

## PSYCHOMETRIC PROPERTIES OF A SURVEY ON PATIENT SAFETY CULTURE (SOPS)-BASED TOOL FOR EMS

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THE NATION'S EMS CERTIFICATION

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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

### Disclosures

- None



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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

### Safety Culture

- Attitudes, perceptions, and behaviors of workers related to their organization's commitment to safety.
- Related to safety outcomes including errors/adverse events.
- Monitoring safety culture is important in high-risk settings like EMS.



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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

## Safety Culture Measurement

- Two major instruments:
  - Safety Attitudes Questionnaire (SAQ)
  - Survey on Patient Safety Culture (SOPS™)
- Comparable psychometric qualities
- EMS-SAQ developed in 2008
- **No SOPS™ instrument specific for EMS**



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## Survey on Patient Safety Culture (SOPS™)

- Agency for Healthcare Research and Quality (AHRQ)
- Introduced in 2004 for hospital setting
- National comparative database



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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

## Objective

Evaluate the psychometric properties of an EMS-adapted safety culture measurement tool based on SOPS™ domains.



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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

### Instrument Development

- 10 domains from existing SOPST<sup>™</sup>
- 1 new domain
- 37 items
- +2 outcome items
  - Overall safety grade
  - Frequency of event reporting

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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

### Design & Study Population

- Design
  - Cross-sectional electronic questionnaire
- Target population
  - Nationally-certified EMS professionals
- Sample
  - All **332,584** nationally-certified EMS professionals

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BACKGROUND METHODS RESULTS DISCUSSION CONCLUSION

### Data Analysis

- **Domain Structure**
  - Confirmatory Factor Analysis (CFA)
    - Polychoric correlation matrix
    - Robust weighted least squares adjusted for mean and variance (WLSMV) estimator
- **Reliability**
  - Cronbach's alpha ( )
- **Validity**
  - Pearson's correlation coefficient (r)

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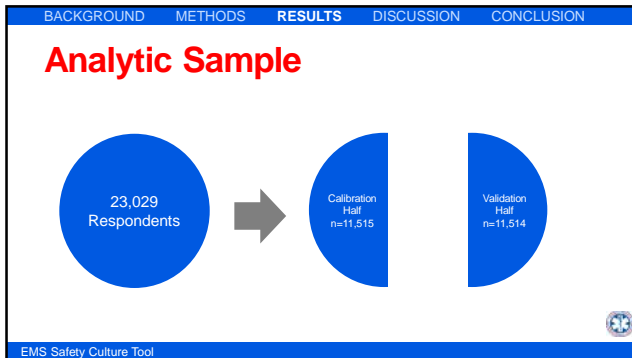
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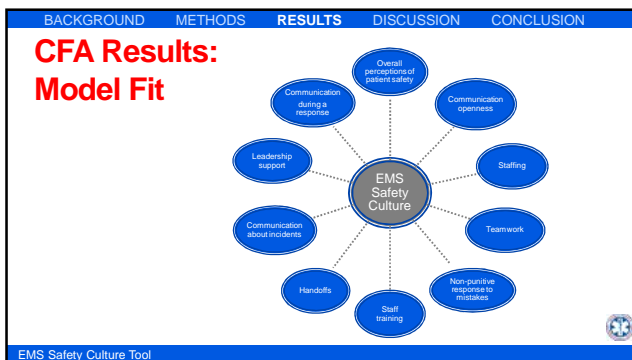
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BACKGROUND METHODS **RESULTS** DISCUSSION CONCLUSION

### CFA Results: Model Fit

- CFA supported the 11-domain model overall

| Variable | EMS Instrument | SOPST <sup>TM</sup> Benchmark |
|----------|----------------|-------------------------------|
| Fit      |                |                               |
| CFI      | 0.94           | >0.90                         |
| TLI      | 0.93           | >0.90                         |
| RMSEA    | 0.08           | 0.05-1.0: acceptable fit      |

