Design of Generic Epinephrine Auto-Injector Minimizes Administration Error and Fingerstick Injury

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Epinephrine Auto-Injectors (EAI) are life-saving medical devices used to treat anaphylaxis, a severe allergic reaction. However, they have low successful administration rates. The EpiPen is the most popular EAI. The Teva EAI is a generic EpiPen that is approximately half the cost of the EpiPen. The Teva differs from the EpiPen in that it has a twist-off cap that covers the needle end, while the EpiPen does not. I investigated whether this design difference affects usage and reduces errors, specifically fingerstick error. Fingerstick error is when a user uses the EAI upside down and injects it into their finger rather than the intended location. A within-subjects experimental design was used, where participants aged 14-18 used both trainer EAIs and completed a survey. 56 participants who indicated they were previously not trained were used in the data analysis. The successful administration rate was 27% for the EpiPen and 29% for the Teva. The EpiPen had a higher rate of participants touching the injection tip before injection and fingerstick error (p=.0253, p=.0163 respectively). The participants who used the Teva before the EpiPen had fewer instances of fingerstick error and not injecting at all when using the EpiPen, compared to those who used the EpiPen first (p=.0257, p=.0304 respectively). The Teva's twist-off cap provides better indication and more awareness of the needle end. The lack of a hole on the non-needle end of the Teva makes it less likely to be confused for the needle end. In turn, these design differences appear to prevent fingerstick error. Overall, this suggests that the Teva's design is favorable as it better indicates the needle end, resulting in fewer instances of fingerstick error.

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