

1 Effects of Community Volunteer Children on Student Pediatric Assessment Behaviors
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3 **Purpose:**

4 The purpose of this study was to compare the findings of using community volunteer
5 children versus high-fidelity simulators on the physical assessment abilities and comfort levels
6 with pediatric patients among undergraduate pediatric nursing students. The hypothesis was that
7 undergraduate nursing students who practiced pediatric assessments on community volunteer
8 children would report a higher level of comfort and lower levels of worry, and demonstrate more
9 effective noticing and responding behaviors during pediatric assessment in the clinical setting
10 than students who practiced on high-fidelity simulators.

11 **Background:**

12 High-fidelity simulation can enhance critical thinking, clinical judgment, and clinical
13 decision making (Beauchesne & Douglas, 2011; Hayden, Smiley, Alexander, Kardong-Edgren &
14 Jeffries, 2014; Ironside & Jeffries, 2014; Witherspoon, Phillips, & Wyatt, 2015). The use of
15 simulation is increasingly being used to replace and/or enhance clinical learning in nursing
16 education. Immersing students in a simulation of real-life experience has been shown to be an
17 effective experiential learning strategy, especially when is it used to complement existing
18 learning activities (Hayden et al.; Miller, 2014; Omer, 2016). Simulation has been well
19 established to enhance nursing student confidence and self-efficacy, and to decrease anxiety
20 (Bultas, 2011; Luctkar-Flude, Wilson-Keates, & Larocque, 2012; Megel et al., 2012).

21 Nursing students experience a high degree of anxiety associated with clinical
22 experiences, and even more anxiety during experiences involving children (Al-Qaaydeh,
23 Lassche, & MacIntosh, 2012; Lassche, Al-Qaaydeh, MacIntosh, & Black, 2013; Megel et al.,
24 2012). Lassche et al. (2013) explored factors that produced worry related to nursing students

25 caring for pediatric patients. Assessment and causing pain were the factors causing more worry.
26 Following exposure in the clinical setting, comfort with assessment changed the most, while fear
27 of causing pain changed the least. Megel et al. (2012) studied the effects of high-fidelity
28 simulation on anxiety before pediatric clinical, and found that simulation decreased anxiety.

29 Standardized patients (SPs) and community volunteers have been used in simulation
30 extensively in medical education and advanced practice nursing education. The use of SPs in
31 prelicensure nursing education is becoming more common, primarily in adult simulation settings.
32 Bornais, Raiger, Krahn, and El-Masri (2012) compared the outcomes of first semester nursing
33 students practicing health assessments on SPs versus on peers and found that the SP group had
34 better performance outcomes than the peer group. Hampson and Cantrell (2014) used SPs in the
35 maternal-newborn setting. Students conducted postpartum assessments on SPs and newborn
36 assessments on manikins. The study results indicated increased student perceptions of self-
37 confidence and critical thinking skills. In a study comparing assessment skills in students in
38 three groups (high-fidelity simulators, SPs, and community volunteers), there were no
39 differences in student self-efficacy. However, students in the high-fidelity simulation group
40 demonstrated higher performance behaviors but had lower satisfaction scores (Luctkar-Flude et
41 al., 2012).

42 There is very little literature describing the use of SPs or community volunteers in
43 pediatric simulation. In an article outlining a simulation program, Anderson, Holmes, LeFlore,
44 and Jenkins (2010) discuss using simulation in pediatrics only for history taking and
45 communication. SPs are suggested only as parents, grandparents, and adolescents. Loprieto and
46 Sawyer (2015) state that pediatric simulation-based education is in a growth phase and will
47 continue to increase over the next decade. Using children as actual “patients” in pediatric

48 simulations could serve to not only increase students' performance outcomes and self-
49 confidence, but more importantly, to decrease student anxiety and worry related to working with
50 children.

51 **Theoretical Framework:**

52 Benner's (2001) novice to expert theory was used as the framework for this study.
53 According to Benner, a novice is new to an experience and is unable to translate skills to the new
54 area which can increase anxiety. They are inflexible and follow inflexible rules which obstructs
55 their growth and judgment and limits their ability to predict what will happen next.

56 Concepts and strategies from Kolb's experiential learning theory were also applied in this
57 study. Transformation is a concept discussed at length within Kolb's theory. According to Kolb
58 (1984, 2015), participation in real-life experiences allows students the opportunity to undergo a
59 transformation by progressing through the stages of the learning cycle. One experiential strategy
60 used was the immersion of the students into an experience using volunteer children as their
61 simulated patients.

62 **Methods**

63 **Participants:**

64 After institutional review board's approval, an experimental pre-and posttest study with a
65 convenience sample of 99 undergraduate baccalaureate nursing students in a pediatric nursing
66 course was conducted. These students were in the third semester of a four-semester program at a
67 large public Southwestern university.

