

# The effects of team-based learning on nursing students' learning performance with a focus on high-risk pregnancy in Korea: a quasi-experimental study

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**Purpose:** The purpose of this study was to examine the effects of team-based learning (TBL) on nursing students' communication ability, problem-solving ability, self-directed learning, and nursing knowledge related to high-risk pregnancy nursing.

**Methods:** This quasi-experimental study used a nonequivalent control group pretest-posttest design. The participants were 91 nursing students allocated to an experimental group (n=45) and a control group (n=46). The experimental group received TBL lectures three times over the course of 3 weeks (100 minutes weekly) and the control group received instructor-centered lectures three times over the course of 3 weeks (100 minutes weekly). Data were collected by questionnaires from September to November, 2019. Data were analyzed using the chi-square test, paired t-test, and independent t-test.

**Results:** After the intervention, the mean scores of problem-solving ability ( $t=-2.59, p=.011$ ), self-directed learning ( $t=4.30, p<.001$ ), and nursing knowledge ( $t=3.18, p=.002$ ) were significantly higher in the experimental group than in the control group. No significant difference in communication ability was found between the experimental and control group ( $t=1.38, p=.171$ ).

**Conclusion:** The TBL program was effective for improving nursing students' problem-solving ability, self-directed learning, and nursing knowledge. Thus, TBL can be considered an effective teaching and learning method that can improve the learning outcomes of high-risk pregnancy nursing in women's health nursing classes. The findings suggest that TBL will be helpful for future nursing students to develop the nursing expertise necessary for providing nursing care to high-risk pregnant women.

**Keywords:** Communication; High-risk pregnancy; Learning; Nursing students; Problem solving

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## Introduction

In response to recent increases in acute, chronic, and infectious diseases, as well as rapid changes in the medical environment, nurses must be able to provide integrated nursing care in the field of clinical nursing. Therefore, international institutions of higher

medical education are actively trying to enhance the necessary capabilities of medical professionals by applying learner-centered educational methods, such as problem-centered learning and team-based learning (TBL), which focus on interactions between small groups [1].

Moreover, universities in Korea are expanding learner-centered

## Summary statement

- **What is already known about this topic?**

Team-based learning is an effective learner-centered learning method in the fields of simulation and basic nursing. However, there is a lack of empirical studies on team-based learning in education on high-risk pregnancy nursing.

- **What this paper adds**

A 3-week team-based learning program focused on high-risk pregnancy nursing improved nursing students' nursing knowledge, problem-solving ability, and self-directed learning ability.

- **Implications for practice, education, and/or policy**

In addition to high-risk pregnancy nursing, team-based learning can be used to improve nursing students' nursing knowledge, self-directed learning ability, and problem-solving ability in other nursing subject areas.

instructional methods, such as problem-centered learning, TBL, and action learning, to improve university students' competency [2]. As a result of these trends in Korea and abroad, to enhance the core competencies of nurses, there is an increasing necessity for learner-based classes to be developed and applied in the field of nursing in Korea.

Life skills, which are a core competency that one develops throughout life, include communication ability, problem-solving ability, self-directed learning, and leadership [3]. TBL is a learner-centered and self-directed active educational strategy, which is expected to equip nursing students with the ability to apply their experience in rapidly changing situations in clinical nursing by improving their understanding of complicated clinical emergency situations, knowledge, problem-solving ability, communication ability, academic achievement, and class satisfaction [4].

In recent years, TBL has also been widely used internationally [5-7]. According to Branney and Priego-Hernández [5], in a pathophysiology class that combined the use of TBL and the traditional learning method for 197 nursing students, higher responsibility and satisfaction were observed with TBL. They argued that TBL was an effective educational method that can encourage students to engage in active learning. Alberti et al. [6] reported in their systematic review of 12 studies applying TBL in nursing that 10 studies had a quasi-experimental design, nine studies showed improvements in academic achievement and nursing skills, and seven studies described improvements in communication ability, learning ability for the professional field, and self-directed learning ability. Dearnley et al. [7] stated in their systematic review of 16 studies that applied TBL in midwifery courses that TBL increased students' participation and satisfaction of the students, led to the development of practical training and changes in the educational method, and that a con-

sistent and structured approach is necessary for its application.

In previous studies, TBL in Korean nursing education was mainly applied in simulation training classes [8,9] and various fields of nursing, including nursing major courses and theoretical classes on basic nursing science subjects. Positive effects have been reported for variables such as problem-solving ability, critical thinking, academic achievement, communication ability, and self-directed learning [10,11].

Although the scope of TBL application is being expanded in nursing education due to its educational effects, and TBL has been conducted in women's health nursing classes focusing on nursing care for normal pregnant women and fetal assessments [12,13], there have not been enough studies applying TBL to nursing for high-risk pregnancies, other than the study by Kim [14]. Due to the increase of delayed marriages and advanced-maternal-age pregnancies, the rate of high-risk pregnancies is steadily rising in Korea [15]. Since high-risk pregnancies lead to complications and are associated with high-risk births, the maternal mortality rate is therefore also increasing [16].

