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Communication training program for nurses caring for patients with aphasia: a quasi-experimental study

Yujin Hur[1] and Younhee Kang[2,3*]

Abstract

Background Nurses are key communication partners for patients with aphasia. Nurses' skills are vital for improving the patients' environment and nursing performance. This study develops and evaluates the effectiveness of a communication training program for nurses who care for patients with aphasia.

Methods A program was developed based on the Intervention Mapping Protocol. Then, a simulation using a standardized patient with aphasia and surveys were conducted. Program effectiveness was evaluated using a quasi-experimental framework with a non-equivalent control group and pretest-posttest non-synchronized design.

Results The two groups exhibited statistical significant differences in health communication competence, knowledge of aphasia, patient advocacy, clinical decision-making, and compassionate competence.

Conclusion This study developed communication training for nurses who care for patients with aphasia. The effectiveness test showed that this training affected nurses' knowledge, attitude, and skills. Clearly, communication education for nurses is important to provide comprehensive care for patients with aphasia and can enhance nursing.

Keywords Aphasia, Communication, Education, Nurses, Simulation

Background

Aphasia is defined as a language impairment in comprehension and expression processes, and is caused by damage to the brain after language acquisition [1]. Improving the communication competence of people involved in the lives of patients with aphasia (e.g., family, caregiver, medical personnel, and volunteers) can facilitate enhanced communication between these two groups [2]. Indeed, training, called communication partner training (CPT), has been developed for those who communicate with patients with aphasia [3]. CPT aims to improve knowledge regarding aphasia, and the communication competence of those who communicate with patients with aphasia and of the patients themselves [4]. Crucially, CPT enhances psychological well-being of patients with aphasia by reducing depression and stress levels [5].

In particular, nurses' ability to communicate with patients is crucial for providing comprehensive nursing care [6]. Specifically, nurses should provide an appropriate level of care depending on the extent of language impairment of patients with aphasia and offer the necessary emotional support [7]. Higher communication competence may improve nurses' understanding of medication use and patient satisfaction [8]. This can also improve compassionate competence, nursing

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competency, and job satisfaction among nurses [9]. In this study's context, medical personnel who provide care for patients in an acute phase do wish to communicate with patients with aphasia but lack knowledge of an efficient communication method [10–13]. The communication competence of nurses who care for patients with aphasia primarily depends on their experience of caring for such patients. Therefore, nurses with relatively less experience may encounter increased difficulty in communication [14]. Accordingly, medical personnel who care for patients with aphasia do exhibit a need to learn how to communicate with patients with aphasia to improve these patients' communicative environment [2, 14].

However, few studies have attempted to improve the communication competence of nurses caring for patients with aphasia [15]. Unlike the families of these patients, healthcare professionals must care for various types of such patients. Therefore, specific training programs must focus on improving nurses' communication competence [11, 13]. Moreover, nurses who must simultaneously care for numerous patients need to communicate with them in a short period while understanding the various types and characteristics of patients with aphasia [16]. This understanding can be cultivated through a special communication training program targeted specifically at nurses caring for such patients. This study sought to design a training program to improve the communication skills of nurses who care for patients with aphasia. The specific goals include developing the communication training program and evaluating its effectiveness in improving communication competence, patient advocacy, clinical decision-making, and compassionate competence for nurses caring for patients with aphasia.

Conceptual framework

The conceptual framework is based on the "process of interpretation in response to voicelessness" [17]. This was used to propose the model for the process through which nurses interpret the intentions of patients who have trouble with communication. Nurses must strive to improve their communication competence by using an auxiliary communication means and a non-verbal cue interpretation technique to understand patients' intentions and non-verbal language. Additionally, nurses need to cultivate their knowledge of aphasia to eliminate bias that can interfere with their communication with patients. Therefore, the key intervention elements for improving communication competence are a non-verbal cue interpretation technique, a knowledge of aphasia, and the use of auxiliary communication means. By improving these skills, nurses can improve their communication competence. This can further enable them to effectively communicate with patients, improve their clinical decision-making skills, and improve their compassionate competence, which helps them to sympathize with the patients' perspective. Communication competence comprises linguistic, sociolinguistic, discourse, and strategic competencies [18]. Here, communication competence is defined as nurses' ability to utilize strategies to overcome communication barriers and challenges when interacting with patients with aphasia. Furthermore, the willingness to engage in difficult conversations can also stem from attitudes such as empathy and patient advocacy.