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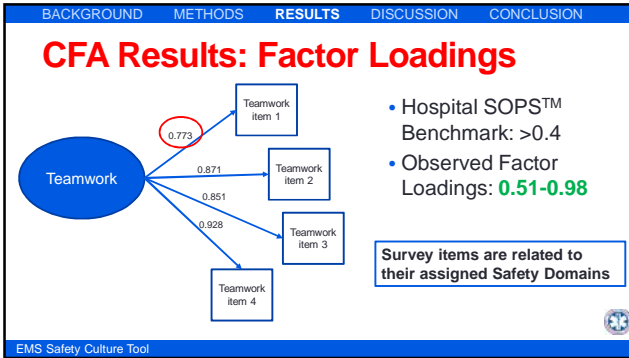
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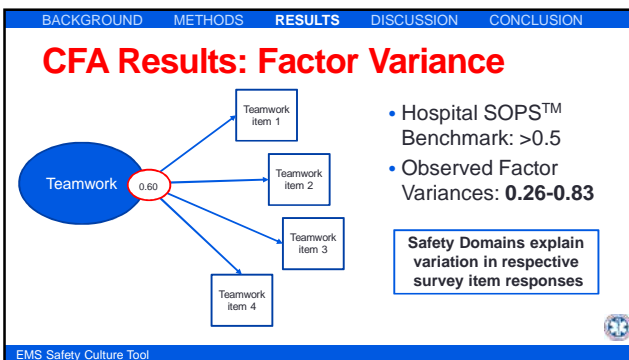
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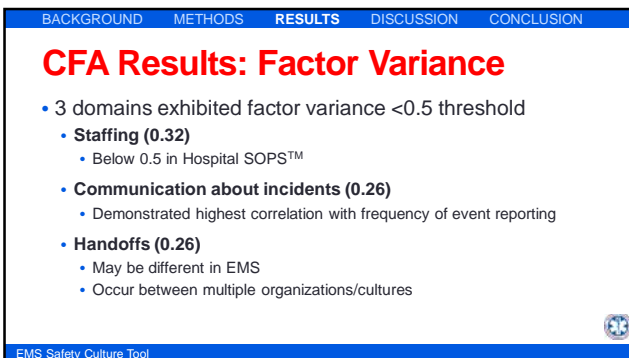
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BACKGROUND METHODS **RESULTS** DISCUSSION CONCLUSION

### CFA Results: Validation Data Set

- Comparable to calibration data set results

| Variable        | Calibration | Validation |
|-----------------|-------------|------------|
| Fit             |             |            |
| CFI             | 0.94        | 0.94       |
| TLI             | 0.93        | 0.93       |
| RMSEA           | 0.08        | 0.08       |
| Factor Loadings | 0.51-0.98   | 0.50-0.99  |
| Factor Variance | 0.26-0.83   | 0.25-0.85  |

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BACKGROUND METHODS **RESULTS** DISCUSSION CONCLUSION

### Reliability & Validity

- Reliability
  - Cronbach's alpha > 0.6 for all 11 domains (range: 0.65-0.88)
- Validity

| Outcome                      | EMS Instrument (range) | Hospital SOPS (range) |
|------------------------------|------------------------|-----------------------|
| Overall Safety Rating        | (r: 0.44-0.72)         | (r: 0.38-0.66)        |
| Frequency of Event Reporting | (r: 0.31-0.48)         | (r: 0.23-0.48)        |

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BACKGROUND METHODS RESULTS **DISCUSSION** CONCLUSION

### Limitations

- Individual-level data
- Response bias
- Self-reported outcome variables

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BACKGROUND    METHODS    RESULTS    DISCUSSION    **CONCLUSION**

## Conclusions

- Overall, EMS-adapted SOPS™-based tool performed similarly to existing instruments.
- Future work is needed to explore properties of the tool at the agency level.
- EMS-adapted instrument will be freely available.

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**THANK YOU!**

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