68 **Instruments:**

69 The Pediatric Student Comfort and Worry Assessment Tool (Al-Qaaydeh et al., 2012)
70 measures student comfort and worry related to caring for pediatric patients using a Likert-type

71 scale in two subscales. Face validity of the questions was determined by a review of nursing and
72 nursing education experts. Further factor analyses were conducted on the questions to determine
73 construct validity. Internal consistency was found to be acceptable using Cronbach's alpha
74 (comfort = .806, worry = .766). Lassche et al. (2013) used the tool with students to determine its
75 usability. The researchers found that students used the tool appropriately, and completed the tool
76 in less than ten minutes. This tool was used in this study, with permission, to assess student
77 comfort and worry with assessing pediatric patients.

78 The Lasater Clinical Judgment Rubric (Lasater, 2007) provides performance expectations
79 to evaluate an event requiring clinical judgment. The rubric is divided into 11 dimensions in
80 four domains: effective noticing, effective interpreting, effective responding, and effective
81 reflecting. Each dimension is evaluated by four developmental levels: exemplary,
82 accomplished, developing, or beginning. The noticing domain includes behaviors like focused
83 observation, recognizing abnormalities, and information seeking. Calm and confident manner, clear
84 communication, well-planned interventions, and being skillful are included in the responding
85 domain. Because these skills are most relevant to pediatric assessment, only these domains were
86 used to evaluate students in this study.

87 **Procedure:**

88 At the beginning of the semester, all students were administered the Pediatric Student
89 Comfort and Worry Assessment Tool (Lassche et al., 2013). After a classroom presentation and
90 hands-on skills lab providing theoretical and didactic content about pediatric assessment,
91 students were randomly split into one of two groups to practice pediatric well-child assessments.
92 One group practiced assessments on high-fidelity simulators, and one group practiced on

93 community volunteer children. Students in each group were given 20 minutes to assess their
94 assigned “patients.”

95 High-Fidelity Simulation Group: Simulators were programmed with age-appropriate vital signs
96 and assessment findings within normal limits for a well-child assessment to be consistent with
97 the ages of the children in the community volunteer group. Simulators were programmed to
98 provide verbal feedback to students so that interaction would be as realistic as possible. There
99 were no parents present in the hi-fidelity group. Faculty were present to guide students through
100 the assessment and to answer questions.

101 Community Volunteer Children Group: Children under the age of five years with no significant
102 medical history served as volunteers for assessment. Children were not given scripts to follow or
103 coached to behave in any particular manner. Children were given age-appropriate toys to keep
104 them occupied during the activity. Parents accompanied the community volunteer children and
105 faculty were present to guide students through assessments and answer questions.

106 All students then completed a pediatric assessment during their first inpatient clinical day
107 at a pediatric facility. Using the effective noticing and responding domains of the Lasater
108 Clinical Judgment Rubric (Lasater, 2007), students’ assessment behaviors were self-evaluated
109 and faculty-evaluated. Immediately following the inpatient assessment, students completed a
110 post-intervention Pediatric Student Comfort and Worry Assessment Tool survey (Lassche et al.,
111 2013).

112 **Results:**

113 Student Comfort and Worry:

114 A 2 (time) by 2 (group), factorial analysis of variance (ANOVA) was conducted to test
115 for differences in student’s perceived distress related to pediatric nursing as measured by the
116 Pediatric Comfort and Worry Assessment Tool. Students reported significantly greater comfort

117 and less stress at posttest than at pretest on the following measures: performing a pediatric
118 assessment, explaining procedures/medications/therapies to a child, administering medications to
119 a child, and administering therapy to a child ($p < .01$). However, there was not a significant main
120 effect of group on any of the measures, indicating that overall students had similar scores
121 regardless of whether or not they received practice with community volunteers.

122 There was a significant interaction effect of time and group on the following measures:
123 administering medications to a child, providing support to children and their families during
124 times of crisis and grief, worry about caring for an ill child, and worry about causing pain (p
125 $< .05$). Those in the simulation group had significant pre/posttest differences on the following
126 measures: providing support to children and their families during times of crisis and grief and
127 helping children and their families cope during painful procedures ($p < .05$). While those in the
128 community volunteer group had significant pre/posttest differences on the following measures:
129 worry about causing a child pain and worry about caring for an ill child ($p < .05$).

130 Assessment Measures (Self-Evaluation):

131 A 2 (time) by 2 (group), factorial analysis of variance (ANOVA) was conducted to test
132 for differences in student's perceived ability to perform clinical assessments. There was not a
133 significant main effect of group on any of the domains measured, indicating that overall students
134 had similar scores regardless of whether or not they practiced on community volunteers.