Methods

This study consisted of two phases—a methodological design for developing a communication training program and quasi-experimental research design for evaluating this program's effectiveness.

Phase 1. Developing a communication training program for nurses caring for patients with Aphasia

The training program was developed based on the Intervention Mapping Protocol (IMP [19]). Conforming to IMP, the process comprises six steps—deducing problems, setting goals, designing the program, developing the program, execution planning, and evaluation planning. Each step included execution and evaluation, thus leading to a cyclic process. For the communication training program for caring for patients with aphasia, an evidence-based intervention program was developed to improve nurses' communication competence with these patients according to the IMP-based conceptual framework [19]. Specifically, based on the literature review presented in a previous study and interviews conducted with six neurology nurses regarding an education demand for communicating with patients with aphasia [20], the current program was designed by setting the goal for establishing change, and program composition, content, and scope.

Based on a previous study, the program consists of six hours [21]. Regarding the program delivery method and strategy, a web-based program was designed considering the work environment of the participants, who worked in three shifts. Indeed, one study observed no significant difference when the CPT was provided in a traditional lecture or through the Internet to hospital workers [22]. The program was designed to ensure that participants can sequentially participate in the introduction, development, and final steps after participating in the simulation using standardized patients (SPs), as shown in Fig. 1. Training in the development step involved a lecture, discussion, quiz, practicum, and debriefing wherein lectures appropriate for each session were provided by the researcher based on previous studies and training programs using various materials. Discussions were conducted anonymously on the intervention website to allow participants to freely exchange their opinions regarding