To keep pace with changes in the medical environment and health problems, it is necessary for nurses to go beyond providing maternity nursing focused on normal deliveries; instead, nurses need to distinguish between normal and abnormal pregnancies and provide intensive nursing care to pregnant women in emergency situations or in need of continuous care [17]. Thus, this study aimed to apply TBL in a women's health nursing class where students learned about diseases associated with high-risk pregnancies, identify its effects on communication ability, self-directed learning ability, problem-solving ability, and nursing knowledge, and help university nursing students enhance their professional competencies needed for high-risk pregnancy nursing to contribute to improving women's health.

This study aimed to identify the effects of TBL in a women’s health nursing class on high-risk pregnancy nursing, with a specific focus on its effects on students’ communication ability, problem-solving ability, self-directed learning ability, and nursing knowledge.

This study had the following hypotheses:

- Hypothesis 1: The experimental group, in which TBL was applied, would have a higher communication ability score than the control group that received instructor-centered lectures.
- Hypothesis 2: The experimental group would have a higher problem-solving ability score than the control group.
- Hypothesis 3: The experimental group would have a higher self-directed learning ability score than the control group.
- Hypothesis 4: The experimental group would have a higher nursing knowledge score than the control group.

## Methods

**Ethics statement:** This study was approved by the Institutional Review Board of Gimcheon University (No. GU-201908-HRa-10-02-P). Informed consent was obtained from the participants.

### Study design

This study used a quasi-experimental nonequivalent control group pretest-posttest design (Figure 1). This study report followed the TREND (Transparent Reporting of Evaluations with

Nonrandomized Designs) reporting guidelines [18].

### Participants

The participants were junior-year nursing students taking a women’s health nursing class at Gimcheon University, Korea, who consented in writing to participate in the study. Students who enrolled in the women’s health nursing class but did not consent to participate in the study and those who were retaking the women’s health nursing class were excluded. For voluntary participation, the researcher explained the objectives and methods of the study on an “extracurricular day” at the university outside of class hours, and a research assistant collected the written consent forms and post-surveys of the students, which were submitted in a box. The students received an explanation that the surveys on nursing knowledge and other topics, which were conducted at the time of T in the experimental group, were not related to their grades and their responses would not result in any disadvantages (including in terms of grades) and that participants could withdraw from the study at any time without any disadvantages. Regardless of their participation in the study, all students in both the experimental and control groups took the same classes from each professor and were given grades from each instructor. Participants in this study were provided with predetermined rewards after they finished all the surveys, and the control group was provided with the materials for TBL afterward.

### Sample size

The one-tailed independent-sample t-test was conducted using

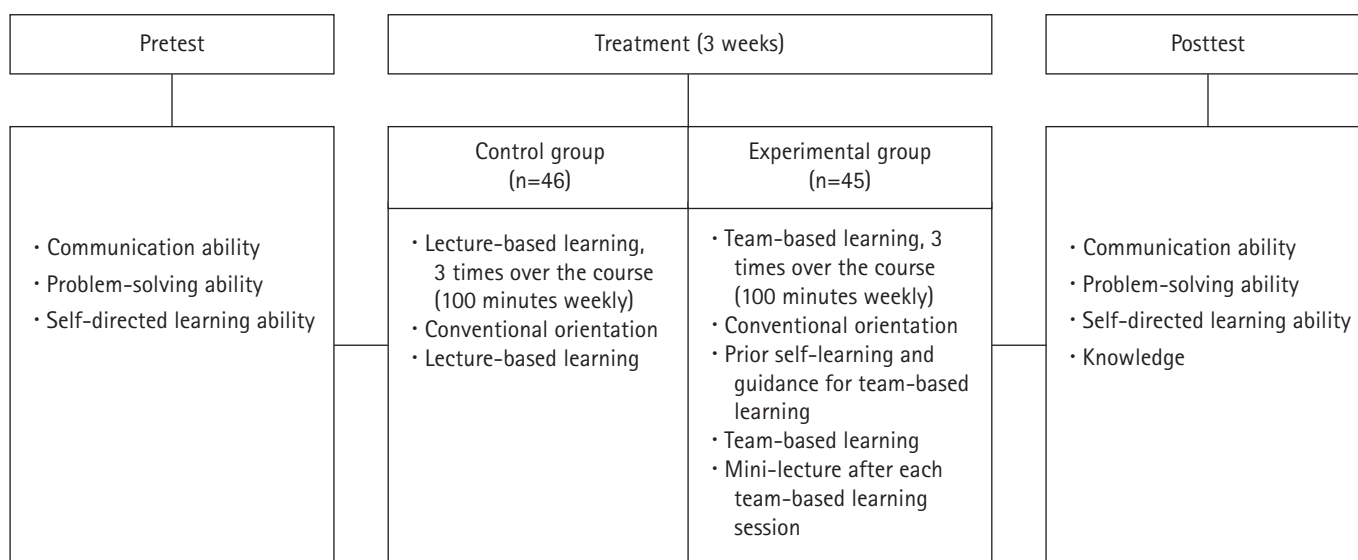


Figure 1. Research design.

