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Effects of a Simulation Education Program on Faculty Members' and Students' Outcomes

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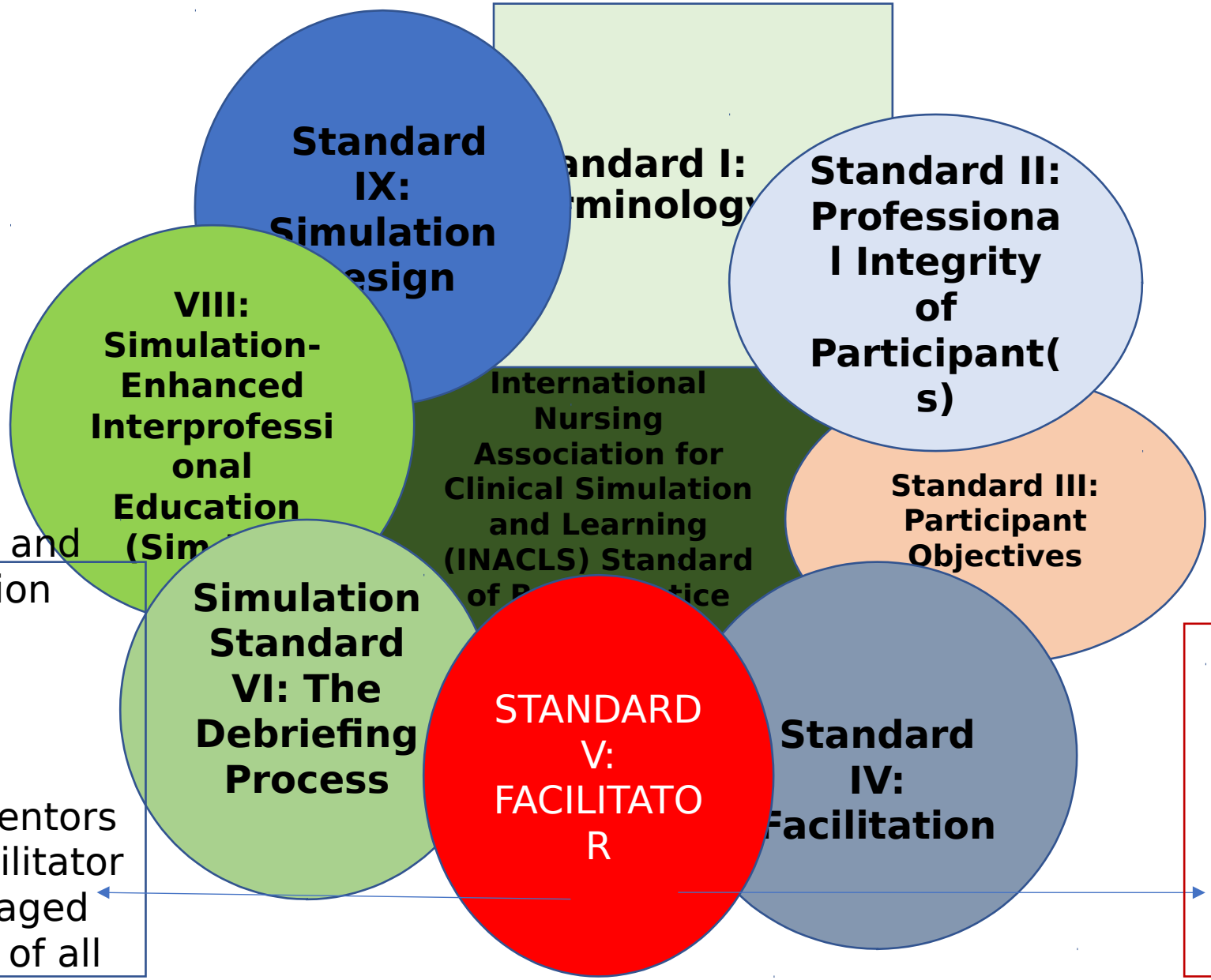
Introduction



- Attend courses and receive education concerning simulation continuously
- Study with experienced mentors
- A proficient facilitator should be managed the complexity of all aspects of simulation

Successful high-fidelity simulation requires adequate knowledge and skills in educators

