Title: Usefulness of a stool to stabilize dental chairs for cardiopulmonary resuscitation (CPR)

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Author’s response to reviews:

Dear Editor and Reviewers (BMC Emergency Medicine)

Thank you very much for reviewing our manuscript and offering valuable advice. We have addressed Reviewer’s comments with point-by-point responses, and revised the manuscript accordingly.

Reviewer reports:

David Häske, PhD MSc MBA (Reviewer 1):
Dear Authors, Thank you for your changes and patience. I have noticed some little things, which I consider essential.

1) - Page 2, line 2: external chest compression: what else? "internal" chest compressions are very rare, maybe in case of a thoracotomy. So I think the better term is "manual chest compression" in comparison to mechanical chest compression with a device. Also, the CPR-guidelines use the term manual chest compression. I recommend to change it.

A: Thank you for your correct advices. We changed the term "manual chest compression (MCC)" in all our manuscript.
2) - Page 2, line 3: you mean defibrillation, not cardioversion. Cardioversion is synchronized electrical cardioversion, defibrillation is non-synch.

A: I replaced the word with “defibrillation”. - Page 2, line 3

3) - Page 2, line 11: In which unit was the vertical displacement measured? Millimeter? Centimeter?

A: We measured the vertical displacement by millimeter (mm), and inserted the unit. - Page 2, line 11

4) - Page 2, line 14: I'm not sure, but I think it must be "during" ECC. And I do not prefer ECC as I told you.

A: Yes, I agree your meaningful advice. I replaced the word with “during MCC”. - Page 2, line 14

5) - Page 2, line 13: Please give the significant differences in your calculation, like "5.5 ± 2.1 mm versus 9.5 ± 1.4 mm, p < 0.001).

A: Another reviewer suggested that usually mean+/SD is used for gaussian variable. As our state in our response, none of our variable had a normal distribution, thus we should use median [interquartile range] to express our results. In the, I provided the significant differences in the largest stabilization case. - Page 2, line 15-16

6) - Page 4, line 7: Think about the term ECC...

A: We changed the term "manual chest compression (MCC)" in all our manuscript.

Romain Jouffroy, MD (Reviewer 2):
Thank you for allowing me to review the revised version of your manuscript entitled" the usefulness of a stool to stabilize dental chairs for external chest compression". I still have few remarks on the form only. I hope my comments will be helpful to improve the quality of your manuscript.

1) Overall the manuscript, please uniformize the writing into brackets: (Figure.1A, Red line) should be written with a space after the dot -> Figure. 1A, Red line

A: My apologies for too many mistakes. We uniformized the writing into brackets he all references as the Journal standers. - Overall the manuscript.

2) Please specify what you mean by "Participants used a ECC technique allowing complete chest recoil." Page 7 line 16 & page 8 line 1.

A: I am sorry that we used a confusing words. So, I revised the sentence.- page 5 line 9.’ Chest
compressions of 5.1 to 6.0 cm were performed with and without a stool.

3) Page 8 line 11: This sentence "As all the data sets were found to be with non-normal distribution" should appear in the result section and not in the method section.

A: Yes, I agree your suggestion. We removed the sentence in this section.

4) Page 9 line 8: "line. #2 and #8 dental chairs have a flat outer-shape relatively. therefore, the stool supported the backrest of » -> Upper case for Therefore

A: I am sorry that we used lower-case for the word. I corrected upper-case “Therefore”.

5) Page 10 line 16: "group [8,9,10]" should be written group [8-10].

A: I replaced the symbols.

6) Page 11 line 4: "The support efficiency of a stool ware different backrest (Figure.1A, Red line)." -> are you sure for the word "ware"?

A: I am sorry for an elementary mistake. I replaced the word.

7) Page 11 line 6: "therefore, the stool supported the backrest of dental chair firmly" -> Uppercase for Therefore

A: I am sorry that we used lower-case for the word. I corrected upper-case “Therefore”.

8) Page 11 line 12: "Although there are a lot of typical chairs in the word »-> are you sure for "word"?

A: I am sorry for a rudimentary mistake. And, we investigated the study in Japan. I replaced the word “in Japan”.

9) Table: Usually mean+/-SD is used for gaussian variable. As you state in your response, none of your variable had a normal distribution, thus you should use median [interquartile range] to express your results.

A: Yes, I agree your meaningful advice. I replaced all results using median [interquartile range].

Overall the manuscript.
Dear authors, Thank you for taking the time to address all the reviewers comments. The message in the manuscript is more clear with the revisions you have already made. The addition of the description of why it's difficult to do CPR in a dental chair helps convey the purpose of the study. However, there are many issues in relation to grammar and language that should be addressed.