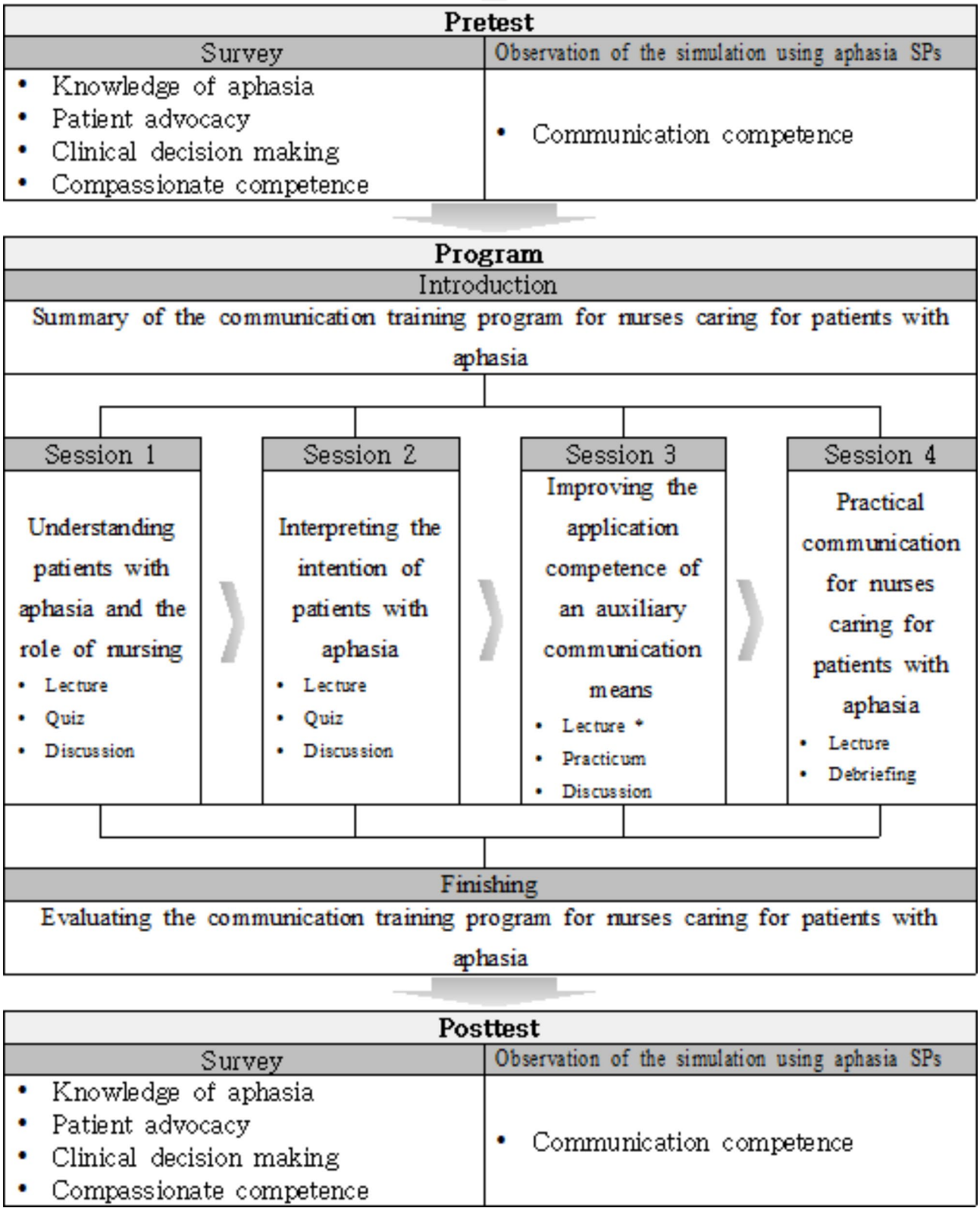


Fig. 1 Communication training program for nurses caring for patients with aphasia and its evaluation

each topic during the first, second, and third sessions, and in the final step. An educational website was utilized where participants logged in using numerical IDs. Initially, participants were unaware of each other's identities. Participants could only view their IDs on the chat. The quiz covered content related to knowledge of aphasia to ensure that participants could review the training material. The final session involved debriefing, wherein the researcher and participants were engaged in a 1:1 video conference. Participants observed the recorded video of the simulation they participated in during the pre-test and evaluated the content they had learned during the training program. Finally, participants shared and organized their opinions on participation among themselves using an anonymous chatroom. The experimental group was instructed to freely complete the six hours of the training program using an Internet web browser or a mobile application.

A simulation using SPs, which is effective for communication training, was selected because the simulation's main purpose was to observe participants' communication competence [23]. The simulation primarily focused on conversations and was developed based on simulation practice standards in the Korean accreditation board [24] by setting the situation as "Intake and Output check," which is frequently performed by nurses in clinical practice. Patients' ability to express their emotions or conduct conversations is crucial during the simulation using aphasia SPs. Therefore, professional actors were cast as SPs for the psychiatric simulation to present the situation requiring complicated acting skills [25]. Item-level Content Validity (I-CVI) was calculated through expert consultation based on the simulation using aphasia SPs and training program; I-CVI was confirmed to be at least 0.78 [26]. A pilot test was conducted with two nurses to evaluate the acceptability and feasibility prior to the actual analysis.

A survey and observation of the simulation using aphasia SPs were planned to evaluate the training program's effectiveness. The training program website was programmed such that participants had to complete a minimum of 80% of each lecture and participate in at least one discussion for their training program to be considered complete.

Phase 2. Evaluating the communication training for nurses caring for patients with Aphasia

Design

This study adopted a quasi-experimental research framework with a non-equivalent control group and pretest-posttest non-synchronized design.