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Introduction- Continued

- Many educators have not had formal training
- Many learn from others who have not had formal education in simulation
- Educators can be novices when learning to write and run scenarios using high fidelity simulations

Hallmark, B. F. (2015). Faculty development in simulation education. *Nursing Clinics of North America, 50*(2), 389-397. http://dx.doi.org/10.1016/j.cnur.2015.03.002

Kardong-Edgren, S., Willhaus, J., Bennett, D., & Hayden, J. (2012). Results of the National Council of State Boards of Nursing National Simulation Survey: Part II. *Clinical Simulation in Nursing, 8*(4), e117-e123. http://dx.doi.org/10.1016/j.ecns.2012.01.003

Jansen, D. A., Johnson, N., Larson, G., Berry, C., & Brenner, G. H. (2009). Nursing faculty perceptions of obstacles to utilizing manikin-based simulations and proposed solutions. *Clinical Simulation in Nursing, 5*(1), e9-e16.

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Introduction- Continued

- The number of Turkish schools setting up simulation lab has increased recently
- While simulation laboratories have been designed and space has been provided for simulators, training for educators is often overlooked.
- No educational programs have been established for nursing educators in Turkey

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Method
Sample and Setting

- The aim of this study was to evaluate the outcomes of a simulation education program (SEP) in faculty and students
- **Study design:** quasi-experimental

Questions:

1. Is the SEP effective in improving **faculty members' knowledge and self-assessment scores?**
2. Is the SEP effective in improving **students' knowledge** about hypovolemic shock, **satisfaction and self-confidence score?**

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Method- Continued
Sample and Setting

Faculty Members' Eligibility Criteria	**Students' Eligibility Criteria**
• To have high fidelity simulator	• Being sophomore.
• Provided bachelor's degree education in Turkey (17 universities)	• Not participated in HFS on hypovolemic shock
	• Was to have taken a lecturer on hypovolemic shock based
Faculty members n=30	**Students n=300

**Power analysis was performed

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Method- Continued

This study consisted of two sections:

1. Implementation of the SEP with faculty
2. Implementation of HFS with students by the faculty members in their institutions

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Content of the Simulation Education Program

Simulation Education Program (SEP)

Educational Needs Questionnaire Emailed to faculty

- The content of the SEP was prepared based on the INACLS
- The duration, aim, and learning objectives of the SEP were determined
- Simulation expert opinion
- Minor changes implemented
- SEP-3 Days : 2 days theoretical, 1 application day

Simulation Scenario
Involving a patient with hypovolemic shock resulting from postoperative bleeding

Simulation experts opinions

The scenario was tested

The same scenario was used in the SEP application day for faculty members and HFS for students

Measurement Instruments

Faculty Members' Instruments

1. Sociodemographic characteristics

2. Knowledge test regarding simulation

- 25 multiple-choice questions
- The highest possible score was 50
- Content validity: questions was tested by simulation experts CVI: 0,90
- Face validity and clarity of the questions
- Four questions were revised
- Cronbach Alpha: 0,71

3. Faculty members' self-assessment questionnaire

- It is included 11 items pertaining to all HFS processes, each with two response options.
- Visual analog scale ranging from 0 to 10
- CVI: 0,90
- Face validity and clarity of questions
- Minor changes were implemented.
- Cronbach Alpha: 0,73

Students' Instruments

1. Sociodemographic characteristics

2. Knowledge test

- 10 multiple-choice questions
- The highest possible score was 50
- The content validity of the questions was tested by surgical nursing experts CVI: 0,90
- The instrument was tested with 30 student to determine face validity and clarity of the questions
- Two questions were revised
- Cronbach Alpha : 0,63

3. Student Satisfaction and Self-Confidence in Learning Scale (SCLS)

- Cronbach's alpha coefficient was 0.90.
- Scores are calculated by summing responses

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Data Collection

- Ethical approval was obtained from the Human Research Ethics Committee of Koc University.
- Koç University School of Nursing also granted permission for the use of classrooms and the simulation laboratory during simulation training.
- Written informed consent was obtained from all participants

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Data Collection-Continued

- An SEP was implemented at a university in Turkey between February **10 and 12, 2016.**