G\*Power version 3.1.9.2 program to estimate the number of participants needed for the study. Using a confidence level ( $\alpha$ ) of .05, a test power ( $1-\beta$ ) of .80, and an effect size ( $d$ ) of .55 [19], which is a normal level for the independent-sample t-test, a total of 84 participants (42 each for the experiment group and control group) was calculated. Although there were initially 49 participants each in the experimental and control groups, questionnaires were collected from 45 participants in the experimental group and 46 participants in the control group in the end, satisfying the calculated sample size, and the collection rate of questionnaires was 93%.

### Intervention

The experimental and control groups were selected based on the original composition of the classes. Among the four classes allocated at the beginning of the semester, two classes were selected as the experimental group, where the investigator applied TBL, and two classes were selected as the control group, where instructors-centered lectures were given by other instructors. The instructors of the experimental group and control group established a 15-week lecture plan based on discussions, prepared lectures on topics where TBL was applied according to the learning objectives, and created the same lecture materials for each group in advance. The experimental and control groups were each divided into two classes, and since classes were taught by different instructors at the same time in accordance with the schedule, no information about the lectures was shared between the two groups. TBL was conducted three times (2 class hours consisting of 100 minutes per session, for a total of 6 class hours over the course) on topics such as placenta previa and placental abruption in week 4, gestational diabetes in week 6, and preterm labor and premature rupture of membranes in week 9.

All students, including those in the experimental and control groups, who took the women's health nursing class received the same lectures from each instructor, and only the participants in the study completed the additional surveys outside of class hours. There was no disadvantage associated with allocation to the experimental or control group since the surveys on nursing knowledge and other outcomes were not reflected in their grades, which were given by the corresponding instructor.

In this study, three topics about high-risk pregnancy and births were selected because it was difficult to identify the effects on learning outcomes based on only one session of TBL. The three topics were selected from the fields of high-risk pregnancy and birth, and a total of 18 problems, consisting of six problems for each topic, were prepared. The content validity index (CVI) was

measured by three professors of women's health nursing. The CVI was calculated by evaluating each item on a 4-point Likert scale, and the average CVI was found to be high (.94). Fifteen of the 18 initial items had a CVI of 1.0 and three items had a CVI of .67, and the three items with a CVI less than .80 were excluded.

For stage I (preparation) of the TBL intervention, PowerPoint (Microsoft Corp., Redmond, WA, USA) materials on the learning objectives and main contents of each topic were distributed through a website the week before the application of TBL to give motivation to study. For stage II (readiness assurance), individual readiness for each topic was assessed for 10 minutes at the beginning of the TBL classes. For this stage, 10 multiple-choice items each were administered for bleeding in late pregnancy, premature rupture of membranes, and preterm labor, while the assessment for gestational diabetes was composed of 15 multiple-choice items. Next, the classes were each divided into six groups of four to five participants, who were then given three cases for group discussions. The assessment of group readiness was conducted in the TBL room, and the instructor went around each group to promote group activities and encourage questioning and participation by all learners to promote their engagement. To assess group readiness, four to six subjective problems were given for each case, and the answers to the problems were prepared through group discussions and then submitted. The assessment was conducted for 40 minutes. In stage III (application), intergroup discussions and class discussions were held on the same cases of two groups through presentations by all six groups, and the content was summed up in a mini-lecture at the end. This process lasted for 50 minutes (Table 1).

### Measurement tools

The instruments used in this study were developed by the Korean Educational Development Institute (KEDI) and used in accordance with Free Use of Public Works under the Korea Open Government License of Ministry of Culture, Sports, and Tourism pursuant to Article 24-2 of the Copyright Act.