Participants

The participants were nurses working in the neurology or neurosurgery wards, neuro-intensive care unit (ICU), stroke care unit, neurology or neurosurgery outpatient clinic, or neurology or neurosurgery nurse practitioners. Nurses who are currently involved in other training programs related to communication, those who had less than a year of experience working in neurology or neurosurgery departments, and those who did not have experience caring for patients with aphasia were excluded. The sample size, calculated using G*Power 3.1.9.4 program [27], was 34 with an effect size of 0.5 [4], significance level of 0.05, statistical power of 0.80, number of groups of 2, and covariate of 1 based on an F-test. Accordingly, 48 participants were recruited considering the withdrawal rate of 42% in a previous study [28]. A total of 45 participants were included in the final analysis as shown in Fig. 2.

Measurements

This study used survey and evaluation tools for a simulated observation of conversations with SPs. According to the study framework, communication competence and knowledge of aphasia were the primary outcomes, while patient advocacy, clinical decision-making, and compassionate competence were the secondary outcomes. For the tools of knowledge of aphasia and patient advocacy that were unavailable in the Korean language, two translators at a professional translation company performed translation and back-translation after obtaining permission from the tools' developers. The content validity was examined by seven experts to determine whether the translated tool satisfied at least 0.78 of the I-CVI and at least 0.90 of the scale-content validity index/average (S-CVI/Ave) [26]. The panel of seven experts included one nursing professor, two neurological nurse managers, two nurses with over ten years of clinical experience, one Ph.D. in education, and one speech therapist. All experts were proficient in both English and Korean, and independently assessed the translated tools.

The demographic characteristics measured here included gender, age, and educational background. The work-related characteristics included work department, total clinical experience, and clinical experience in neurology departments.

Communication Competence. To determine communication competence, the Korean version of the health communication assessment tool (HCAT), developed by Campbell et al. [29] and translated into Korean (K-HCAT) [30], was used. Two nurses observed the recorded video of the simulation between the participants and SPs, and provided scores. The inter-rater reliability Intraclass Correlation Coefficient () and Cronbach's α of internal consistency reliability of K-HCAT [28] were 0.84 ($p<.001$) and 0.85, respectively. The inter-rater reliability ICC and

