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**How useful is AED training as a determinant for the utilisation of
Automatic External Defibrillators by lay people?**

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Abstract

There is some debate in the resuscitation literature about whether training lay people in the use of an Automatic External Defibrillator (AED) is actually necessary. Certain models of AED implementation have successfully been used where no formal training has been provided. This paper reports on a qualitative, interview-based study of lay people who had been trained to use an AED. The data suggests that the training event, and especially the face-to-face contact with the trainers, plays an important part in persuading people to trust the AED, and to use it, if and when an emergency occurs. Thus the training event may have a value in addition to teaching lay people the skills of using an AED.

Keywords

AED; automated external defibrillator; qualitative research; training

Introduction

It is now generally accepted that lay people (that is, people with no formal training as a clinical professional) can be trained to use an Automatic External Defibrillator (AED). The classic example of this is the study by Gundry et al.¹ It has further been demonstrated that lay people, with minimal training, can go on to use the AED correctly and successfully in real emergencies.² Lay people's retention of the skills learned in AED training is comparable with clinical personnel.^{3,4} There is some literature that questions whether formal programmes of training in AED usage are necessary at all.

Kern⁵ suggested that formal training may not be necessary. Caffrey et al⁶ reviewed the use of AED at O'Hare Airport Chicago which has AEDs installed on a 'fire extinguisher' model. They found that 6 out of 11 people who had used an AED had no prior training in how to use them. Wik et al^{7,p.171} suggest that 'the use of an AED by untrained lay persons may be feasible and that complex time-consuming training programmes may not be necessary'. Alternatives to formal classroom-based training have been tried and found to be effective.⁸ However, while there is little empirical evidence on whether AED training is necessary or not, the debate is underway.

The argument made against training is that the AED is sufficiently intuitive and easy to use that training is not necessary, and if the AED were implemented and used in the same way as, for instance, fire extinguishers, then more lives would be saved. However, published papers, some by significant authorities in the field⁹ still insist that formal training for lay people is necessary. Nanthakumar and Soal¹⁰ argue that this is because lay people may still make inappropriate decisions to use the AED.

Method

We believe that our study of lay people¹¹ who have been trained to use the AED has a contribution to make to this debate, though the issue of whether AED training is necessary was not one of our original aims, which were:

- How do training courses help prepare people for dealing with real life situations?
- Who is ultimately responsible for providing critical incident debriefing and how should this be organised?

While the nature of qualitative research often produces unexpected findings and data, we consciously did not adopt a textbook approach to the conduct of this qualitative research *per se*, but instead chose to employ a more pragmatic style, as advocated by Avis¹² who offers detailed philosophical justification for this approach. Having said this, our methodological position is (broadly) that the issues we have studied are socially constructed,¹³ and that the relationships between technology, individuals and society need to be studied in an integrated, symmetrical fashion.¹⁴

This study was conducted using semi-structured interviews of lay people, in a variety of settings (including airports, railway stations, shopping and leisure centres) who had been trained to use an AED (n=44). AED trainers were also interviewed (n=9). The sample was purposive, and limited to organisations that had implemented AEDs, and had trained their employees to use them.

Participants were recruited via their employer, while trainers were recruited via AED training providers (such as St John Ambulance and the Red Cross). Interviews were tape recorded, transcribed verbatim, and then analysed using QSR Nvivo. Short sections of the transcript were initially given a purely descriptive code, with more analytical codes being developed as the analysis went on. Codes were then grouped together into themes for the purpose of tentative theory building. Coding was undertaken principally by the second and third authors, with the first author cross-checking for consistency. Ethics approval was granted by the University of Nottingham Faculty of Medicine Research Ethics Committee.

Findings

Analysis of the data produced by this study has shown that the issue of trusting the AED is a significant one for the people who we interviewed. This is linked to several reasons. The first of these is that the AED is seen as a medical device, to be used by professionals. This is probably reinforced by media representations. Secondly, the AED is designed for use in a situation where lay people are less likely to be experienced, as opposed to professional users of the AED. Thirdly, both the condition and the treatment are, to the lay person, potentially frightening. In the settings we studied, it is likely that lay people would have to use the AED alone, or without support from professionals. Thus a central issue in persuading people to use the AED is their trust in the device. These kinds of concerns were expressed by one interviewee:

"I might be trying to do something right and they might end up worse for it"

Our data show that the training event itself plays a key role in creating this trust. There are several ways in which this is achieved. The training event provided an opportunity for the technical functionality of the AED to be explained to trainees. The AED was understood to embody medical expertise in terms of determining whether ventricular fibrillation was present, and then, effectively, taking the decision to deliver a shock.

