

# Effects of virtual reality of simulation based on core fundamental nursing skills for intravenous fluid infusion



배영실 1

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## Purpose

The purpose of this study was to evaluate the effects of virtual reality (VR) simulation based on core fundamental nursing skills for intravenous (IV) fluid infusion among nursing students.

## Methods

The research design consisted of a pretest-posttest quasi-experimental design through a nonequivalent control group. The participants in this study were 45 nursing students, who were classified according to two groups; the control group (n=21) who were trained using high fidelity simulator, and the experimental group (n=24) who were trained using the VR simulator. Analysis of collected data was performed using descriptive statistics, Fisher's exact test, Mann-Whitney U test, and Wilcoxon signed rank test with SPSS/WIN 21.0.

## Results

No significant difference in problem-solving ability scores ( $Z=-0.85$ ,  $p=.393$ ) and clinical competency scores ( $Z=-1.11$ ,  $p=.263$ ) was observed between the two groups. However, a significant increase in self-confidence scores ( $Z=-5.04$ ,  $p<.001$ ) was observed in the experimental group compared with the control group.

## Conclusion

The IV cannulation of the VR simulator will increase the self-confidence of nursing students having limited IVC experience.

Table 1. Effects of the virtual reality simulation based on core fundamental nursing skills for intravenous fluid infusion on problem-solving ability

(N=45)

Variables	Group	Pretest M±SD	Posttest M±SD	Difference M±SD	z(p)*	Wilcoxon signed rank test Z(p)
Problem-solving ability	Exp. (n=24)	95.88±14.02	109.50±14.02	13.62±23.38	-0.85(.393)	<b>-2.43(.015)</b>
	Cont. (n=21)	97.67±13.92	106.71±13.18	9.04±21.12		-1.77(.076))

\*Mann-Whitney U test; Exp.=Experimental group; Cont.=Control group; M±SD=Mean±Standard deviation.

Table 2. Effects of the virtual reality simulation based on core fundamental nursing skills for intravenous fluid infusion on clinical competency

(N=45)

Variables	Group	Pretest M±SD	Posttest M±SD	Difference M±SD	z(p)*	Wilcoxon signed rank test Z(p)
Clinical competency	Exp. (n=24)	55.58±5.98	57.3±81.74	1.79±6.33	-1.11(.263)	-1.40(.161)
	Cont. (n=21)	54.76±6.26	56.00±1.89	1.23±6.78		-0.14(.887)

\*Mann-Whitney U test; Exp.=Experimental group; Cont.=Control group; M±SD=Mean±Standard deviation.

Table 3. Effects of the virtual reality simulation based on core fundamental nursing skills for intravenous fluid infusion on self-confidence

(N=45)

Variables	Group	Pretest M±SD	Posttest M±SD	Difference M±SD	z(p)*	Wilcoxon signed rank test Z(p)
Self-confidence	Exp. (n=24)	47.08±16.54	88.33±12.03	41.25±20.06	<b>-5.04(&lt;.001)</b>	<b>-4.12(&lt;.001)</b>
	Cont. (n=21)	47.14±12.30	58.10±10.30	10.95±17.86		<b>-2.47(.013)</b>

\*Mann-Whitney U test; Exp.=Experimental group; Cont.=Control group; M±SD=Mean±Standard deviation.

**Key words: Simulation, Nursing, Intravenous, Virtual reality**