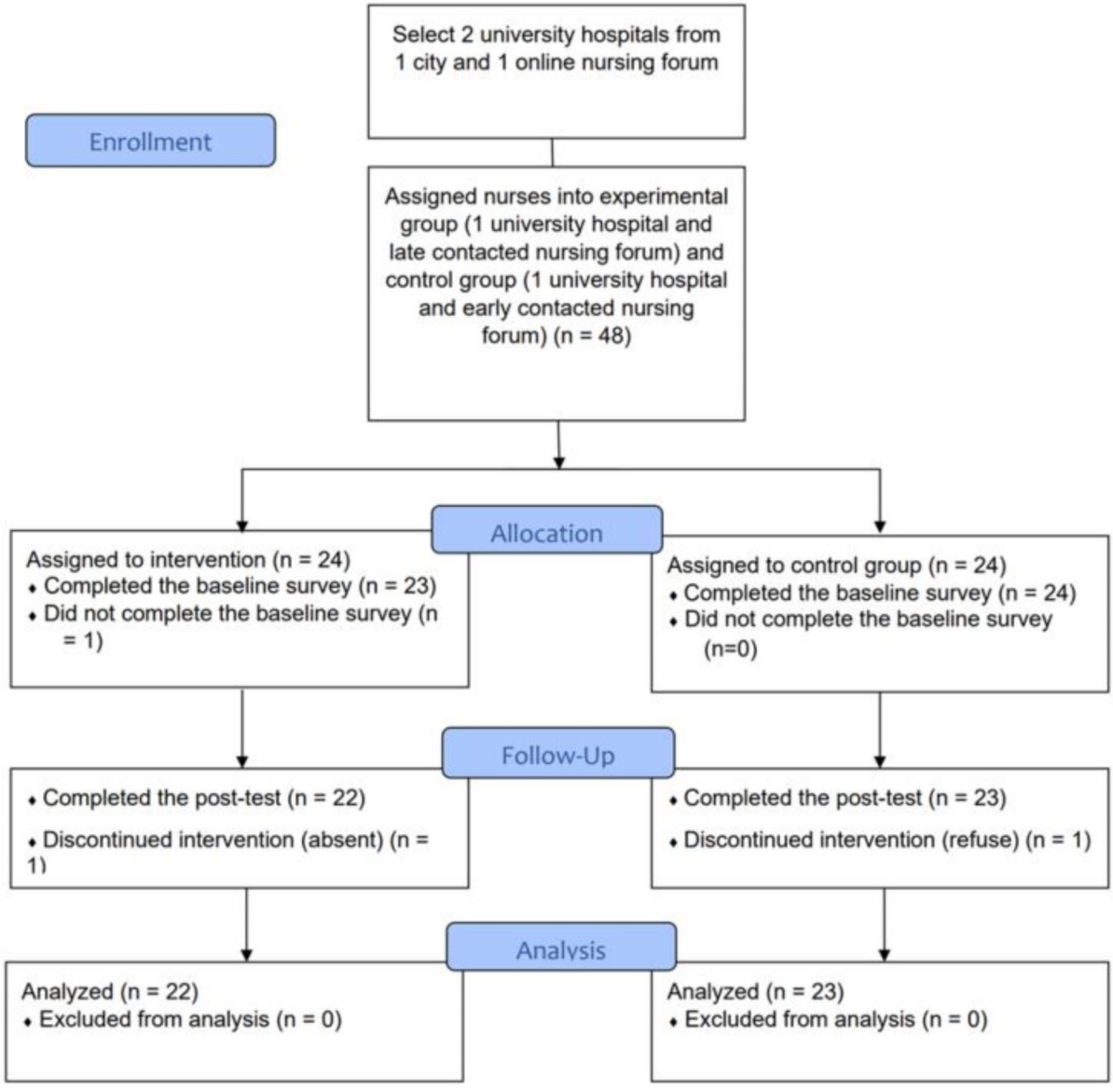


Fig. 2 Flow chart of study participants' selection

Cronbach's α in this study were 0.94 (95% CI 0.91 −0.96; $p<.001$) and 0.92, respectively.

Knowledge of aphasia. Knowledge of aphasia was measured using ten questions from the test of knowledge of aphasia (TKA) [22]. The TKA consists of multiple and short-answer questions regarding basic knowledge of aphasia, its symptoms, and communication strategies. At the time of development, the inter-rater reliability, *r*, was 0.92 [22], whereas Kuder-Richardson 20 internal consistency reliability was 0.87.

Patient Advocacy. The protective nursing advocacy scale consists of 37 questions. At the time of development, Cronbach's α of internal consistency reliability was 0.80 [31]. The Cronbach's α of internal consistency reliability in this study was 0.91.

Clinical Decision-Making. Clinical decision-making skills were measured using the Korean version of the nursing clinical decision-making instrument, which was developed by Lauri and Salanterä [32] and translated into Korean [33]. The Cronbach's α in a study in Korea [33] and this study was 0.89 and 0.95, respectively.

Compassionate Competence. Compassionate competence was measured using 17 questions of the compassionate competence scale (CCS) [34]. The Cronbach's α of

internal consistency reliability at the time of development and in this study was 0.91 and 0.93, respectively.

Procedure

The researchers explained the study purpose and method to the directors of two university hospitals in Korea, and an administrator of an online nursing forum to get permission to recruit participants. After obtaining permission, a recruitment notice was posted. Two university hospitals were assigned to the experimental and control groups each by flipping a coin, and the recruitment notice was posted first at the control hospital. Group allocation was based on recruitment period. Those recruited in July were assigned to the control group, and those recruited in August were assigned to the experimental group. Participants were blinded to prevent them from knowing whether they were in the experimental or control groups.