#### *Communication ability*

The instrument to measure communication ability for university students/adults developed by KEDI [20] was used. This instrument consists of 49 items, including five ability factors (interpretation ability, role performance ability, self-presentation ability, goal setting ability, and message conversion ability) and seven subfactors (information gathering, attention, overcoming fixed ideas, creative communication/open communication, self-disclosure, and leading communication). The items are scored on a

**Table 1.** The team-based learning program for high-risk pregnancies

Topic	Content	Teaching strategy	Time (minute)
Introduction to the program	TBL operation plan for 3 topics and guidance on each learning goal	Motivation for learning	20
	Three topics -Bleeding in late pregnancy -Premature rupture of membranes and preterm labor -Gestational diabetes	Guidance on learning management	
Stage I. Preparation	Individual prior self-learning from PowerPoint presentations	Facilitating self-directed learning	60
Stage II. Readiness assurance <sup>†</sup>	Individual readiness evaluation: 10–15 multiple-choice questions	Item development -Bleeding in late pregnancy: 10 multiple-choice questions -Premature rupture of membranes and preterm labor: 10 multiple-choice questions -Gestational diabetes: 15 multiple-choice questions	10
	Group readiness assessment: 6 teams with 3 cases discuss 4–6 open-ended questions each	Case-based item development -Bleeding in late pregnancy: 4 subjective questions -Premature rupture of membranes and preterm labor: 10 multiple-choice questions -Gestational diabetes: 15 multiple-choice questions To promote group activities, the instructor circulates among each group and promotes learning Encourage participation of all learners	40
Stage III. Application <sup>†</sup>	Intergroup discussion	Facilitating intergroup discussion	50
	Mini-lecture	Lecturing	

TBL: Team-based learning

<sup>†</sup>In-class provision

5-point Likert scale (very rarely, 1 to very often, 5), and a higher total score (range, 49–245) corresponds to higher communication ability. Cronbach's  $\alpha$  when the instrument was developed was .80 [20], and Cronbach's  $\alpha$  in this study was .88.

#### Problem-solving ability

The instrument to measure problem-solving ability measurement for university students/adults developed by KEDI [20] was used. The instrument consists of a total of 45 items including five ability factors (problem clarification, cause analysis, development of alternatives, planning/taking action, and performance assessment) and nine subfactors (problem recognition, information gathering, analyzing ability, divergent thinking, decision-making, planning ability, taking action and risks, evaluation, and feedback). The items are scored on a 5-point Likert scale (very rarely, 1 to very often, 5), and a higher total score (range, 45–225) indicates higher problem-solving ability. Cronbach's  $\alpha$  was .94 at development [20] and .90 in this study.

#### Self-directed learning ability

Self-directed learning ability was measured using 40 items from the instrument to measure self-directed learning ability for university students/adults developed by KEDI, with the exclusion of five items from the subfactor of diagnosis of desire to learn because they did not have a CVI higher than .80 as assessed by two researchers. The instrument consisted of three ability factors (learning plan, learning action, and learning assessment) and eight subfactors (diagnosis of desire to learn, setting learning objectives, identification of resources for learning, basic self-management ability, selection of learning strategies, continuity of learning actions, attribution of efforts for results, and self-examination). With the items scored on a 5-point Likert scale (very rarely, 1 to very often, 5), a higher score indicated a higher level of self-directed learning ability. Cronbach's  $\alpha$  when the instrument was developed was .93 [20], while Cronbach's  $\alpha$  in this study was .79.

#### Nursing knowledge

To measure nursing knowledge in this study, a total of 15 items (five items for each topic, including two short-answer items, two

analysis-focused items, and one problem-solving item) were developed by the researcher for the following topics: placenta previa, placental abruption, gestational diabetes, premature rupture of membranes, and preterm labor. The CVI of each item was measured by professors who had taught women's health nursing for over 10 years, and all items had a CVI of .80 or higher. Correct answers were given a score of 1, and incorrect answers were given a score of 0. The score range was 0 to 15, and a higher total score corresponded to a higher level of nursing knowledge. Cronbach's  $\alpha$  for the reliability of the instrument in this study was .79.

### Data collection

Data were collected from September 10 to November 8, 2019. Among the four classes allocated at the beginning of the semester, two classes were selected as the experimental group, where TBL was applied by the investigator, and two classes were selected as the control group, where lecture classes were taught by other instructors. The week before the application of TBL, the researcher explained the objectives and methods of the study to the experimental group during class hours and to the control group on "extracurricular day," and written consent forms were distributed and collected by the students. The surveys for the experimental group and control group were delivered and collected by the students outside of class hours. Preliminary surveys were conducted in both the experimental and control groups using a self-checklist on the week before applying TBL. After the preliminary surveys were collected from the experimental group, they were given preview materials for TBL. Post-surveys were conducted using a self-checklist in the week after TBL had ended.

### Data analysis

Data were analyzed using IBM SPSS ver. 28.0 for Windows (IBM Corp., Armonk, NY, USA). The general characteristics of the subjects were analyzed in terms of frequency, percentage, average, and standard deviation. The chi-square test and t-test were used to test for homogeneity in the general characteristics and dependent variables between the experimental group and control group. To verify the set hypotheses, the independent t-test was used for the effects in the experimental group compared to the control group regarding communication ability, problem-solving ability, and self-directed learning ability before and after TBL. The paired t-test was used for pre-hoc and post-hoc verification in each group. The independent t-test was used to analyze differences between the experimental and control groups in nursing knowledge after TBL, and the reliability of the measurement instruments was tested with Cronbach's  $\alpha$ .