- Data regarding student outcomes were collected during the spring term at the institutions that employed the faculty members who received the training between **March and June 2016.**

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Data Collection-Continued

SEP Implementation

SEP theoretical days

Prior to SEP
- Sociodemographic questionnaire
- Knowledge test
- Self-assessment questionnaire

During SEP
- Active educational teaching and learning techniques

SEP application day

HFS with Faculty
- Faculty were divided into groups
- Roles assigned

- Pre-briefing
- Simulation
- Debriefing session

After SEP
- Knowledge test
- Self-assessment questionnaire

Scenarios Presentation
- Provided an information sheet on the steps in the simulation
- They received a certificate of attendance to the SEP

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Data Collection-Continued
HFS with the students

Faculty members implemented the hypovolemic shock scenario via HFS for sophomore students at their institutions during the spring term

Before HFS: Students were informed about the day of the simulation 1 week in advance

- Sociodemographic questionnaire
- Knowledge test on hypovolemic shock

Faculty members performed HFS with two groups of five students

After HFS

- The students completed the knowledge test and SCLS
- Faculty members completed the self-assessment questionnaire

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Data Analysis

- Descriptive statistics (means, standard deviations, and frequencies)
- Mann-Whitney *U* test
- Friedman test
- Cochran's *Q* test
- Paired-samples *t* tests
- The significance level $p < .05$

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Results

- In total, 30 faculty members who came from 12 different universities participated to the SEP.
- 27 faculty members had performed HFS with sophomore students.
- Faculty members reported that 11 students did not attend the simulation sessions; therefore, data for 249 students were analyzed.

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Demographic Background of Faculty Members (n=10)

		Min-Maks	Mdn±SD
Age (year)		23-41	30,70±4,79
Experience (year)		1-17	4,83±4,09
The duration of simulation use (year)		1-6	2,15±1,56
		N	%
Gender	Female	28	93,3
	Male	2	6,7
Perception of technological skills	Extremely good	13	43,3
	Good	17	56,7
Status of receiving education regarding simulation	Yes	10	33,3
	No	20	66,7
The duration of previous simulation training (n=10) (hours)	8	2	20,0
	16	7	70,0
	36	1	10,0
Provider of previous education simulation training (n=10)	From their institutions educators	2	20,0
	From educators outside their institutions and from manikin vendors	7	70,0
	From their institutions and outside their institutions	1	10,0
The use of HFS in current courses	Yes	10	33,3
	No	20	66,7

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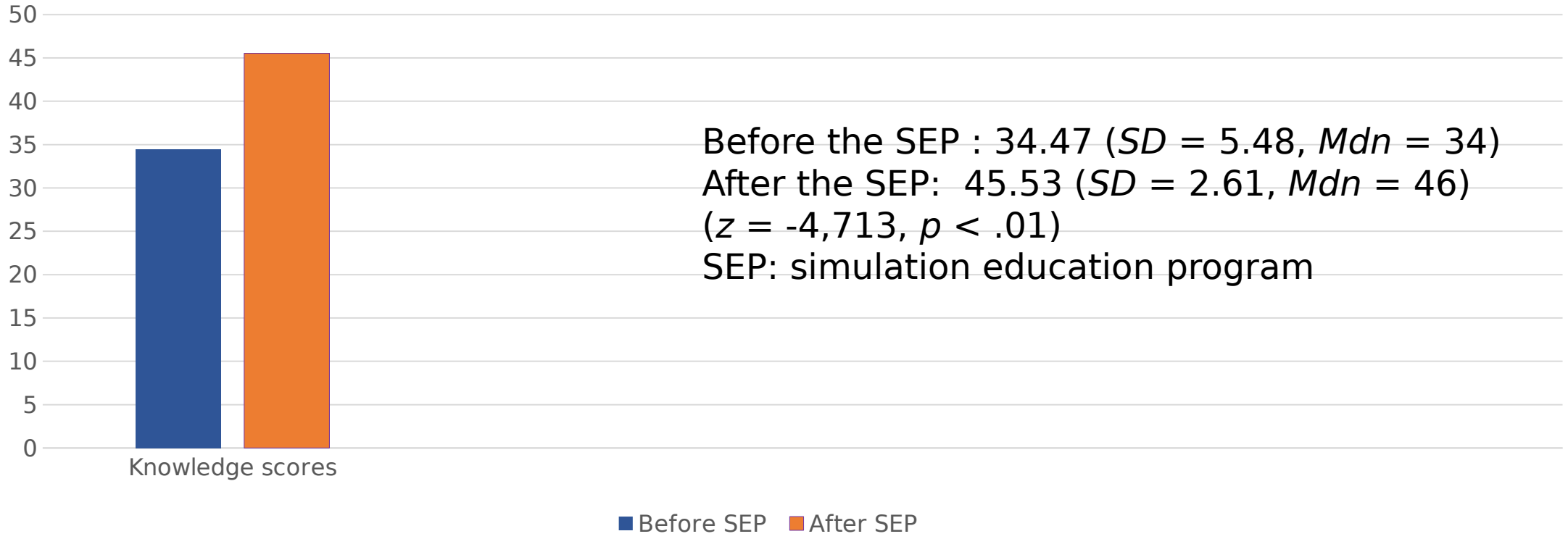
Faculty Members' Knowledge Scores Before and After SEP (n=30)



