

Development and Evaluation of a Facial Action-based Pain Assessment Training

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Accurate pain assessment is a critical skill for EMS providers, yet traditional training paradigms emphasize verbal self-report, which may be unreliable in patients who are nonverbal, cognitively impaired, or emotionally distressed. Provider biases related to gender and race may further complicate recognition and interpretation of pain, possibly resulting in underestimation or delayed intervention.

The Facial Action Coding System (FACS) is recognized as a valid and reliable method in objectively describing facial expressions, as well as monitoring pain-related facial expressions in various populations. Fifty New York State EMTs were randomly assigned to participate in one hour of didactic instruction in either standard patient assessment or FACE-IT. The FACE-IT training included (1) foundations in FACS and pain-related action units and (2) image-based exercises using the SynPAIN dataset, which provides synthetic and demographically balanced facial images annotated for pain expression. Then, trainees were randomly assigned to two adult simulation scenarios varied by pain expression, gender, and race.

Cohort outcomes were compared for absolute differences in trainee and standardized pain labels, demographic effects, and self-reported confidence. Trainees who received the FACE-IT training demonstrated higher accuracy in identifying pain expressions across all demographic categories and reported increased confidence in assessing nonverbal pain compared to the standard training group.

These findings support the integration of facial action recognition into EMS assessment training to improve accuracy, equity, and confidence in pain evaluation. Further research is needed to assess the generalizability of the program to non-adult patients and the extent of longitudinal retention.

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