## Results

### Homogeneity testing between the groups for general characteristics and dependent variables

According to the test of homogeneity between the two groups regarding participants' general characteristics and the dependent variables before the experiment, there were no statistically significant differences in age ( $t = -1.45, p = .336$ ), gender ( $t = 0.30, p = .758$ ), personalities ( $t = 0.46, p = .73$  significant 4), satisfaction with the major ( $t = -1.24, p = .218$ ), satisfaction with interpersonal relationships ( $t = .32, p = .752$ ), communication ability ( $t = -0.14, p = .889$ ), problem-solving ability ( $t = -0.91, p = .367$ ), self-directed learning ability ( $t = -.65, p = .519$ ). Thus, the homogeneity of the two groups was verified (Table 2).

### Verification of the effects of team-based learning

Regarding hypothesis 1, "the experimental group, in which TBL was applied, would have a higher communication ability score than the control group that received instructor-centered lectures," the experimental group had a communication ability score of  $168.51 \pm 15.72$  and the control group had a score of  $162.41 \pm 16.24$ . Although the experimental group had an average score increase of 12.51 after the intervention, whereas the average increase was 7.11 in the control group. The difference was not statistically significant ( $t = 1.38, p = .171$ ), so hypothesis 1 was rejected (Table 3).

As to hypothesis 2, "the experimental group, in which TBL was applied, would have a higher problem-solving ability score than the control group that received instructor-centered lectures," the experimental group had a problem-solving ability score of  $167.29 \pm 18.40$ , and the control group had a score of  $158.57 \pm 16.49$ . The experimental group had an average score increase of 19.09 after the intervention, while that of the control group was 7.22. There was a statistically significant difference between the two groups ( $t = -2.59, p = .011$ ), supporting hypothesis 2 (Table 3).

Regarding hypothesis 3, "the experimental group, in which TBL was applied, would have a higher self-directed learning ability score than the control group that received instructor-centered lectures," the experimental group had a self-directed learning ability score of  $142.29 \pm 17.84$ , and the control group had a score of  $129.61 \pm 16.71$ . The experimental group showed a score increase of 19.64 on average after the intervention, while the score of the control group increased by 5.15. Since there was a statistically significant difference between the two groups ( $t = 4.30, p = .001$ ), hypothesis 3 was supported (Table 3).

As to hypothesis 4, "the experimental group, in which TBL was

**Table 2.** Homogeneity test of general characteristics and dependent variables (N=91)

Variable	Categories	Possible score range	n (%) or M ± SD			χ <sup>2</sup> or t	p
			Total	Experimental group (n = 45)	Control group (n = 46)		
Age (year)			21.89 ± 2.82	22.18 ± 3.53	21.59 ± 1.85	1.45	0.336
Gender	Female		72 (79.1)	35 (76.1)	36 (80.0)	0.30	0.758
	Male		19 (20.9)	10 (21.7)	9 (20.0)		
Personality	Extroverted		36 (39.6)	17 (37.0)	19 (42.2)	0.46	0.734
	Introverted		55 (60.4)	28 (60.9)	27 (60.0)		
Major satisfaction	Positive		55 (60.4)	26 (56.5)	29 (64.4)	-1.24	0.218
	Negative		7 (7.7)	4 (8.7)	3 (6.7)		
	Moderate		29 (31.9)	15 (32.6)	14 (31.1)		
Satisfaction with interpersonal relationships	Positive		59 (64.8)	30 (65.2)	29 (64.4)	0.32	0.752
	Negative		7 (7.7)	3 (6.5)	4 (8.7)		
	Moderate		25 (27.5)	12 (26.1)	13 (28.9)		
Communication ability		49–245	155.08 ± 15.57	154.84 ± 14.47	155.30 ± 16.73	-0.14	.889
Problem-solving ability		45–225	149.79 ± 16.61	148.20 ± 13.14	151.35 ± 19.43	-0.91	.367
Self-directed learning		40–200	123.56 ± 13.29	122.64 ± 13.23	124.46 ± 13.43	-0.65	.519

**Table 3.** Comparison of communication ability, problem-solving ability, and self-directed learning between the two groups

Variable	Group	Mean ± SD			t	p
		Pretest	Posttest	Difference		
Communication ability	Exp (n = 45)	154.84 ± 14.47	168.51 ± 15.72	12.51 ± 18.09	1.38	.171
	Cont (n = 46)	155.30 ± 16.73	162.41 ± 16.24	7.11 ± 19.23		
Problem-solving ability	Exp (n = 45)	148.20 ± 13.14	167.29 ± 18.40	19.09 ± 18.14	2.59	.011
	Cont (n = 46)	151.35 ± 19.43	158.57 ± 16.49	7.22 ± 25.13		
Self-directed learning	Exp (n = 45)	122.64 ± 13.23	142.29 ± 17.84	19.64 ± 13.24	4.30	<.001
	Cont (n = 46)	124.46 ± 13.43	129.61 ± 16.17	5.15 ± 18.56		