Before the SEP : 34.47 (*SD* = 5.48, *Mdn* = 34)
After the SEP: 45.53 (*SD* = 2.61, *Mdn* = 46)
(*z* = -4,713, *p* < .01)
SEP: simulation education program

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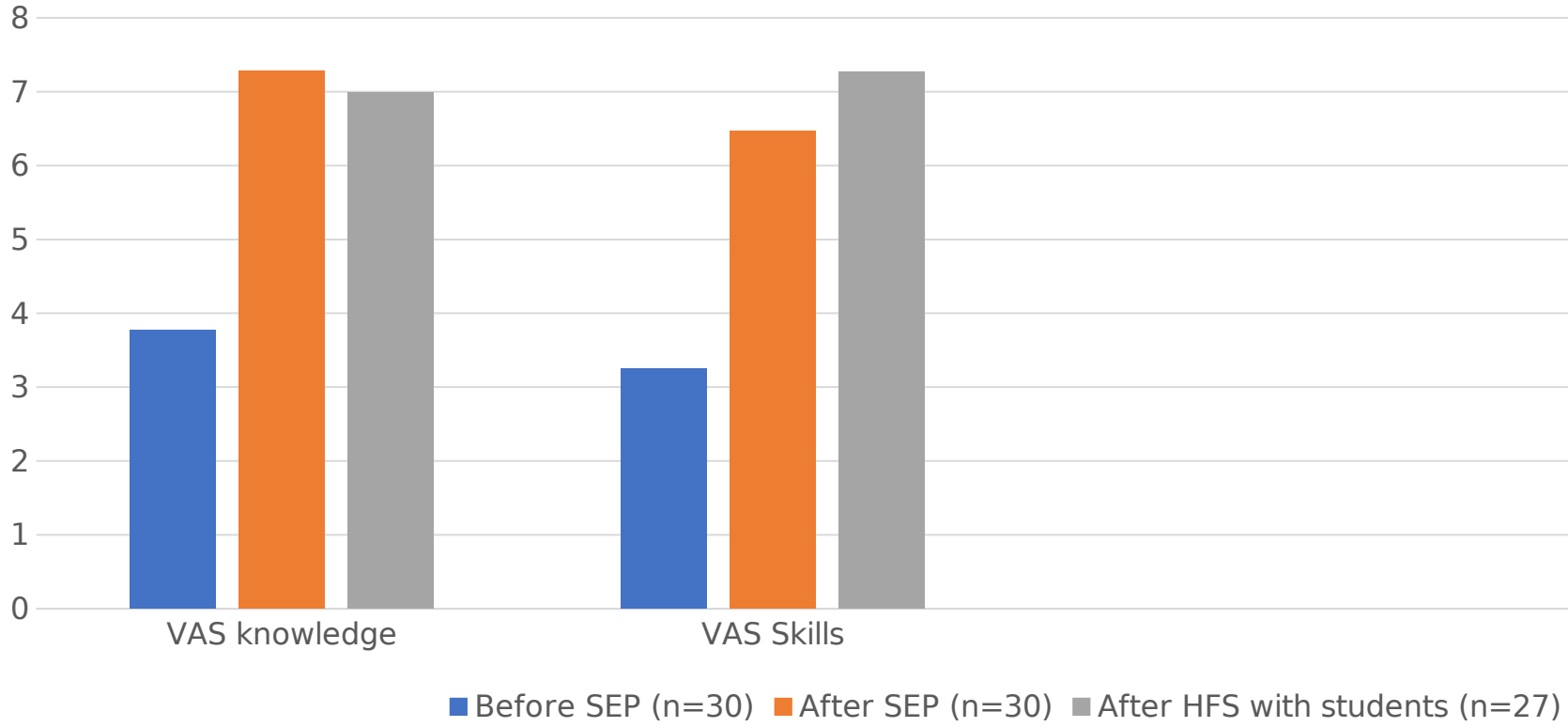
Faculty Members' VAS Knowledge and Skill Levels Before and After SEP and After HFS with Students



Note. Friedman test results (levels indicated using a visual analog scale); Knowledge: $\chi^2 = 32.77$, $p = .001$; Skill: $\chi^2 = 30.30$, $p = .001$; HFS = high-fidelity simulation; SEP = simulation education program

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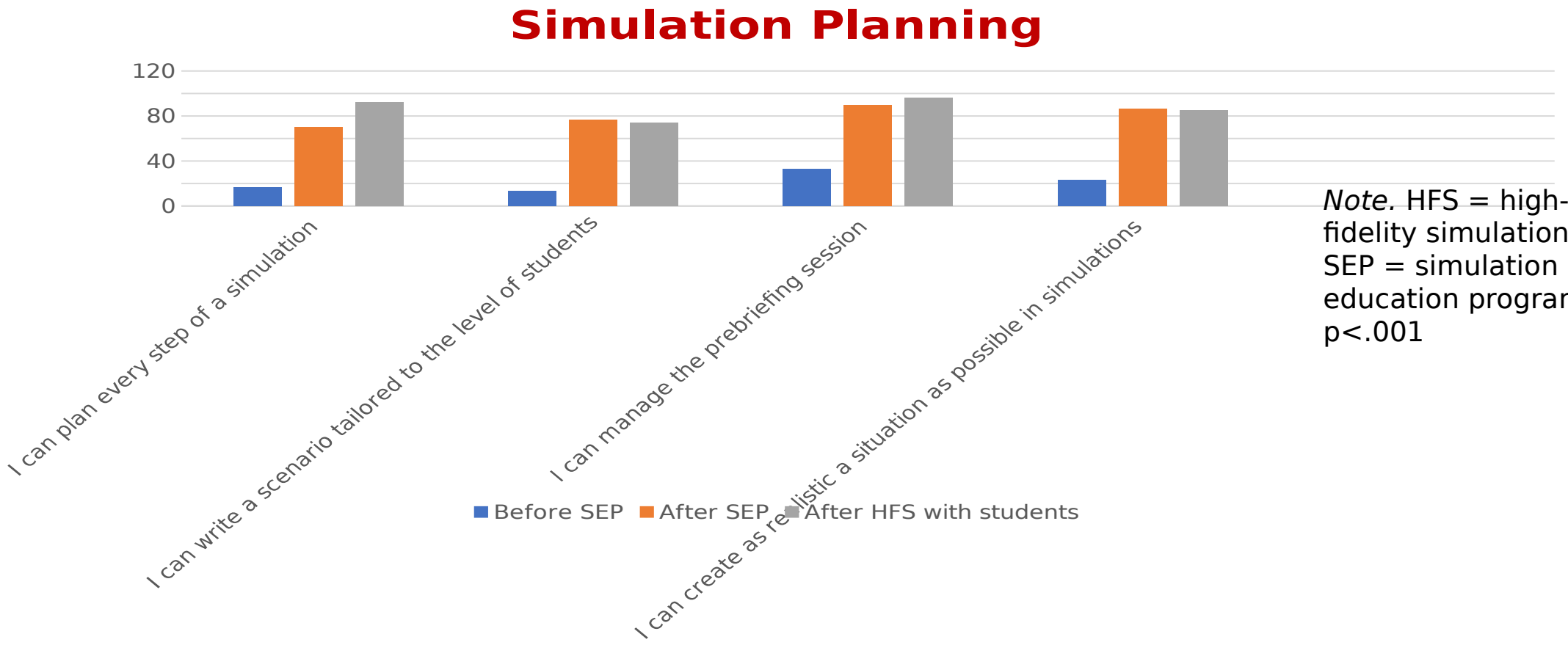
Comparison of Faculty Members' Self-Assessments Before and After SEP and After HFS With Students