"when you hear them, you've got like, it's like an expert talking to you, so it's even like having a doctor at the side of you telling you what to do"

Interviewees seemed almost grateful for having any decisions taken out of their hands:

"Yes, because you don't have to make that decision, you may have to make other decisions as regards to other parts of first aid linked to that, but the actual decision to use it on somebody is taken away from you, so it's failsafe."

Related to this was a wider trust in the companies who had built the AED, and their own organisations for allowing it to be implemented.

"I mean it's a clever piece of equipment and they wouldn't manufacture something like that and put them up in [...] places like this, if they weren't fool proof."

Positive stories, both from within their own organisation, and from the media also played a part in creating this trust:

"It's had, the [local newspaper] publicise it quite well, and [...] they gave it a good run of publicity."

However, the most significant factor appeared to be the trust that was placed in the trainers, as a result of meeting them face-to-face at the training event. This gave experts an opportunity to demonstrate their (and the organisation's) commitment to the people being trained and to show their professional expertise and integrity:

"The gentleman was very assured, he put you at ease and there was a very good manner about him. Immediately he sounds very much like he knows what he is talking about. The instructions he gives are very simple, very effective, I think he was very good actually."

And

"...obviously the paramedics, they're on all the time, they go out in emergencies, they use it all the time, so obviously they are probably better equipped to instruct on the use of it. Because it's their everyday job."

The effectiveness of the training event and of the trainers in particular, in persuading the trainees of the effectiveness and safety of the AED is demonstrated by this view:

"I've never used it but I trust it. Yes, after what the trainer told us, because he's used them all the time so I should imagine it would work."

Discussion

Achieving trust in the AED was clearly an important issue for both groups of our interviewees, the trainers and the trainees. The trainees needed to be persuaded (they did not just accept the AED uncritically) and the trainers had to work at producing this trust.

Our analysis shows that this was not a simple process. Trust was not simply vested in the device, but, additionally, in the trainers, the companies that manufactured the AED, and in the trainees' own organisation that was implementing the AEDs. There was also a less tangible, but nonetheless present, trust in medicine, the health care system and doctors more generally. All of these elements need to be in place for the trust in the AED to be functional.

Our interviewees were, in general, quite sceptical about most technologies (they were specifically asked about this issue), which makes the complete confidence that they reported in the AED all the more striking. This is due, in no small part, to the skills of the trainers, which should not be underestimated. This confirms Skora and Riegel's suggestion¹⁵ that a consideration for training should be persuading trainees to use the device.

Limitations

Though some remain critical of the (perceived) subjectivity of methods of this kind, these were minimised in our study by the robust and transparent methods employed, and the diverse perspectives (both clinically and academically) of the research team. Nonetheless, this study cannot be generalised to a wider population of lay people trained to use an AED. However, we did study a broad spread of locations and individuals, sufficient to suggest that our results may have some relevance to most initiatives of this kind, in the UK at least.

It is acknowledged that due to differences in regulation, and the wider configuration of healthcare systems, the results should be interpreted with caution in countries other than the UK. It is possible that cultural factors played a part in influencing our results.

Conclusion

Our qualitative data show that the training event itself played a key part in persuading lay people that they could and should use an AED in the event of an emergency. We would contend that while formal training in AED use may not be functionally necessary^{6,7} in order for lay people to use the AED correctly, it may play an important 'rhetorical' role in persuading them to use the AED when an emergency occurs. It would thus seem premature to abandon formal programmes of training in AED use, at least until more detailed and rigorous studies have been undertaken. It may be possible to do this by comparing two sites where one has a formal programme of training for potential AED users, and the other uses the 'fire extinguisher' model. It might also be worth changing the emphasis of AED training so that more time is devoted to persuading lay people that the AED is effective and safe to use, perhaps at the expense of spending less time on the practical skills. Such a change would, of course, need to be rigorously evaluated.

Our advice to AED trainers, on the basis of the findings of this study, would be to consider their style of delivery, so as to increase the confidence of trainees, and to bear in mind some of our data relating to sources of confidence in the AED, for an audience of lay people.

In order to determine whether the rhetorical process we have described in this paper has any effect in a real situation, it may be of value to conduct post-training studies which compare the actual patterns of AED usage by two groups of trainees (like those in the study reported

by Young et al).⁸ While such a study may be difficult to perform, the outcomes would further determine if delay or reluctance by lay people trained in the use of AED, to actually deliver a shock in the stressful and unfamiliar setting of a real-life emergency, are influenced by the AED training event.

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