Cont: Control group; Exp: experimental group.

applied, would have a higher nursing knowledge score than the control group that received instructor-centered lectures,” a post-hoc test was conducted in the experimental group. The experimental group had a total knowledge score of 8.13 ± 2.26, which exceeded that of the control group (6.65 ± 2.18) by 1.18. The difference between the two groups was statistically significant (t = 3.18, p = .002), and hypothesis 4 was therefore supported (Table 4). Although there was no significant difference in the short-answer items (t = 0.91, p = .364) in the knowledge assessment, there were significant differences in the analysis-focused items (t = 2.28, p = .025) and the problem-solving items (t = 4.27, p < .001).

## Discussion

This study investigated the effect of TBL on the communication ability, problem-solving ability, self-directed learning ability, and

knowledge of junior-year nursing students in a women’s health nursing class. After TBL was applied for three major diseases in women’s health nursing (placenta previa, gestational diabetes, and preterm labor), with three sessions that each lasted 100 minutes, significant differences were found in the nursing students’ problem-solving ability, self-directed learning ability, and knowledge in the analysis-focused items and problem-solving items. However, no significant difference was observed in communication ability.

The finding that TBL did not have a significant effect on improving communication ability led to the rejection of hypothesis 1. Although the communication ability score of the experimental group increased after they engaged in TBL related to women’s health nursing, no significant difference from the control group was found, unlike the study by Kim [14], where students’ communication ability score increased when TBL was applied in

**Table 4.** Comparison of knowledge according to the assessment type between the two groups

Knowledge assessment type	Possible score range	Group	Posttest, mean $\pm$ SD	t	p
Short-answer	0-6	Exp (n = 45)	4.11 $\pm$ 1.51	0.91	.364
		Cont (n = 46)	3.85 $\pm$ 1.23		
Analysis-focused	0-6	Exp (n = 45)	2.33 $\pm$ 1.15	2.28	.025
		Cont (n = 46)	1.78 $\pm$ 1.15		
Problem-solving	0-3	Exp (n = 45)	2.69 $\pm$ 1.22	4.26	< .001
		Cont (n = 46)	2.02 $\pm$ 1.16		
Total	0-15	Exp (n = 45)	8.13 $\pm$ 2.26	3.18	.002
		Cont (n = 46)	6.65 $\pm$ 2.18		

Cont: Control group; Exp: experimental group.

high-risk pregnancy nursing education. Rotthoff et al. [21] stated that the communication between medical professionals can be improved through ongoing training, and according to a study by Park [22], the effect of a communication-training program was greatest with a high intervention frequency of twice a week rather than once a week, 4 to 8 training sessions, and a training period of 5 to 8 weeks. In the study by Kim [14], TBL was applied for 1 hour per week for a training period of 8 weeks. The lack of significant differences in this study may therefore be explained by the fact that there were only three sessions, which each lasted for 100 minutes. Therefore, it is necessary to develop TBL that focuses on the ability to communicate in different situations with an increased training period and frequency in the future.

In addition, TBL was effective in improving the problem-solving ability of the nursing students, which is similar to the results of previous studies [9,14,23]. In this study, TBL was applied to the following three topics: preterm labor and premature rupture of membranes, which are emergency situations associated with neonatal mortality; placenta previa and placental abruption, which are emergency situations that cause obstetric bleeding in late pregnancy; and gestational diabetes, which has been increasing recently [16]. The body of a pregnant woman goes through continuous and dynamic changes and adaptations during pregnancy, and over the course of this process, pregestational diseases worsen or new diseases occur, which lead to complications or high-risk births [24]. Following the principles of TBL, the nursing students in this study became active learners; they tried to find information on solutions for emergency nursing problems, analyzed the relevant information, and used comprehensive thinking skills [25]. Moreover, the program emphasized students' active participation in solving nursing problems that may occur in nursing field, and it was found that their problem-solving ability improved through this learning experience. This improvement in their problem-solving ability will help them re-

spond appropriately to emergency nursing problems as clinical nurses in the field, including maternity wards and delivery rooms, and support pregnant women in delivering safely.

TBL was effective in improving self-directed learning ability in this study, and this result is similar to that of a previous study in which TBL showed effectiveness in self-directed learning [23].