135 Assessment Measures (Student and Faculty Evaluation)

136 A 2 (rater) by 2 (group) factorial analysis of variance (ANOVA) was conducted to test
137 for differences in student's performance on clinical assessments at posttest. There was not a
138 significant main effect of group on assessment performance, indicating that students in both
139 groups had similar performance. There was a significant effect of rater on the observation
140 scores. Regardless of group, students rated their observation higher than faculty members.

141 **Discussion:**

142 Study results indicate that having students practice pediatric assessments prior to clinical
143 experiences can reduce stress and worry whether they practice with high-fidelity simulators or
144 community volunteer children. Overall, students in this study had similar scores regardless of
145 group and reported decreased worry and stress from pre-to posttest. The area with the greatest
146 change was being comfortable in performing a pediatric assessment, which is consistent with the
147 findings reported by Lassche (2013).

148 Posttest scores revealed an increase in comfort for the high-fidelity simulation group with
149 helping children and their families cope during painful procedures and providing support to
150 children and their families during times of crisis and grief. These findings are interesting since
151 the simulation group did not interact with children or parents during the practice.

152 Another interesting finding is that students in the community volunteer group reported
153 less worry on posttest about causing a child pain and about caring for an ill child. Lassche
154 (2013) reported that worry about causing a child pain was the most significant source of anxiety
155 for nursing students pre-and post-clinical exposure, and suggested this as an area for educational
156 improvement. Findings of this current study suggest that prior exposure to community
157 volunteers prior to clinical exposure might positively influence this factor.

158 Assessment behaviors were similar for both groups. However, students in both groups
159 rated their assessment behaviors higher than faculty members. Mehrdad, Bigdeli, and Ebrahimi
160 (2012) conducted a study evaluating clinical skills of junior nursing students comparing
161 evaluations of self, peers, and clinical teachers. This study found a significant correlation
162 between the self and peer evaluations, but no correlation between the clinical teacher and the self
163 or peer evaluations. Thus, suggesting that self and peer evaluations are not a good substitute for

164 clinical teacher evaluations of student clinical skills. However, other studies have found positive
165 correlations between student, peer, faculty, and even patient evaluations (Adib-Hajbaghery,
166 Karbasi-Valasheri, & Heidari-Haratmeh, 2012; Sadeghi & Loripoor, 2016). Therefore, the
167 validity of student self-evaluation versus faculty evaluation requires further study.

168 Students were given an opportunity to provide open-ended comments to evaluate this
169 experience. Students in both groups commented that the practice session was a valuable
170 experience and made them feel more comfortable about pediatric assessment prior to entering the
171 clinical setting. Students in the high-fidelity simulation group overwhelmingly commented that
172 they were disappointed that they did not have the opportunity to practice on “real” children.
173 Comments from students in this group included that they believe they would have learned more
174 if they could have practiced with the children. Faculty also commented that students in the
175 community volunteer group were more engaged, noticed more developmental milestones, and
176 overall interacted more appropriately with children.

177 **Limitations:**

178 The small sample size in this study was a limitation; repeating the study with a larger
179 sample is recommended to increase the generalizability of the study results. Additionally, this
180 study was conducted in a single educational institution with only baccalaureate nursing students
181 which limits generalizability. Other limitations that might have affected the outcomes of the
182 results of this study include the background of students. Demographic data was not collected;
183 therefore, prior and concurrent experience with children, work experience, and other factors that
184 may influence stress and worry were not evaluated.

185 Although faculty were present during the practice sessions to provide guidance and
186 answer questions, it was noted that students were confused about how to proceed with

187 assessments. Students in the community volunteer group were reluctant to approach the children
188 and take initiative to begin assessments without prompting from faculty and/or parents.

189 **Conclusions:**

190 This is one of few studies to evaluate the use of child community volunteers in teaching
191 pediatric assessment to undergraduate nursing students. Results of this study indicate that
192 practicing pediatric assessment prior to beginning clinical experiences is beneficial to decreasing
193 student stress and anxiety; however, there may be no difference between practicing assessment
194 with high-fidelity simulators versus community volunteer children. Both experiential strategies
195 demonstrated a benefit to the student in contributing to a decrease in student stress and anxiety,
196 however, based on student and faculty comments, satisfaction seemed to be higher with
197 community volunteer children. Therefore, the authors of this study have continued solely using
198 the community volunteer method of teaching pediatric assessment. Faculty presence has been
199 increased during the practice sessions to allow for one-on-one guidance with the students during
200 the assessment practice. Further research using children as community volunteers and
201 standardized patients during simulated pediatric experiences is necessary. The use of simulation
202 in pediatrics is a growing area for nursing education and best practices need to be established.
203 Community volunteers and standardized patients are successfully used to enhance the simulated
204 learning experiences in many other healthcare areas; therefore, it behooves nursing educators to
205 explore this methodology in pediatric nursing education as well.

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