A blind strategy was implemented to ensure the control group remained unaware of their status. The control group began participating before the experimental group. The experimental group began the pre-test separately and completed the developed training program. The same procedure was followed for the experimental and control groups. First, a link to access the intervention site assigned for each group was provided to participants, along with individual IDs and passwords, who then completed the survey. The participants participated in the simulation wherein aphasia SPs were used. The simulation was recorded and required approximately 10 min to complete. The experimental group were involved in a six-hour web-based program consisting of four sessions. During the third session, the control group received training on using an auxiliary communication means extracted from the lecture "Improving the application competence of an auxiliary communication means." The lecture discusses different types and application methods of auxiliary communication means that facilitate communicating with aphasic patients and application cases, and lasts for 30 min. Both groups were instructed to complete the post-test within three days of completing the program. The method of participating in the post-test and collected data are identical to the pre-test.

Ethical considerations

This study was conducted after obtaining approval from the institutional review board of the relevant institution (IRB number: 202005-0001-02). After confirming whether the control group wished to participate in the entire training program once the necessary data was collected, only those who wished to participate were provided with a link to access the website containing the training material.

Data analysis

The collected data were analyzed using IBM SPSS Statistics 26.0. Percentage, mean, and standard deviation were applied to analyze participants' general characteristics. To verify whether the data satisfies the normal distribution, a parametric test was performed for variables that satisfied normality, whereas a non-parametric test was performed for those that did not based on the results of the Shapiro-Wilk test. A chi-squared test, independent t-test, Fisher's exact test, and Mann-Whitney U test were conducted to test the homogeneity of both groups. To test the difference in communication competence, patient advocacy, clinical decision-making, and compassionate competence between the two groups, ANCOVA and ranked ANCOVA were conducted by controlling the pre-test score as a covariate.

Results

Homogeneity tests

All characteristics and preliminary dependent variables showed no statistically significant differences between the experimental and control groups, thus demonstrating homogeneity as shown in Table 1.

Outcome evaluation

Table 2 lists the results for verifying program effectiveness. We expected significant differences between the experimental and control groups in communication competence, knowledge of aphasia, patient advocacy, clinical decision-making, and compassionate competence. To verify this, we treated the pre-scores of these variables as covariates and compared the net changes between the groups. Statistically significant differences were observed in post-test changes between the experimental and control groups in communication competence ($F=101.868$, $p<.001$), knowledge of aphasia ($F=156.299$, $p<.001$), patient advocacy ($F=6.012$, $p=.018$), clinical decision-making ($F=5.311$, $p=.026$), and compassionate competence ($F=4.941$, $p=.032$). Therefore, the difference in post-test changes between the experimental and control groups was statistically significant regarding communication competence, knowledge of aphasia, patient advocacy, clinical decision-making, and compassionate competence.

Discussion

This training program evenly incorporated three domains of education—knowledge, attitude, and skills—and was systematically developed for effectively training nurses using various educational methods. The first characteristic of the program is that participants can evenly learn the three aforementioned domains, which influence communication between nurses and patients with aphasia, according to IMP [19]. In the program's knowledge

Table 1 Homogeneity of participants by groups ($N=45$)

Characteristics/Variables	Categories	Exp ($n=22$)		Cont ($n=23$)		$t/\chi^2/Z$	p
		n (%) or Mean ± SD	Median (Q1-Q3; IQR)	n (%) or Mean ± SD	Median (Q1-Q3; IQR)		
Gender	Female	21(95.5)		18(78.3)		2.877†	0.187
	Male	1(4.5)		5(21.7)			
Age		28.18 ± 3.19		28.78 ± 3.67		0.585	0.561
Education level	Associates	1(4.5)		2(8.7)		1.430†	0.596
	Baccalaureate	20(90.9)		18(78.3)			
	Masters	1(4.5)		3(13.0)			
Work department	ICU	12(54.5)		14(60.9)		3.537†	0.519
	Stroke unit	1(4.5)		3(13.0)			
	Ward	8(36.4)		4(17.4)			
	Outpatient	1(4.3)		1(4.3)			
	Nurse practitioner	0(0.0)		1(4.3)			
Clinical experiences (month)		55.45 ± 34.72	44.00(35.00-79.75; 44.75)	58.35 ± 40.26	48.00(29.00–63.00; 34.00)	-0.011‡	0.991
Careers in neurology (month)		48.27 ± 34.80	38.00(25.25–58.50; 33.25)	42.96 ± 28.30	42.00(24.00–50.00; 26.00)	-0.193‡	0.847
Communication competence		43.89 ± 7.74		40.85 ± 7.85		-1.307	0.198
Knowledge of aphasia		36.73 ± 3.82		35.52 ± 4.63		-0.950	0.347
Patient advocacy		119.23 ± 10.98	123.00(113.50-126.25; 12.75)	124.56 ± 14.62	124.00(116.00-133.00;17.00)	-0.784 ‡	0.433
Clinical decision making		82.64 ± 7.02		81.17 ± 13.36		-0.462	0.647
Compassionate competence		3.66 ± 0.42	3.73(3.29–3.90; 0.61)	3.77 ± 0.43	3.82(3.47–4.12; 0.65)	-1.070 ‡	0.284

†Fisher's exact test, ‡Mann-Whitney U test; SD = Standard Deviation; IQR = Inter-quartile Range

Table 2 Effects on main outcome variables between groups ($N=45$)

Variables	Source	SS	df	Mean Sq	F	p
Communication competence	Group	3825.7	1	3825.7	101.868	< 0.001
	Error	1614.9	43	37.6		
	Total	5440.6	44			
Knowledge of aphasia	Group	5117.2	1	5117.2	156.299	< 0.001
	Error	1407.8	43	32.7		
	Total	6525.0	44			
Patient advocacy	Group	1118.0	1	1118.0	6.012	0.018
	Covariance	2071.6	1	2071.6	11.140	0.002
	Error	7810.4	42	186.0		
	Total	10486.8	44			
Clinical decision making	Group	648.2	1	648.2	5.311	0.026
	Covariance	1544.0	1	1544.0	12.648	0.001
	Error	5126.8	42	122.1		
	Total	7469.2	44			
Compassionate competence	Group	1.099	1	1.099	4.941	0.032
	Covariance	1.807	1	1.807	8.128	0.007
	Error	9.339	42	0.222		
	Total	11.928	44			

domain, in-depth knowledge of aphasia, communication strategy, and communication methods were taught to facilitate communication with patients with aphasia. In the attitude domain, four principles of bioethics, codes of ethics for Korean nurses, and communication rights of patients with aphasia were emphasized. Further, a sense of duty as nurses was evoked by proposing the communication problems, such as extended hospital stay and increased accidents among patients with aphasia, which have been identified in many studies. In the skill domain, education on communication skills that can be applied to patients with aphasia was provided. During pre- and

post-tests, participants were provided with an opportunity to participate in a practicum for communicating with aphasia SPs. Here, they learned details about using the AAC, such as the type of mobile application.

Second, the training involved a simulation using SPs. Simulations are widely used in nursing education to enhance all three domains—knowledge, attitude, and skills [35]. In this study, the simulation process was recorded and provided to participants to enable them to observe their own skills. The trained material was reviewed through positive interaction between the researcher and participants during the debriefing process to further improve communication competence.

Third, by designing a contactless, web-based educational program, its applicability was increased in situations where time is limited due to shift work or the risk of infection is high. Web-based programs are an effective educational method for improving the knowledge and clinical performance of nurses, and are gaining attention as an innovative solution for nursing education [36, 37]. This type of training program may also solve the problem of lack of time for nurses and reduce the training cost.

Finally, the developed training program was effective in enhancing nurses' communication skills in terms of knowledge, patient advocacy, clinical decision-making, and compassionate competence. Medical personnel experience difficulty in communicating with patients with aphasia due to limited time and insufficient knowledge regarding communication [10]. Meanwhile, the participating nurses' communication competence significantly improved after participating in the training program. When communication training was applied to ICU nurses who care for patients with communication difficulty due to mechanical ventilation, nurses' positive communication activities increased. Further, they looked at patients' eyes and made friendly physical contact to ensure that patients fully understand the conversation through repeated explanations [31]. These results correspond to our finding of improved health communication competence among participants. The patient-nurse relationship is a healing relationship wherein nurses' communication positively affects treatment outcomes and patients' emotional state [8]. Therefore, forming a relationship with patients and the emotional aspect are key factors for nurses' communication competence [24]. This study focused on nurses' communication competence because it is not merely an ability to exchange information; it can also serve as a treatment measure from the nursing perspective [8, 16]. Additionally, the developed training program substantially improves nurses' knowledge of aphasia. This finding is similar to another study which reported that nurses' knowledge improved after applying CPT [14]. Thus, the developed training program can efficiently deliver knowledge about communicating with patients with aphasia.

Further, the training program was effective in enhancing patient advocacy, clinical decision-making, and compassionate competence. Patient advocacy is limited without communication or interactions with patients [38]. Therefore, patients' intentions can perhaps be easily determined when communication competence improved—improving patient advocacy—or protecting and representing patients after participating in the training program. Advocacy is a fundamental part of nursing. Therefore, this study is notably significant from the nursing perspective. Additionally, the training program was effective for clinical decision-making because understanding and identifying patients' conditions substantially affects decision-making when caring for patients with complicated acute symptoms [39]. Indeed, the training program developed here significantly improved clinical decision-making among participants. Finally, nurses' compassionate competence allows them to deeply understand patients based on their love for patients and effectively respond to various situations, thereby improving patient compliance [40], satisfaction [41], and health conditions [42].

Overall, the proposed communication training program designed for nurses caring for patients with aphasia can significantly improve nurses' communication competence, particularly in health communication, knowledge of aphasia, patient advocacy, clinical decision-making, and compassionate competence. As demonstrated here, this program can be used to enhance the nursing competence of those caring for patients with aphasia.

Study limitations

There are a few limitations to this study. First, the external validity might have been limited because the participants were recruited from only two general hospitals and an online nursing forum using convenience sampling. Second, the interpretation of the results may be limited because the timing of the post-tests varied among participants. The research team allowed participants three days to complete the final assessment. Further, the nature of online learning enabled participants to finish the training at their convenience. However, this made it theoretically impossible to engage in simulations with SPs immediately after the training. Third, although the majority of reviewed studies on the effectiveness evaluation utilized traditional face-to-face education methods, our study employed a different format. Therefore, there may be limitations in demonstrating significance compared to extant studies. Caution is required when interpreting the results.

Conclusion

The communication training program for nurses caring for patients with aphasia is designed to evenly incorporate three domains—knowledge, attitude, and skills—and is highly applicable due to the web-based arrangement. As demonstrated, this training can be applied in the clinical field to minimize communication difficulties faced by nurses while caring for patients with aphasia. Furthermore, the program aims to enhance the nursing staff's communication skills, thereby improving their efficiency in working with patients with aphasia. This can also reduce patient safety incidents and contribute to better patient outcomes. Therefore, the focus should be on improving nurses' communication skills in the clinical setting.

Abbreviations

CPT	Communication Partner Training
IMP	Intervention Mapping Protocol
SP	Standardized Patients
ICC	Interclass Correlation Coefficient
I-CVI	Item-level Content Validity
S-CVI	Scale-Content Validity Index/Average
ICU	Intensive Care Unit
HCAT	Health Communication Assessment Tool
TKA	Test of Knowledge of Aphasia
CCS	Compassionate Competence Scale
ANCOVA	Analysis of Covariance

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Author contributions

Conceptualization, Y.H. and Y.K.; methodology, Y.H.; formal analysis, Y.H. and Y.K.; writing—original draft preparation, Y.H.; writing—review and editing, Y.H. and Y.K.; visualization, Y.H.; supervision, Y.K.; project administration, Y.K.; and funding acquisition, Y.H. All authors read and approved the final manuscript.

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Data availability

The data that support the findings of this study are not openly available due to reasons of sensitivity and are available from the corresponding author upon reasonable request.

Declarations

Ethical approval and consent to participate

Ethical approval for this study was obtained from the institutional review board (Approval NO. 202005-0001-02) of Ewha Womans University. All study methods were performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments, or comparable ethical standards. Written informed consent was obtained from all individual participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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