In this study, the students were required to participate in team activities in which they previewed the risk factors and nursing assessment method for high-risk pregnancy diseases and established nursing processes for primary nursing interventions when problems occurred. According to Jun and Ju [23], students' self-directed learning ability improves as their sense of responsibility increases through the process of solving problems related to the learning topics. Lee [13] pointed out although male students may not be interested in studying since it focuses on women, through TBL, as learner-to-learner and learner-to-professor interactions occur, and as learners participate actively in the learning process, it can serve as an opportunity for male students to increase their interest in women's health nursing. In a meta-analysis by Lee and Yang [26] of the effects of classes that applied learner-centered instruction methods such as TBL, it was also found that the effects on class-related knowledge and self-directed learning were the greatest.

Finally, the experimental group showed significant differences in nursing knowledge compared with the control group. This is similar to the results of a study by Ulfa et al. [27], where the nursing knowledge score increased when TBL was applied on the topic of nursing care for postpartum bleeding. In particular, in the present study, significant differences were found for analysis-focused and problem-solving items, rather than short-answer items. This finding suggests that TBL is effective for analysis-focused and problem-solving items which require more critical thinking. As the national nursing licensure examination is shifting from problems asking for simple knowledge toward more analysis-foc-



cused and problem-solving items [28], TBL will be helpful in improving students' academic achievement by increasing their thinking ability for problem-solving. This study is meaningful in that it applied learner-centered TBL for women's health nursing and verified its efficacy, suggesting that TBL is an effective instructional method that can help improve nursing professionals' academic achievement and enhance their competencies, such as problem-solving ability and self-directed learning ability, by increasing nursing students' knowledge of nursing for high-risk patients. In addition, TBL will help university nursing students contribute to improving women's health by enhancing the professional competencies needed in high-risk pregnancy nursing.

However, a limitation of this study is that it did not control for variables related to the instructional skills of the instructors, since the experimental group and control group were taught by different instructors. To overcome this limitation, instructors who had taught women's health nursing for a number of years taught the control group, and the two instructors managed the class with thorough discussions of the lecture plans and learning outcomes for each class topic before classes. Moreover, since this study tested the effect of TBL applied to only a single course with a limited duration and frequency (only three times), differences in communication ability could not be confirmed, which constitutes a limitation to the interpretation of the study results. Therefore, it is necessary to develop a TBL program with a higher frequency and longer duration period in the future to verify its effects conclusively.

In conclusion, TBL was an effective instructional method that can improve the knowledge, problem-solving ability, and self-directed learning ability of university nursing students for high-risk pregnancy nursing. Furthermore, TBL will be helpful for improving nurses' professional competencies for high-risk pregnancy nursing in clinical situations.

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## Authors' contributions

Conceptualization: Lee S; Formal analysis: Park HJ; Writing—original draft, Writing—review & editing: Lee S, Park HJ.

## Conflict of interest

The authors declared no conflict of interest.

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## Data availability

The dataset file is available from Harvard Dataverse at <https://doi.org/10.7910/DVN/S08F>.

## Acknowledgments

None.

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# Instructions to Authors

*Korean Journal of Women Health Nursing*

Enacted in March 1995 and most recently revised in July 2021 and applied from Vol 27, No. 3 (September 2021).

## 1. General Guidelines for Manuscript

The *Korean Journal of Women Health Nursing* is focused on women's healthy life processes or on conditions relevant to women due to greater risk or prevalence among women. It features original articles and review papers. Manuscripts for submission should be prepared according to the following instructions. The Journal follows the Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication (<http://www.icmje.org>) if not otherwise described below.

### 1-1. QUALIFICATION FOR AUTHORS AND LANGUAGE

Nurses or researchers throughout the world can submit a manuscript if the scope is appropriate for *Korean Journal of Women Health Nursing*. Manuscripts should be submitted in English or in Korean. Medical or nursing terminology should be written based on the most recent edition of Dorland's Illustrated Medical Dictionary, the most recent edition of English-Korean Korean-English Medical Terminology (<https://term.kma.org/search/list.asp>) published by the Korean Medical Association or the most recent edition of Standard Nursing Terminology published by the Korean Society of Nursing Science. Authors are required to state their affiliation and related status (job titles) upon submission, to support the reliability of the research.

### 1-2. RESEARCH AND PUBLICATION ETHICS

For the policies on research and publication ethics that are not stated in these instructions, the Good Publication Practice Guidelines for Medical Journals ([https://www.kamje.or.kr/board/view?b\\_name=bo\\_publication&bo\\_id=13&per\\_page=](https://www.kamje.or.kr/board/view?b_name=bo_publication&bo_id=13&per_page=)) or the Guidelines on Good Publication Practice (<https://publicationethics.org/guidance/Guidelines>) can be applied.

