wording used in the text does not match that used in the legends or the labeling of the axes. This makes things difficult to follow, therefore. If you are in any doubt, compare “a more robust the(?????) circadian rhythm” (text), “the greater the circadian rhythm in activity/rest” (legend) and “autocorrelation” (axis label).

Page 16 to end of Results: This also has many statistics but no illustrations (see above). Again, I suggest you add some illustrations (and incorporate the statistics into them, as with Figure 3, for example) and/or add a Table and use the text only to draw attention to the main findings.

Discussion:

Up to “of the cancer patient” (page 19): could the present findings and the literature be integrated more? At the moment they appear to be covered separately. Moreover, throughout the Discussion, would it help to refer to the relevant Tables/Figures?

Page 19, the “counter-intuitive finding”: might this reflect the fact that the questionnaire and actimetry are measuring different things?

**End of Discussion: I accept that a further study is being introduced by yourselves, but the idea of promoting health by promoting circadian rhythmicity is not new. Such an effect has been proposed, and even tested, in other cancer patients, in patients in intensive care, and in the growth and development of neonates. At least some mention of this might be appropriate.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests