



Effects of Senior Simulation Program for Nursing Students: An Integrated Study in South Korea

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ABSTRACT

This research is an integrated study conducted to identify the effects and experiences of the senior simulation applied to nursing students on those students' attitudes toward seniors. The effects were verified after conducting the senior simulation with 70 nursing students from March 1 to June 30, 2015. As the result of this study, the attitudes were researched and analyzed; they turned more negative after the simulation than before the simulation, but they turned significantly positive after the sharing of thoughts with others, so that the simulation had the final effect of enhancing attitudes. Qualitative measurements showed the enhancement of participants' understanding of seniors, a regret of past actions, and a consideration for their own later years, along with the will of the nursing students in their future nursing, as they mentioned that this experience had been positive. The senior simulation is an effective mediation of an empathic understanding of students toward seniors, and the simulation should be utilized in nursing education. Also, through the development of various forms of education programs to include senior simulation programs, and by securing enough simulation time for their operation, methods to heighten the educational effect of these programs need to be pursued. This study suggests implications and recommendations related to the development and application of future senior simulation programs.

Keywords: senior simulation, educational program, integrated method, nurse students

INTRODUCTION

The proportion of senior citizens 65 years of age and older is continuously increasing (Statistics Korea, 2015), and the sudden increase in seniors has resulted in various physical and psychosocial health issues. Reports suggest that many seniors will live in an unhealthy state for a long time, with the health issues of elderly citizens often being chronic or requiring caretakers; thus, the social demand for professional human resources in the field of senior nursing will also increase continuously.

As the demand of the senior population for nursing increases, nursing educational institutes are making attempts to enhance nursing students' understanding of seniors and increase positive attitudes toward them (Burbank et al., 2006; Lambrinou et al., 2009). However, nursing students lack experience with seniors, and with

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State of the literature

- Nursing educational institutes are making attempts to enhance nursing students' understanding of seniors and increase positive attitudes toward them.
- However, nursing students lack experience with seniors, and with their own physically healthy bodies, need to enhance their actual understanding of seniors. Therefore, it is necessary to develop effective senior simulation program for nursing students.

Contribution of this paper to the literature

- Senior simulation programs are effective in enhancing nursing students' attitudes toward seniors.
- In future senior nursing education, the senior simulation program needs to be applied in stages.
- The effects of the senior simulation program should be measured repeatedly by considering the times of internalization, and enough time should be given to understand seniors and aging from a holistic perspective.

their own physically healthy bodies, need to enhance their actual understanding of seniors. Therefore, it is necessary to develop effective educational programs as resources to assist nursing students who will be nursing seniors.

A senior simulation program is a program that allows students to experience aging indirectly by wearing specially manufactured garments; this type of program is reported to be an effective educational mediation to promote understanding of elderly citizens and to enhance positive attitudes toward them (Eymard, Crawford, & Keller, 2010; Pacala, Boulton, & Hepburn, 2006; Robinson & Rosher, 2001). Attitude is a motivator that leads to action, so positive attitudes of nursing students toward the elderly are thought to result in positive nursing practice (Erwin, 2000). For this reason, several prior studies have applied senior simulation programs to various subjects to identify their effects (Eymard, Crawford, & Keller, 2010; Robinson & Rosher, 2001; Varkey, Chutkan, & Lesnick, 2006).

The effects after many senior simulation programs were that there were positive effects in enhancing attitudes (Robinson & Rosher, 2001; Varkey, Chutkan, & Lesnick, 2006), while other reports claimed that there were no significant changes and that the results were not coherent (Jeong, Kim, & Kim, 2010; Yu, Kim, & Lee, 2004). However, after qualitative analysis of the experiences the reports that these programs were effective in enhancing empathetic understanding dominated. But it should be noted that consideration is needed in identifying the positive effects through qualitative measurements (Eymard, Crawford, & Keller, 2010; Jeong, Kim, & Kim, 2010; Yu, Kim, & Lee, 2004).

