Reviewer’s report

Title: Reliability and reproducibility analysis of the Cobb angle assessing by Computer-assisted and manual measurement tools

Version: 3
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Reviewer: Sami KOLTA

Reviewer’s report:

The paper deals with the comparison between two methods of measurement of angles of the spine in sagittal and coronal planes, a manual measurement and a measurement using software: the SurgimapSpine.

General comments:

Everybody is not familiar with the software used (the SurgimapSpine). The authors should give more details on how this software works. Does it measure the different angles automatically, with recognition of the spine and pelvis? Is it a semi-automatic calculation (the operator positions the lines and the software just calculates the angles? Etc.

The paper, especially the discussion section, should be restructured in order to be clearer.

The English language of the paper should be checked, as some grammatical errors exist and some sentences are difficult to understand and therefore need reformulation.

Specific comments:

1. Introduction section, line 10: ". such as manual and iphone". The authors should probably not use brand names, but generic names as "smart phone" for example.

2. Introduction section, line 18: "Therefore the aims of the current study is .." Please change to "Therefore the aims of the current study are ..".

3. Material and Methods section, line 2: "These radiographs were chosen because of good quality ". Please indicate the total number of radiographs evaluated in order to select these 68 radiographs. Did you exclude 10% or 50%? How many radiographs were considered of "bad quality"? What were the criteria of "good quality"?

4. Material and Methods section, line 8: "Informed consent for data analysis was obtained from all subjects and/or the families" please change to "Informed consent for data analysis was obtained from all subjects and/or families".

5. Material and Methods section, line 12: "(manual measurement on x-ray radiographies .." please change to "(manual measurement on radiographs .."

6. Material and Methods section, line 21: "All radiographies were blinded ." please change to "All radiographs were blinded ."
7. Results section, line 4: "Table 3". Do they mean "Table 2"?

8. Results section, line 10: "the ICC of the intra-observer reliability was ranged from 0.75 (0.63-0.84) of the T2-T5 angle and 0.98 (0.97-0.99) of the LL angle." Please change to "the ICC of the intra-observer reliability ranged from 0.75 (0.63-0.84) for the T2-T5 angle to 0.98 (0.97-0.99) for the LL angle."

9. Results section, line 14: "measures of sagittal plane parameters with a low of 0.66 for determining the T2-T5 angle to a high of 0.96 for determining the LL; And with SurgimapSpine tool, the intra-observer reliability of LL was the best as same as manual tool and of PT was the worst" please change to "measures of sagittal plane parameters with as low as 0.66 for determining the T2-T5 angle to as high as 0.96 for determining the LL. With SurgimapSpine tool as well as the manual tool, the intra-observer reliability of LL was the best and that of PT was the worst".

10. Results section, line 18: "was obviously better than those of manual tool." Please change to "was obviously better than the manual tool".

11. Results section, line 19: "intra-rater reliability" do the authors mean "intra-observer"? If yes, please use "intra-observer" for consistency throughout the paper.

12. Discussion section: First sentence is not clear; please change the formulation of the sentence.

13. Discussion section, line 5: "Although Cobb angle measurement in the coronal has been ." please change to "Although Cobb angle measurement in the coronal plane has been ."

14. Discussion section, line 7: ", manual measurement errors and difficulty visualizing ." please change to ", manual measurement errors and difficulty in visualizing ."

15. Discussion section, line 14: please define what is "PACS".

16. Discussion section, line 14: "However, many clinicians still allow for patients from rural .." The sentence is not clear, please reformulate it.

17. Discussion section, line 18: "In these cases, Owe to SurgimapSpine software could open the forms existing ..". The sentence is not clear. Please reformulate it and give more details. Do the authors mean that plain radiographs are photographed or scanned then the digitized image file is analyzed with the SurgimapSpine software?

18. Discussion section, line 27: ", as well as imagines is formatted by photos but not films". The whole sentence is not clear. Please reformulate. "imagine" Do the authors mean "images"?

19. Discussion section, line 28: "In the present study, comparing the intra and inter-observer reliability under the definition of end vertebrae in a manual ..". The whole sentence is not clear. Please reformulate.

20. Discussion section, line 36: ", is more reliably in Cobb angle measurement." please change to ", is more reliable in Cobb angle measurement.".
21. Discussion section, line 69: "In the present study about AIS radiographic measurement with manual, the reproducibility." please change to "In the present study about AIS radiographic with manual measurement, the reproducibility." and please define "AIS".

22. Discussion section, line 76: "The other study carried out in AIS patients found." The sentence is not clear. Please reformulate.

23. Discussion section, line 81: ". demonstrated well to excellent correlation." Please change to ". demonstrated good to excellent correlation".

24. Discussion section, line 81: "Those may be correlation with the small magnitude of the measures." The sentence is not clear. Please reformulate.

25. Discussion section, line 87: "SurgimapSpine software produces a reliable measurement of the sagittal profile." please change to "SurgimapSpine software produces a reliable measurement of the sagittal plane.".

26. Discussion section, line 88: "It adjusts image contrast and brightness which will enable the superior identification." please change to "It adjusts image contrast and brightness which will enable a better identification.".

27. Discussion section, line 91: ".SurgimapSpine measurement is a equivalent measuring tool to the traditional manual in coronal Cobb angle, but has markedly advantageous in spina-pelvic measurement especially in T2-T5 and PT." please change to ".SurgimapSpine measurement is an equivalent measuring tool to the traditional manual measurement in coronal Cobb angle, but is markedly advantageous in spina-pelvic measurement especially in T2-T5 and PT.".