Work Environment and Error Reporting by Nurses

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Background

- To Err is Human
- Almost all hospitals in the U.S. have error reporting systems. However, research demonstrates that error reports do not accurately reflect the number of known errors
- As a result, opportunities for hospitals to learn from errors and improve quality and safety in hospitals are lost because errors are not reported
Past Research

- Large focus on facilitators and barriers to error reporting\textsuperscript{6-8}

- Error reporting in hospitals is complex

- Gap in research to explain how the work environment of a hospital affects error reporting by clinicians
Purpose

To examine how the nursing unit work environment affected error reporting by nurses
Definitions

- Safety climate—shared perceptions and experiences about the practices, policies, and procedures related to the safety of patients\(^9,10\)
- Leader inclusiveness—behavior of leaders demonstrating availability, openness, and accessibility to employees whereby they invite input and demonstrate an appreciation for the contribution of employees\(^11,12\)
- Psychological safety—willingness of team members to speak up about concerns without fear of negative consequences\(^13,14\)
Conceptual Model

Psychological Safety

Safety Climate
Leader Inclusiveness

Error Reporting

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## Methods

<table>
<thead>
<tr>
<th>Design</th>
<th>Setting</th>
<th>Data</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-sectional, descriptive design</td>
<td>805-bed academic medical center</td>
<td>Self-administered surveys</td>
<td>Linear Mixed Models with Random Effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nurses</td>
<td>• Bootstrap Confidence Intervals with Bias Correction</td>
</tr>
</tbody>
</table>
Results: Sample Characteristics

Nurse Education

- Diploma: 68.4%
- ADN: 22.3%
- BSN: 3.0%
- MSN or Higher: 6.4%
Results: Sample Characteristics

Nurse Manager Education

- 54.4% BSN
- 2.2% Any Master's Degree
- 43.5% Doctorate

Legend:
- BSN
- Any Master's Degree
- Doctorate
Results: Sample Characteristics

Nurse Experience (average years as a nurse) = 11.7 Years

Nurse Tenure (average years on current unit) = 6.1 Years
Results: Sample Characteristics

Nursing Units

- Medical/Surgical: 26.5%
- ICU: 12.2%
- Specialty: 36.7%
- Other: 24.5%
Results

Psychological Safety

RQ 1: Safety Climate
RQ 2: Leader Inclusiveness
RQ 3: Error Reporting
RQ 4: [Connection Not Specified]
Implications

- The findings emphasize the important relationship between the work environment and error reporting.

- Psychological safety is an important characteristic for teams. Both the safety climate and nurse manager behaviors help to positively influence psychological safety within teams.
Thank you!

Contact:
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References


References


Statistical Tables

• Descriptive Statistics of Dependent and Independent variables

• Results of Linear Mixed Models with Random Effects used to answer research questions of study

• Results of Mediation Analysis
## Results: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Error Reporting</td>
<td>876</td>
<td>3.4 (0.9)</td>
<td>1</td>
<td>5</td>
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<tr>
<td>Safety Climate</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Unit Environment</td>
<td>824</td>
<td>3.9 (0.7)</td>
<td>1.6</td>
<td>5</td>
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<tr>
<td>- Interprofessional Relationships</td>
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<td>3.7 (0.8)</td>
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<td>5</td>
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<tr>
<td>Leader Inclusiveness</td>
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<td>1</td>
<td>5</td>
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<td>842</td>
<td>3.9 (0.7)</td>
<td>1.3</td>
<td>5</td>
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</tbody>
</table>
Results: Research Question 1

How do safety climate and leader inclusiveness affect error reporting?

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>DF</th>
<th>Estimate</th>
<th>t Value</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Climate</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Unit Environment</td>
<td>788</td>
<td>738</td>
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Note. Analyses conducted using linear mixed models with random effects models to account for intra-unit correlation. DF=Degrees of Freedom
Results: Research Question 2

How do safety climate and leader inclusiveness affect psychological safety?

<table>
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<tr>
<th></th>
<th>N</th>
<th>DF</th>
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<th>t Value</th>
<th>p Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Safety Climate</strong></td>
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<tr>
<td>Unit Environment</td>
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<tr>
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<td>738</td>
<td>0.36</td>
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<tr>
<td><strong>Leader Inclusiveness</strong></td>
<td>809</td>
<td>759</td>
<td>0.27</td>
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<td>&lt;.01</td>
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</table>

*Note. Analyses conducted using linear mixed models with random effects models to account for intra-unit correlation. DF=Degrees of Freedom*
Results: Research Question 3

How does psychological safety affect error reporting?

<table>
<thead>
<tr>
<th>Psychological Safety</th>
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<th>DF</th>
<th>Estimate</th>
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<th>p Value</th>
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</thead>
<tbody>
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<td>6.56</td>
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</tbody>
</table>

Note. Analyses conducted using linear mixed models with random effects models to account for intra-unit correlation. DF=Degrees of Freedom
Results: Research Question

Do Safety Climate and Leader Inclusiveness indirectly affect error reporting through psychological safety?

Step 1: Significant in all cases

Step 2: Significant in all cases

Step 3: Significant in 2 out of 3 cases

No support for psychological safety as a mediator between the unit environment of the safety climate and nurses’ perceptions of error reporting.
## Results: Research Question

Do Safety Climate and Leader Inclusiveness indirectly affect error reporting through psychological safety?

<table>
<thead>
<tr>
<th>Mediation Analysis</th>
<th>95% Lower Bound</th>
<th>Mid-Value</th>
<th>95% Upper Bound</th>
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<tr>
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<td><strong>Leader Inclusiveness</strong></td>
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*Note.* Steps 4 of the mediation analysis conducted Bootstrap confidence intervals with bias correction. 1000 resamples were used for the analysis.