Thus, there is a need to identify why the effects of qualitative measurement are not coherent and to reflect this issue in the educational process. The senior simulation programs applied in prior research varied in terms of place, subject, effect, and the times of the identification of changes as well as in the times at which the effects of the program were measured, that is, before and right after the program (Jeong, Kim, & Kim, 2010; Yu, Kim, & Lee, 2004). Wood (2002) ensured that participants had time to share the experiences of the program in order to alleviate any psychological discomfort they felt from the sudden experience of aging and to accept the experiences of simulation so they could reconstitute the meaning in a positive way. Therefore, it is valid to sensitively consider times at which the effects of a simulation are identified, other than simply before and immediately after the simulation, and it is also necessary to pinpoint the time at which new values are formed through the participants' internalization of the simulation experience. Also, quantitative measurement may be insufficient for the identification of personal experiences, so an in-depth identification may be needed that goes beyond a simple analysis of the review of the impressions from the experience.

To aid nurses to function in the area of future senior nursing, a process by which nursing students can form positive attitudes toward seniors and form the values of nursing care would be significant. Therefore, in this study, after applying a systematized senior simulation program, an integrated approach was used that integrated quantitative methods and qualitative methods to verify the effects of the simulation, and changes according to the

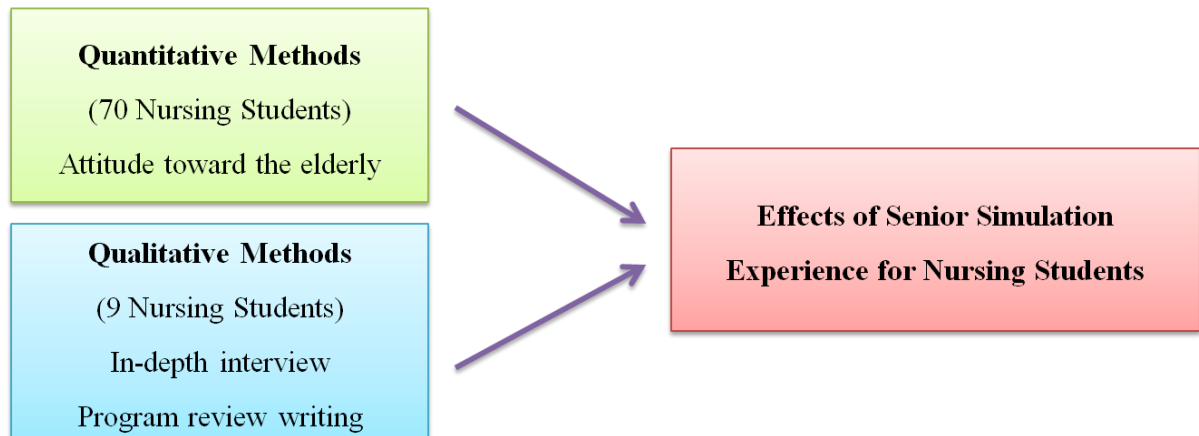


Figure 1. Research design

different assessment times during the experience were considered to verify changes in attitude according to the different steps of the participants' experience of the program.

This study was conducted to examine the effects of the senior simulation program applied to university students of nursing major. And the specific purposes were as follows:

- 1) To examine effects of the senior simulation program on attitude toward seniors of the university students of nursing major.
- 2) To describe the participating experiences of the senior simulation program of the subjects.

METHOD

Research Design

This study uses a quasi-experimental research design, applying nonequivalent control group pre-post test design, as shown in **Figure 1**. Additional content analysis was performed with qualitative data collected from subjects to investigate further intervention effect. Such a design utilizes two different studies by the researcher to verify the results of the entire study. In order to test the effects of intervention, data of outcome variable were collected at three points of time (pre-intervention, post-intervention1, post-intervention2). And qualitative data were also collected through in-depth interviews after participating in senior simulation program. The respective analysis was utilized to identify changes in the attitudes of nursing students toward seniors through the senior simulation program.

Participants

Eighty sophomore students without previous experience of participating in the senior simulation program were conveniently selected from a university located in Chungchungnamdo. After eliminating 10 students due to missing data or withdrawal in the middle of the process of intervention program, 70 students were included in the final analysis. As a result of conducting test power analysis for the repeated measurement analysis by utilizing G*power, based on the 0.25 moderate size effect, at a significance level of 0.05, and test power of 0.95, 54 subjects were calculated, satisfying the criteria of 70 subjects. Also, to avoid the influence of selection bias, the subjects taking any kinds of gerontological classes or previously participating in similar senior simulation programs were excluded.

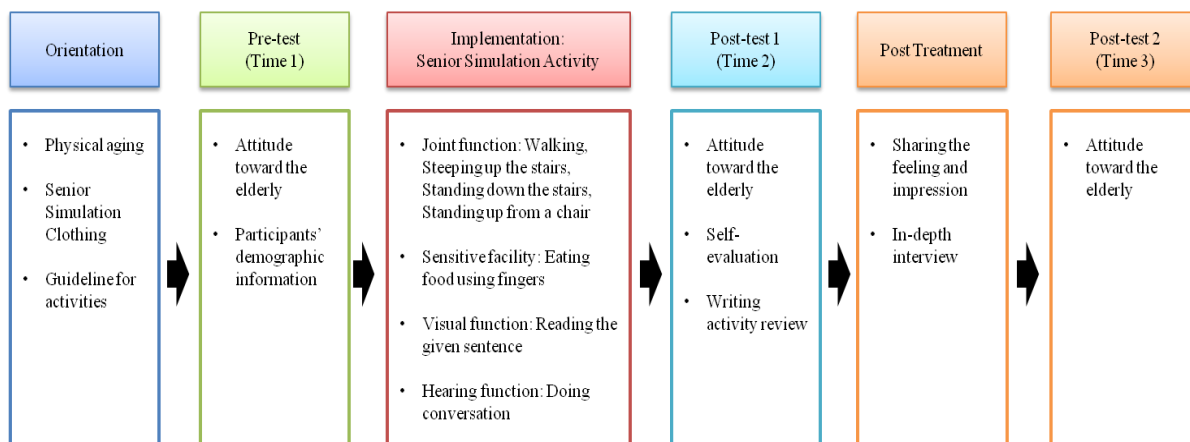


Figure 2. Procedure of the senior simulation program

Instruments

Attitudes toward seniors

The attitudes toward seniors were measured with semantic differential scale developed by Sanders, Montgomery Jr., Pittman, and Balkwell (1984). This tool was verified for validity and reliability, and each question used a self-reported 7-point scale formed of 20 pairs of adjectives such as “wise-foolish” or “kind-unkind” a lower score signified that the attitude toward seniors was positive. The reliability of the tool had a Cronbach’s alpha value of .96 at the development of the tool, and of .84 before the simulation, .82 after the simulation, and .77 after the sharing of experiences.

In-depth interviews

In this study, the collection of the qualitative data occurred both in the written review of the experience requested of all participants after participation in the program and in the in-depth interview. The in-depth research studied the changes in the attitudes of the nursing students toward seniors and what they felt. The in-depth interview was conducted after the completion of the program, and its main content included the change in attitudes toward seniors before and after the experience. The subjects of the interviews included 9 students selected through random sampling from among the 70 students participating in the senior simulation program. The content of each interview was individually recorded.

Intervention: Senior Simulation Program

The study was conducted from March 1, 2015 to June 30, 2015. The specific processes were as shown in **Figure 2** below.

The senior simulation program was conducted for three weeks according to the protocol. The average time of the simulation per student was 13 minutes, and based on reports from previous research that some participants may regard the experience as a mere event, the researchers were present throughout the simulation to help the senior simulation program be a serious and educational experience.

(1) Simulation clothing

The simulation clothing was specially manufactured to allow the subjects to experience a similar physical status to that of an 80-year-old (Sakamoto Co., Japan); it consisted of the simulation clothing itself (1) as well as gloves (1 pair), glasses, earplugs (1 pair), and a walking stick.

(2) Orientation and pre-test

Table 1. Program content and procedure

Procedure	Program Content	Function
1	Sitting the chair	Joint function
2	Hearing the helper's explanation Reading the script	Eye sight and hearing function
3	Walking in the hallway Go up and down the stairs Sitting the chair	Joint function
4	Eating the snack Drinking the beverage	Sensitive facility

The orientation took about 30 minutes; its purpose was to alleviate the psychological effects of sudden physical aging and to allow a pretest before the simulation. The educational content consisted of the experience of physical aging, a description of the composition of the simulation clothing, the order to put on the simulation clothing, and an explanation of the content of the simulation program and cautions about the program. This educational content was provided to all students participating in the simulation. After completing the orientation, the students received a written agreement form, and the pretest was conducted.

(3) Senior Simulation Activity

The content and the order of the senior simulation program were given to participants in a protocol form as presented in [Table 1](#). To prevent accidents, each simulation occurred in one group of three students. The assistant did not assist the simulator unless he or she encountered a dangerous situation, to allow for a meaningful experience.

(4) Post-test 1

A post-measurement was conducted to gauge the attitude toward seniors and to evaluate and review the simulation experience.

(5) Post Treatment

All the participants shared their experiences in a small group (17–22 people) one week after the experience. This sharing had the purpose of alleviating the negative emotions of fears about aging, sharing the meaning of the experience, and reconfirming the meaning of the experience and its necessity through final education received from the researchers. To identify the nature of participants' experience, an in-depth interview was conducted with nine participants who agreed to be interviewed.

(6) Post-test 2

After two weeks of the sharing of the participants' feelings, the second posttest regarding attitudes toward elderly people was conducted.

Data Analysis

The data analysis of this study is divided into quantitative data analysis and qualitative data analysis. First of all, the quantitative data was analyzed through SPSS Ver 21.0 for Windows. The characteristics of the research subjects were presented through numbers, percentages, and standard deviation, and in the first and second posttest, the differences in attitudes were measured through Repeated Measures ANOVA, and the reliability of the tool was suggested through Cronbach's alpha. The qualitative data gained from the review of the simulation and the interviews was analyzed using the content analysis method. In particular, the data recorded during the interviews was transcribed and analyzed. The analysis of the qualitative research was conducted by two qualitative research methodology professionals (in the field of nursing and the field of education), and the attitudinal changes

Table 2. Characteristics of Subjects (N=70)

Variables	Category	N(%) or M(SD)
Gender	Female	58(82.9)
	Male	12(17.1)
Age (year)	19~44	20.4 (4.03)
Religion	Not have	41(58.6)
	Have	29(41.4)
Interested in the elderly	None	12(17.1)
	Neutral	30(42.7)
	Yes	28(40.0)
Intention to work	None	24(34.3)
	Moderately	29(41.4)
	Absolutely	17(24.3)
Currently live together	Yes	4(5.7)
	No	66(94.3)
Lived together in past years	Yes	30(42.9)
	No	40(57.1)
Key information source for the elderly	Mass media	19(27.1)
	Internet	11(15.7)
	Neighbor, relative, family	25(35.7)
	Education or training	15(21.4)
Volunteer work experience	Yes	62(88.6)
	No	8(11.4)
Education experience	Yes	10(14.3)
	No	60(85.7)
Acquaintance except grandparent	Yes	22(31.4)
	No	48(68.6)
Frequency meeting grandparent	Monthly or more	16(22.9)
	Semi-annual	35(50.0)
	Rarely	6(8.6)
	None	13(18.6)
Frequency phone	Monthly or more	19(27.1)
	Semi-annual	27(24.3)
	Rarely	21(30.0)
	None	13(18.6)

toward senior citizens were described in three themes: emotional transition, cognitive transition, and practical transition.

Table 3. Effect of Aging Simulation Game as Time Series

Variable	Time	T1 M(SD)	T2 M(SD)	T3 M(SD)	F(p)
Attitude toward seniors		3.92(.59)	4.26(.49)	3.73(.57)	24.230(<.001)

T1: Pre-test, T2: Post-test 1 (Right after the simulation), T3: Post-test 2 (After the program review)

Ethical Consideration of the Subjects

This study was approved by the Institutional Review Board (IRB) of the university that the researchers belonged to (IRB-KNU_ 2015-74).

RESULTS

Demographics

Women constituted 82.9% of participants; the average age of participants was 20.4, and 41.4% of the students were religious, 40.0% had an interest in seniors, 5.7% currently lived with seniors, and 42.9% had had the experience of living with a senior. For 35.7% of participants, their main way of gaining information about seniors was through family, neighbors, or relatives. Fully 88.6% had experience in volunteering in tasks related to seniors, while only 14.3% had the experience of receiving education related to seniors, 31.4% knew other elderly people in addition to their grandparents, 27.1% contacted the grandparents through phone “once per month or more often” if their grandparents were alive, and the frequency of meeting them once or more over six months was 50.0%. (See [Table 2.](#))

Change in attitude toward seniors

To verify the effects of the senior simulation program, the attitudes toward seniors were consistently measured at three points (before the program, after the program, and after sharing feelings). The attitudes toward seniors changed significantly from before the program (3.92), after the program (4.26), and after sharing feelings (3.73) ($F=24.230, p<.001$). In analyzing between the assessment points, the attitudes became more negative after the program than before the program ($p<.001$), more positive after sharing feelings in comparison to immediately after the program ($p<.001$), and conclusively more positive after sharing feelings than before the program ($p=.022$). (See [Table 3.](#))

Attitudes toward seniors after the senior simulation program were ranged into the two categories of positive and negative. At the first assessment point, 15.7% (11) of participants had a positive attitude, at the second point, 7.1% (5) were positive, and at the third point, 25.7% (18) had positive attitudes. The positivity decreased after the program but increased after the sharing of feelings. Meanwhile, 10% (7) of participants had negative attitudes at the first assessment point, 35.7% (25) at the second, and 4.3% (3) at the third. Negative attitudes increased after the experience but decreased after the sharing of feelings.

On the other hand, in the analysis of the qualitative data of the simulation review and the interview, the nursing students showed cognitive, emotional, and practical changes.

To gain knowledge of the state of seniors, the nursing students experienced the decline of eyesight and hearing, the numbing of the sense of touch, and the body becoming heavy and joint movement becoming difficult. Such experiences gave the students actual experience of the various senses, allowing the realization that for seniors, movement is difficult and they fatigue easily.

Jennifer (pseudonym): I had often learned about the physical changes of seniors from the textbooks, so I thought that I knew much about them. So I had thought, “This senior simulation program will not be new.” However, I think that the standard of knowledge of nursing students has become different. Especially, I did not understand the idea that seniors could not move their bodies according to their

will, but by experiencing the heavy and difficult body, I felt that this was the life of the elders. (Interview)

Mike: In my thought about seniors, I have always first thought of the walking cane. Walking canes represent elderly people. However, from this simulation, I realize how foolish it was. In other words, it was an opportunity to experience the necessity of the walking cane and to understand that need. (Interview)

David: Through the senior simulation program, I was able to gain a wholly different knowledge. It was a time to experience elderly people as differing from what I understood and to gain a different knowledge of seniors. (Review)

Yuri: The senior simulation gave an accurate understanding of seniors. The experience of the eyes, ears, waist, and legs allowed the opportunity to understand the physical discomfort accurately. (Review)

The nursing students also experienced emotional changes through the senior simulation program, and such changes became an opportunity to change their negative feelings toward seniors into positive ones. Though the experience was short, the students expressed negative feelings toward their “older” lives.

Sue: I felt ashamed for thinking that seniors were receiving unrighteous benefits because of their discomfort. Perhaps, from wrong understanding, I was mistaken about the seniors. Through the experience, I felt that “I would age” and that care and respect was needed. (Interview)

George: I was sad after the experience. I almost cried during the experience, and after the simulation, to comfort myself, I called my mother and cried during the phone conversation. I felt that aging was sad, and while talking with my mother, I learned that aging needs preparation and that there must be respect for the elderly. (Interview)

Tom: I was depressed after the interview, because of the discomfort. However, in thinking and reconsidering the experiences to write the review, I became thankful for this life and for this happiness. (Review)

Sunny: Regardless of my effort, I had an unpleasant feeling, perhaps because of my body. Why? It was probably surprise. I was taken aback by this strange feeling, but I felt somewhat positive that I might be able to sympathize with the seniors. (Review)

Finally, the nursing students experienced actual changes through the senior simulation. Their practical attitudes toward seniors now included the will to give kind care to seniors, the will to help seniors positively, and the will to prepare themselves for their own old age.

Aram: To be honest, I was not able to yield my seat to elders in public transport. I thought, why should I yield my seat when I have paid for the seat? But through this experience, I realized that respect for the elders is needed and that I should carry that out. The friends experiencing the simulation would feel the same, but this simulation was the perfect opportunity to teach me about care and forgiveness toward seniors. (Interview)

Cathy: I felt that when I become a nurse, I should be kind during all the procedures of medical care. (Interview)

Hera: In the circumstances of the health measurement course taken this semester, I thought that I should not stop at understanding the seniors but should actually carry out those thoughts. It was time to think about what care and effort is needed for the seniors. (Review)

Laura: Through the experience toward seniors, I was able to think of my own old age, and I concluded that more systematic management and preparation is needed. (Review)

DISCUSSION

This study was an integrated study that attempted to assess the experiences and effects on the attitudes of nursing students toward seniors when the senior simulation was applied to these nursing students.

