Evaluation of a simulation-based curriculum in managing agitated patients for paediatric residents

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I do not have an affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.

Je n’ai aucune affiliation (financière ou autre) avec une entreprise pharmaceutique, un fabricant d’appareils médicaux ou un cabinet de communication.
Objectives

- Demonstrate the current educational gap in paediatric residency training in regards to agitation management

- Simulation-based educational tools may serve as a modality to improve knowledge and competence in agitation management

- The use of didactic lectures in isolation does not appear to make an impact on knowledge or competence in agitation management
Background

- Prevalence of mental health diagnoses has been rising among paediatric patients seeking acute medical care\(^1\)
- Paediatric residents often encounter potentially violent or aggressive patients and/or families in the course of their work\(^2\)
- Behavioural emergencies are high risk situations and inadequate management can put patients, clinicians and staff at risk of harm\(^3\)

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Background

• Experiential learning through simulation is frequently used for safety training in fields where high-risk decisions must be made rapidly\(^4\)

• Simulation has been studied in the context of psychiatric training programs\(^5\)
  > Limited studies exist to inform the most effective method of training paediatric residents in the management of agitated and aggressive patients

• The *Partnering to Manage Agitation in Children (PMAC)* workshop was developed by mental health clinicians and simulation experts at The Hospital for Sick Children in 2015\(^6\)


Study Question

- Does a simulation-based workshop lead to improved reported self-efficacy and demonstrated competence of paediatric residents’ management of agitated patients compared with a traditional didactic lecture or no educational intervention?
Design and Methods

• Prospective comparative study using a mixed methods approach

• Core and subspecialty paediatric residents enrolled in the Department of Paediatrics Residency programs at Sick Kids, University of Toronto in the 2017-2018 academic year were eligible to participate

• Three different groups:
  > Group 1: general paediatric residents who attended a 1-hour didactic lecture
  > Group 2: senior paediatric and subspecialty residents who attended full-day PMAC workshop
  > Group 3: group of remaining residents who did not receive any educational intervention
<table>
<thead>
<tr>
<th>Measure</th>
<th>Group 1 Didactic Session</th>
<th>Group 2 Simulation based workshop</th>
<th>Group 3 No educational intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre and post self-efficacy scales</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Pre session clinical vignette</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>“Code White” OSCE station score</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Debrief of simulation session (thematic analysis)</td>
<td></td>
<td>X</td>
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</tbody>
</table>
Methods

• Univariate analysis was completed on the pre- and post-intervention questionnaires
• Clinical vignette scores were analyzed using a T-test
• Analysis of variance was used to compare OSCE scores between groups
Demographics

- Didactic (N=30): 9 PGY1, 15 PGY2, 6 PGY3, 0 PGY4,5
- Simulation (N=7): 7 PGY1, 0 PGY2, 0 PGY3, 0 PGY4,5
- No Intervention (N=47): 16 PGY1, 11 PGY2, 12 PGY3, 8 PGY4,5
## Results

<table>
<thead>
<tr>
<th>Weighted OSCE Results</th>
<th>Group 1 (Didactic Lecture)</th>
<th>Group 2 (Simulation workshop)</th>
<th>Group 3 (no intervention)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted OSCE LS MEAN</td>
<td>74.614524</td>
<td>81.72143</td>
<td>71.63774</td>
</tr>
<tr>
<td>95% Confidence Limit</td>
<td>(71.420471 - 77.808577)</td>
<td>(75.10911 - 88.33375)</td>
<td>(69.23468 - 74.0408)</td>
</tr>
</tbody>
</table>
Results

- Simulation-based workshop participants performed better in the OSCE scenario compared to the other two groups.
- The most significant difference in OSCE scores was seen between the simulation-based group and control (p=0.0055).
- **No difference** in mean OSCE scores was found between those who received didactic lecture and those who had no educational intervention (p=0.1424).
- Subgroup analysis of OSCE scores by PGY of training **did not show improvement with increased level of training** (p=0.0615).
Results

• Didactic lecture participants had a statistically significant difference in scores on the pre/post self-efficacy questionnaire suggesting an overall increased sense of self-efficacy however this did not translate to an increase in OSCE performance compared to control
Limitations

• Small sample size and limited diversity with respect to PGY level of training in the simulation group confounds the impact of simulation based learning on objective measures of performance

• Longer time interval between didactic lecture and OSCE compared to the time interval between the simulation workshop and OSCE
Summary

• Limited studies have been done to investigate agitation management within the context of paediatrics and paediatric trainees

• Simulation-based learning may be an effective educational strategy for paediatric residents to acquire skills in managing acute agitation

• A one-hour didactic lecture was not shown to have any significant impact on OSCE performance compared to those who received no educational intervention

• These results are helpful in informing curriculum design
Next Steps

• Thematic analysis of simulation-workshop debrief is ongoing
• Modification of PMAC workshop into ½ day workshop that will be more amenable to physician participation
• Larger scale use of “Code White” simulation scenarios to determine impact on clinical practice
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