

Assessing the Effect of Lay-Rescuer Gender on Chest Compression Quality in a Simulated Sudden Cardiac Arrest

Hannah Torney, Dr Adam Harvey, Olibhear McAlister, Dr Raymond Bond, Prof Dewar Finlay, Dr Justin Magee, Dr David McEaney, Prof Jennifer Adgey

Introduction:

Survival from sudden cardiac arrest (SCA) relies on prompt defibrillation and effective cardiopulmonary resuscitation (CPR). The effect of SCA patient gender has been assessed, but there has been little research into the effect of rescuer gender. An update to the resuscitation guidelines recommends lay-rescuers perform chest compression (CC) only CPR. This study was conducted to assess quality of CCs performed by male and female lay-rescuers.

Methods:

Lay-rescuers (n=141, 48.2% male) were randomly recruited in a shopping mall to use a HeartSine SAM 450P public access defibrillator and perform CC on a manikin in a simulated SCA. Audio-visual CPR rate feedback was provided to 68 participants (48.2%, 50% male). CC rate, depth and fraction performed by male and female participants was assessed. Wilcoxon and t-tests were used where appropriate.

Results:

As shown in Figure 1, there was no difference in CC rate between males and females in the total population ($p=0.87$). Males compressed deeper than females (23.95(9.73) vs. 20.61(7.66) mm, $p<0.05$) and CC fraction was significantly higher with females (87.9 (85.5,95.6) vs. 94.4 (88.7,96.8) %, $p<0.05$).

There was no statistical difference between CC rate ($p=0.89$) and fraction ($p=0.16$) in males vs. females in the audio-visual CPR rate feedback group, but the difference in CC depth was significant (26.77(8.44) vs. 22.75(7.11) mm, $p<0.05$).

There was no statistical difference in males vs. females for CC rate ($p=0.44$) and depth ($p=0.27$) in the group without CPR rate feedback, but CC fraction was significantly higher with females (86.7 (83.8,94.4) vs. 92.7 (88.7,96.0) %, $p<0.05$).

Conclusions:

CC rate, depth and fraction improve with the addition of audio-visual CPR rate feedback. Males performed CC at higher depths than females. CC fraction was significantly higher than the 60% recommended by the ERC guidelines.

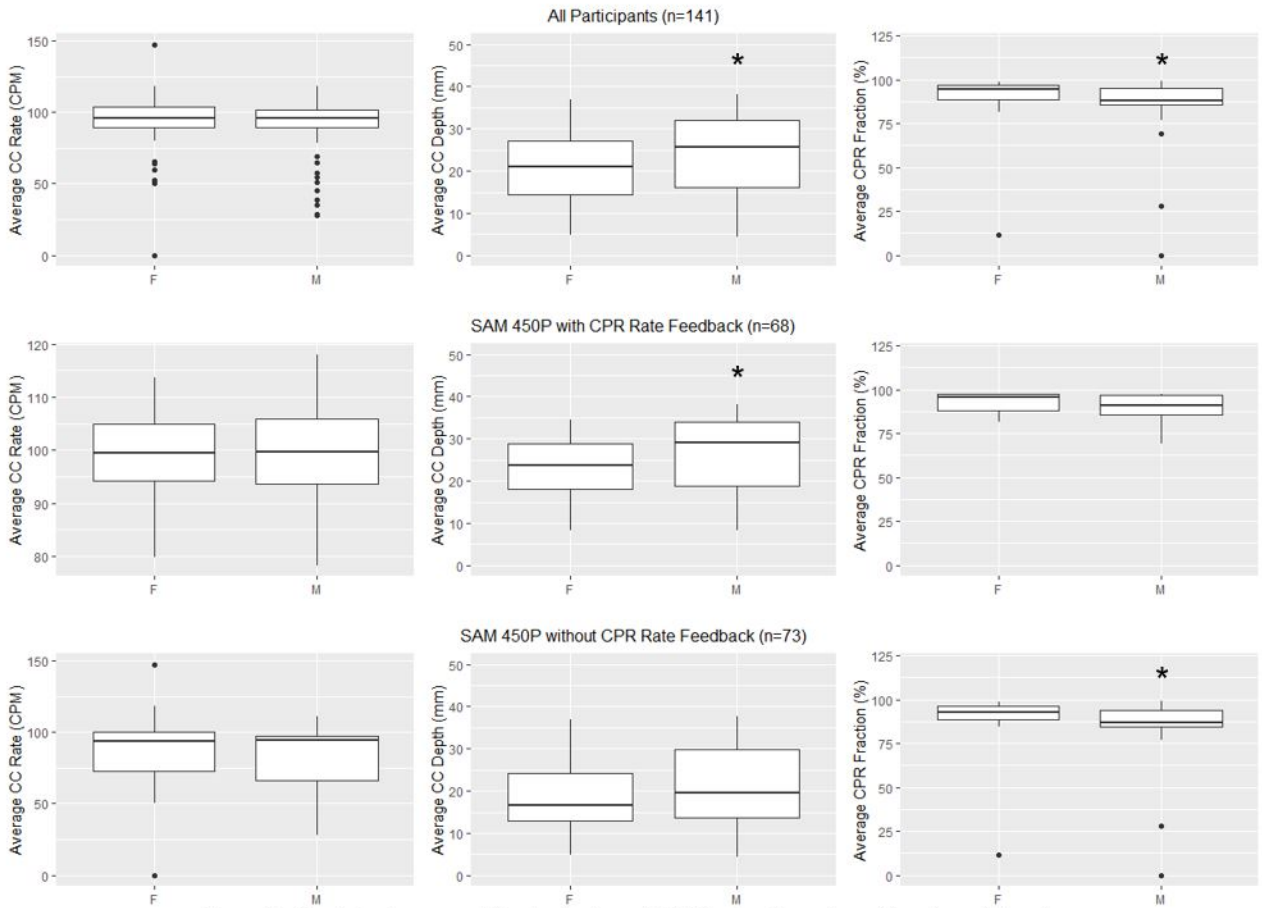


Figure 1: Boxplots of average CC rate, depth and CPR fraction for male and female participants.
 * Denotes statistical significance ($p < 0.05$)