As a result of this research, attitudes after the senior simulation program became negative in comparison to those before the simulation, but they became significantly positive after the sharing of feelings. In particular, after segmenting the participants into two categories of positive and negative and identifying the number in each category, the group with positive attitudes saw these attitudes decrease after the simulation but increase after the sharing of thoughts, and the group with negative attitudes saw these attitudes increase after the simulation but decrease after the sharing of feelings. The positive effects were equal in qualitative measurement such that this was a positive experience, which included the understanding of seniors, regret for past actions, consideration of the participants' own old age, and the application of these changes by the nursing students to the nursing of seniors.

Thus, as a result of this research, the senior simulation program brought positive attitudinal changes toward seniors, agreeing with the results of previous research suggesting that the senior simulation was effective in enhancing attitudes (Eymard, Crawford, & Keller, 2010; Pacala, Boulton, & Hepburn, 2006; Robinson & Rosher, 2001; Varkey, 2006) and differing from other research suggesting that it produced no significant changes (Jeong, Kim, & Kim, 2010; Yu, Kim, & Lee, 2004).

In considering the reasons for the differences in the research, the measurement times of the attitudes, point, and the differences in the attitude measuring tools may be considered (Jeong, Kim, & Kim, 2010; Yu, Kim, & Lee, 2004). First of all, in consideration of the times and points at which the attitudes were measured, this study measured attitudes three times, while in previous studies, the simulation's effects were only measured twice, that is, before and after the simulation. Therefore, although there are difficulties in direct comparisons of the results, there may be differences in the psychological state of a participant after the educator has reinforced the significance of the simulation or after a participant's experience is shared with others. Also, most previous research in South Korea had measured participant attitudes with the tool developed by Sander et al. (1984), which used the criteria of 20 items composed of adjective pairs, identifying the attitudes of the answerer at similar points. However, as the purpose of this study was to identify the attitudinal changes toward the subject, there were limitations in measuring changes in the value of the subject in addition to the impression felt toward the subject at the measurement point. Therefore, it will be necessary to follow such research by selecting or developing more sensitive tools to measure attitudes toward seniors.

Based on the research results, a method by which to maximize the educational effects of the senior simulation can be suggested.

First, much time must be allowed for the internalization of the simulation experience and for the experience to not be disturbed, and plans for identifying the sensitive effects are needed. In identifying changes of attitude after the simulation, even if the simulation experience has helped form positive attitudes and promoted sympathetic understanding, it may be restrained from alleviating the psychological discomfort felt by participants or their acceptance of the experiences.

Second, to maximize the educational effects of the senior simulation program, it needs to be properly understood. Therefore, through enough beforehand education, participants in the program need to acquire knowledge about seniors and aging, and through the emphasis of the potential hazards, students need to prepare for the psychological shock from their sudden aging during the simulation program. Also, after the end of the program, time to share thoughts needs to be planned to allow the students to express the emotional shock; also, the meaning and purpose of the experience must be emphasized again so that the experience of the program can be positively internalized. In previous research, fears of aging increased after the senior simulation program (Henry, Douglass, Kostiwa, 2007; Wood, 2002), but through the sharing of their feelings, the participants were able to realize that such feelings were general, and the educator was able to positively promote the meaning of the experience.

Third, to enhance the understanding of elderly people from a holistic perspective, the content of the experience needs to be diversified. In the in-depth interviews in this study, the interviewees suggested role-plays, an increase in the time of the simulation, and the diversification of the experience. Also, with respect to the question of understanding the elderly, many participants answered that the senior simulation program was relatively less helpful in their understanding of social and psychological aging in comparison to physical aging. In cases where the simulation has been used in other nations, the time of the simulation was comparatively long, and the content included visiting the library, calling, purchasing items, and using vending machines (Wood, 2002). This would have the effect of allowing participants to indirectly experience the psychological reactions in daily life when movement is difficult and when eyesight and hearing is reduced.

The senior simulation program applied in this study was effective in enhancing nursing students' attitudes toward seniors. Based on this research result, in future senior nursing education, the simulation needs to be applied in stages: prior education, experience of the simulation program itself, and future measures. The effects of the program also need to be measured repeatedly by considering the times of internalization, and enough time needs to be given to understand seniors and aging from a holistic perspective. The simulation should also be diversified.

Based on the research results, the following is to be suggested.

The research results, with respect to the qualitative measurement, demonstrated differences according to the times at which the measurements were made. Therefore, in-depth interviews should be conducted both before and after the program as well as after the internalization of the experience, identifying whether changes in the attitudinal scores with respect to the actual quantitative measurements correspond to the psychological changes at the same points in time.

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