Note. HFS = high-fidelity simulation; SEP = simulation education program
p<.001

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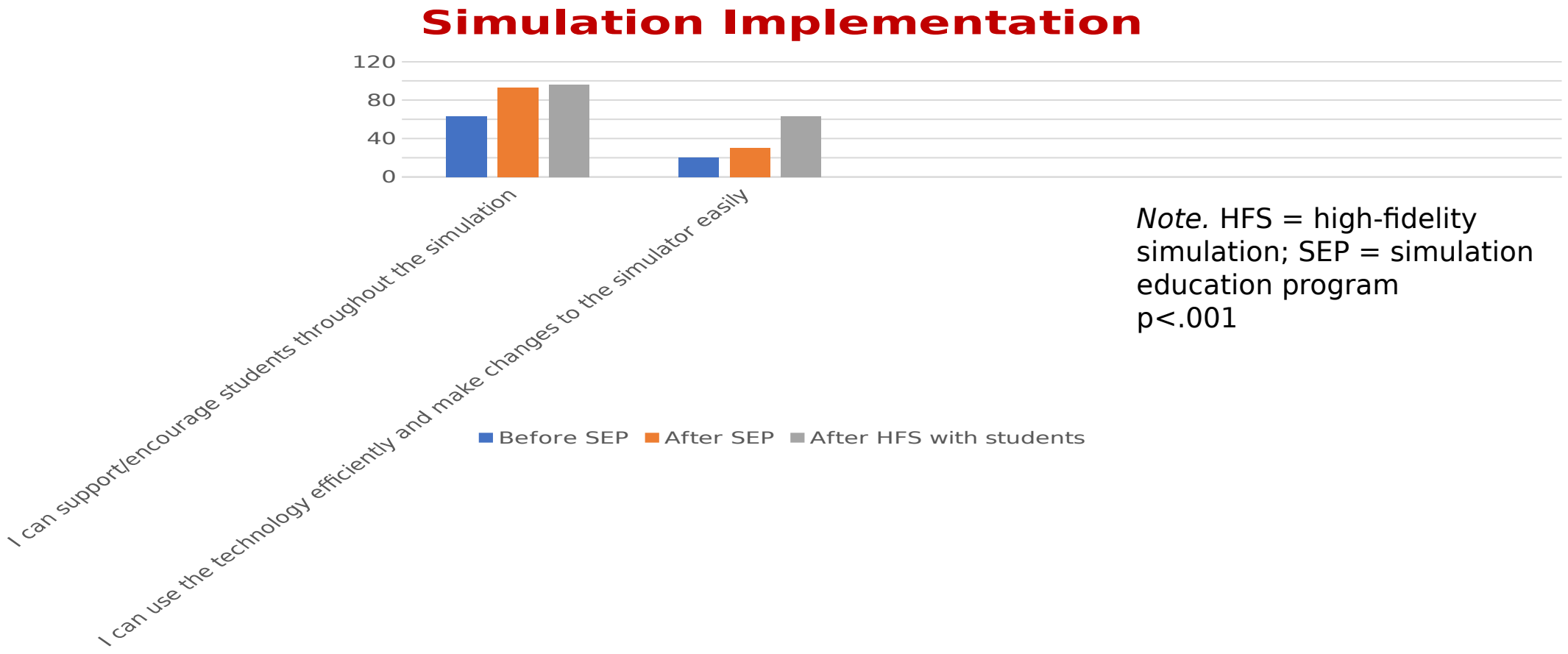

