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Letter to the Editor

Correct AED electrode placement is rarely achieved by laypersons when attaching AED electrodes to a human thorax

Sir

The importance of cardiopulmonary resuscitation and rapid and correct defibrillation during cardiac arrest have been emphasized. Further, public campaigns highlighting the importance of bystander intervention and automated external defibrillators (AEDs) have evolved and basic life support courses are now widely distributed for laypersons to attend [1]. For defibrillation to be successful, correct placement of AED electrodes is important. Unfortunately, it has been demonstrated that AED electrodes are often anteriorly misplaced and that the pictorial guidance on AEDs and AED electrodes are often poor and incorrect [2,3].

Studies investigating physicians, nurses, physiotherapists and laypersons abilities to correctly attach AED electrodes have all demonstrated poor AED electrode placement of especially the left apical AED electrode [4]. Further, Goksu et. al. demonstrated poor AED electrode placement by emergency medical technicians (EMTs) with possible fatal outcome [5]. However, most studies investigating laypersons and healthcare professionals abilities to correctly attach AED electrodes are performed on resuscitation manikins. Attaching AED electrodes to a human thorax may defer from that of attaching them to a manikin. In accordance, we investigated how laypersons attach AED electrodes to a real human thorax.

We recruited 40 laypersons and provided them with an AED (Lifepak® CR-T AED Trainer, PhysioControl, Redmond, WA, USA). The lead author was used to simulate the cardiac arrest patient and the layperson participant were asked to activate the AED and follow the instructions provided. When AED electrodes were attached, the session was completed. Further, a digital photograph of the AED electrode placement was taken for subsequent analysis. To avoid observer bias, a paramedic was recruited to analyze the pictures for correct AED electrode placement. For placement to be correct, both AED electrodes should be correctly attached. As misplacement of AED electrodes by EMTs have been reported, the paramedic in our study was tested on his abillities to correctly attach AED electrodes similarly to the layperson participants.

In total, 40 laypersons attached AED electrodes to a human thorax. Only 12 (30%) were able to correctly attach both AED electrodes and 28 (70%) did not attach both AED electrodes correctly (Fig. 1). The left apical AED electrode was misplaced by all 28 laypersons that attached AED electrodes incorrectly.

These results are in accordance with the study by Nurmi et. al. demonstrating poor AED electrode placement by laypersons when attaching different types of AED electrodes to a manikin. They found that the proportion of laypersons that were able to correctly attach both AED electrodes varied from 8% to 36%. Our results are important as they demonstrate that misplacement of AED electrodes not only occur when attached to a manikin but also to a real human thorax. We included a small sample size however and more research on AED electrode placement on humans is needed. Further, our results support the litterature describing poor AED electrode placement.

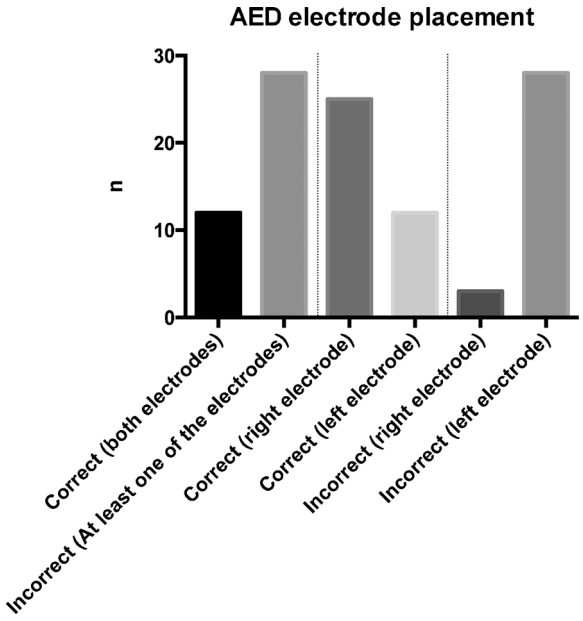

Fig. 1. AED electrode placement by laypersons on a real human thorax.

There is an urgent need for further research on this subject. Especially, research on how to facilitate correct AED electrode placement of the left apical AED electrode is highly warranted.

Conflicts of interest

None.

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