1) Page 4, Line 2: 'Dental office is a special circumstance, and sudden cardiac arrest and asphyxia due to aspiration of dental materials into the trachea are two major life-threatening emergencies.' I would revise this sentence such that it reads more like 'The dental office poses special circumstances where life-threatening emergencies of aspiration of dental materials and asphyxia can lead to sudden cardiac arrest.'

   A: Thank you for your meaningful advices. We corrected the sentence for 'The dental office poses special circumstances where life-threatening emergencies of aspiration of dental materials and asphyxia can lead to sudden cardiac arrest.' - Page 4, Line 2-3.

2) Page 4, Line 8 -10: 'On the other hand, CPR should be started in the dental chair, considering the difficulty of moving the patient to the floor safely. Because, the space around a dental chair is so compact chest compression [2]. This procedure was adopted in the ERC guideline 2015 [3]. A stool is placed under the tilted or horizontal backrest, and then the dental chair is lowered so that the backrest come into contact and quite-narrow to do effective treatments between a dentist and staffs. And, there are only a few stuff in many clinics.' These 3 sentences are really run ons and the sentences should not ideally start with 'But' or 'And'. Taking into consideration the surrounding sentences I would suggest revising these to read: 'However, given the limited space around a dental chair for effective interventions on the floor and the difficulty in moving a patient to the floor safely requiring multiple staff (which may be limited in some clinics), CPR should be started in the dental chair itself.'

   A: Yes, I agree that your sentence was very accurate information. I quoted your meaningful advice directly. - Page 4, Line 8 -10.

3) Page 5 line 3: 'Therefore, we are afraid whether our procedure is effective in all types of dental chairs or not.' Please revise to state: 'Thus, it is unclear if our procedure is effective in all types of dental chairs.'

   A: We revised to state 'Thus, it is unclear if our procedure is effective in all types of dental chairs.' - Page 5 line 2.

4) Page 5, line 5: 'We compared the performance of ECC in different types of dental chairs between with and without a stool.' Please revise to state: 'We compared the performance of ECC in different types of dental chairs with and without a stool.'

   A: We revised to state: 'We compared the performance of ECC in different types of dental chairs with and without a stool.' - Page 5, line 4.
5) Page 5, line sentence 6: 'We hypothesized that a stool as a stabilizer may reduce the vertical displacement by ECC and increase the efficacy of ECC in dental chairs when the same quality of ECC are provided.' Should read, '....when the same quality of ECC is provided.'

A: We corrected the word “is” - Page 5, line 6.

6) Page 5, line 15: 'Each dental chairs were installed in four private dental offices.' Should read either 'Each dental chair was installed in four private dental offices.' or 'Each of the dental chairs were installed in four private dental offices.'

A: We corrected the sentence 'Each dental chair was installed in four private dental offices.' - Page 5, line 14.

7) Page 6, line 12: 'The displacement of the point P (Figure 2.A) on the lower surface of the backrest (vertically under the area for ECC) was fixed a vertical-measurement instrument (Figure 2.B).’ Do you mean ‘...was fixed using a vertical-measurement instrument...’?

A: I am sorry for poorly explanation. This sentence was not need to describe. I deleted the sentence "using a vertical-measurement instrument ". - Page 6, line 10.

8) Page 6, line 15: 'The depth of ECC was tried to be kept between 5.1 to 6.0cm in both cases with and without a stool.' Would suggest stating as, 'The depth of ECC was kept between 5.1 to 6.0cm with and without the stool.'

A: We corrected the sentence 'The depth of ECC was kept between 5.1 to 6.0cm with and without the stool.'- Page 6, line 13.

9) In the section of Statistical analysis, there is a line 'Normality test and non parametric statistical test' This appears to be a floating sentence without a clear purpose. Would suggest removing it.

A: Yes, I agree. We removed the sentence.

10) Page 11, line 4:'The support efficiency of a stool ware different, maybe as the backrest of some dental chairs has an outer-shell shape with curving line.' Please clarify the thought.

A: We corrected the sentence ' The support efficiency of a stool was different, maybe as the backrest of some dental chairs has a curved outer-shell.'- Page 10, line 16- Page 11, line 1.

11) Page 11, line 12: 'These are common models in Japan. Although there are a lot of typical chairs in the word.' First, I believe you meant to use the word 'world' not 'word'. Second, this could perhaps be rephrased to convey your point. It seems you may be trying to convey that these are the common models found in Japan but also typical of those found worldwide?
A: I am sorry for a rudimentary mistake. And, we investigated the study in Japan. I replaced the word “in Japan”. - Page 11 line 8

12) Page 12, line 1: 'However, no studies to date have demonstrated a significant reduce deflective movements on several types of a dental chair.' Do you mean '...significant reduction in..' over '...significant reduce deflective movements...'?

A: Yes, that means '...significant reduction in..'. We emended the sentence for your advice. - Page 11, line 13.