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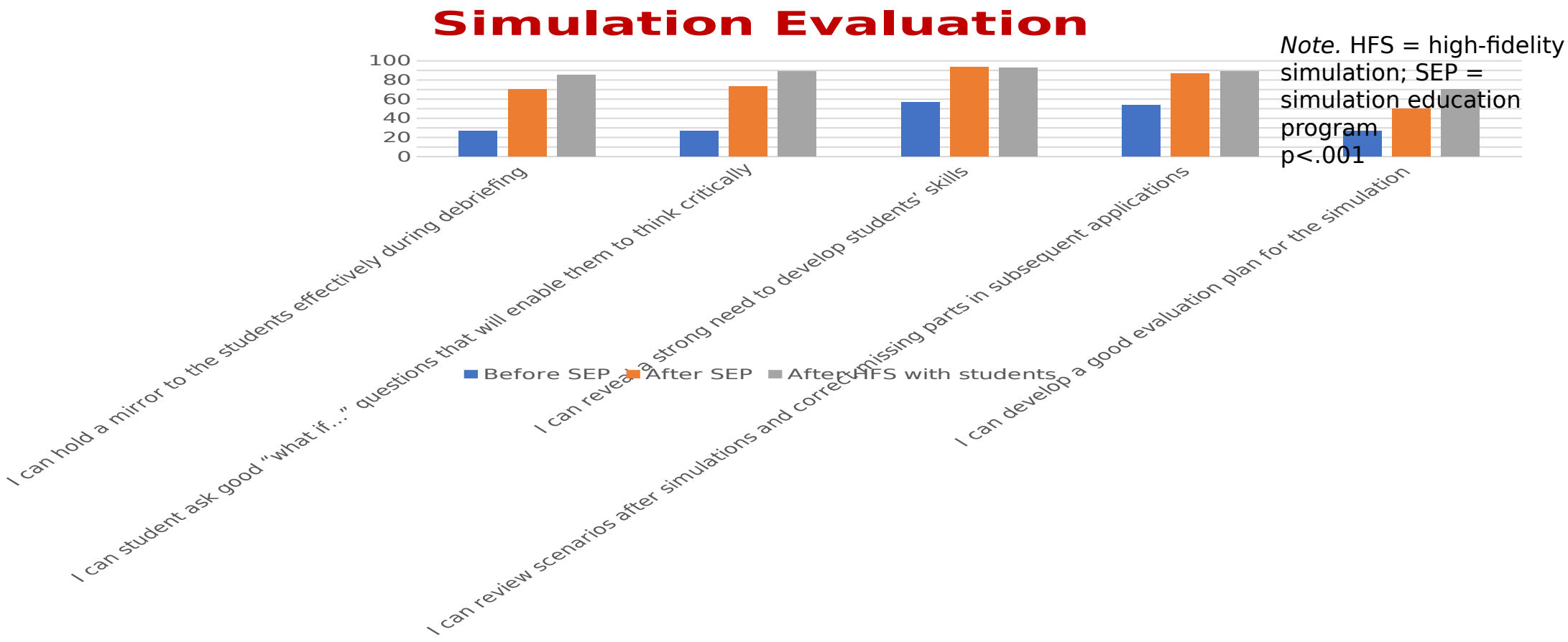

Note. HFS = high-fidelity simulation; SEP = simulation education program
$p<.001$

Demographic Background of the Students

Of the students included in the study:

- 82.7% were women
- Students’ mean age was 20.5 (*SD* = 1.2; range: 18–28) years,
- and their mean grade point average was 2.87 (*SD* = 0.42).

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Students' Knowledge Scores Before and After HFS (n=249)

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	Min-Max	Mean±SD	Median
Student Satisfaction	6-25	22,68±2,83	24
Self Confidence in Learning	10-40	33,62±4,17	34
Total	16-65	56,31±6,55	57

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Limitation of the Study

- As there were no instruments to measure faculty members' improvement related to the simulation, their skills were measured based on self-assessment

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Conclusions

- The SEP was effective in improving faculty members' and students' outcomes.
- Most faculty members used HFS for the first time in the study, even though they worked at institutions with simulators. The study can be considered to have contributed to the correct implementation of HFS with simulators
- SEPs should be implemented periodically by

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Conclusions- Continued

- An application day should be included in SEPs:

➢to increase faculty members' knowledge and skills regarding simulation

➢to ensure efficient use of the simulators available in laboratories.

- Future research focus on developing instruments to measure and follow faculty members' skills and improvement.

THANK YOU