**Conflict-of-interests statement:** Authors are required to disclose commercial or similar relationships to products or companies mentioned in or related to the subject matter of the article being submitted. Sources of funding for the article should be acknowledged in a footnote on the title page. Affiliations of authors should include corporate appointments relating to or in connection with products or companies mentioned in the article, or otherwise

bearing on the subject matter thereof. Other pertinent financial relationships, such as consultancies, stock ownership or other equity interests, or patent-licensing arrangements should be disclosed to the Editor-in-Chief in the cover letter at the time of submission. Such relationships may be disclosed in the Journal at the discretion of the Editor-in-Chief in footnotes appearing on the title page. Questions about this policy should be directed to the Editor-in-Chief. If there is no conflict of interest, this should also be explicitly stated as "The author(s) declared no conflicts of interest."

**Statement of human and animal rights:** Clinical research should be done in accordance with the Ethical Principles for Medical Research Involving Human Subjects, outlined in the Declaration of Helsinki (<https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/>). Clinical studies that do not meet the Declaration of Helsinki will not be considered for publication. Research participants' rights to privacy must be protected, and personal identifiable information should not be disclosed unless absolutely necessary. Human subjects should not be identifiable, i.e., patients' names, initials, hospital numbers, dates of birth, photographs, or other protected healthcare information should not be disclosed. If such personal information is needed as scientific data for publication, this should be explained to participants (or legal guardians) and written consent must be obtained. The possibility of online information sharing (not only printed publications) must also be explained. For animal subjects, research should be performed based on the National or Institutional Guide for the Care and Use of Laboratory Animals, and the ethical treatment of all experimental animals should be maintained. For studies using literature review and meta-analysis, Institutional Review Board (IRB) approval is not required. For secondary data analysis studies, the editorial committee will decide whether IRB approval is needed.

**Statement of informed consent:** Copies of written informed consents and IRB approval for clinical research should be kept. If necessary, the editor or reviewers may request copies of these documents to resolve questions about IRB approval and study conduct.

**Authorship:** All authors, including the co-authors, should be responsible for a significant part of the manuscript. All authors and co-authors should have taken part in writing the manuscript, reviewing it, and revising its intellectual and technical content. Any author whose name appears on a paper assumes responsibility and accountability for the results.

**Originality and duplicate publication:** All submitted manuscripts should be original and should not be considered by other scientific journals for publication at the same time. Manuscripts are accepted for publication with the understanding that their contents, or their essential substance, have not been published elsewhere, except in abstract form or by the express consent of the Editors. Any part of the accepted manuscript should not be duplicated in any other scientific journal without the permission of the Editorial Board. The duplication will be checked through Similarity-Check powered by iThenticate (<https://www.crossref.org/services/similarity-check/>) before review. If duplicate publication related to the papers of this journal is detected, the authors will be announced in the journal and their institutes will be informed, and there also will be penalties for the authors. Materials taken from other sources must be accompanied by written permissions for reproduction, obtained from the original publisher. Editors should follow the procedure set out in the Committee on Publication Ethics (COPE) flowcharts (<https://publicationethics.org/resources/flowcharts-new/translations>) that are designed to help editors follow COPE's Code of Conduct and implement its advice when faced with cases of suspected misconduct.

**Secondary publication:** It is possible to republish manuscripts if the manuscripts satisfy the condition of secondary publication of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (<http://www.icmje.org>).

**Publication of master's thesis or doctoral dissertation:** When thesis or dissertation work is submitted for publication, the first author should be the thesis awardee and should declare that content is from thesis/dissertation.

### 1-3. DATA SHARING

This journal follows the data sharing policy described in "Data Sharing Statements for Clinical Trials: A Requirement of the International Committee of Medical Journal Editors (ICMJE)" (<https://doi.org/10.3346/jkms.2017.32.7.1051>). As of July 1, 2018 manuscripts submitted to ICMJE journals that report the results of interventional clinical trials must contain a data sharing state-

ment as described below. Clinical trials that begin enrolling participants on or after January 1, 2019 must include a data sharing plan in the trial's registration. The ICMJE's policy regarding trial registration is explained at <http://www.icmje.org/about-icmje/faqs/clinical-trials-registration/>. If the data sharing plan changes after registration this should be reflected in the statement submitted and published with the manuscript, and updated in the registry record. All of the authors of research articles that deal with interventional clinical trials must submit data sharing plan of example 1 to 4 in **Table 1**. Based on the degree of sharing plan, authors should deposit their data after de-identification and report the digital object identifier (DOI) of the data and the registered site.

### 1-4. PEER REVIEW PROCESS

All contributions (including solicited articles) are critically reviewed by the editorial board members, and/or reviewers. If the manuscript does not fit the aims and scope of the Journal or does not adhere to the Instructions to Authors, it may be returned to the author immediately after receipt and without a review. Before reviewing, all submitted manuscripts are inspected by Similarity-Check powered by iThenticate (<https://www.crossref.org/services/similarity-check/>), a plagiarism-screening tool. Reviewers' comments are usually returned to authors. The decision of the editor is final. Manuscripts are sent simultaneously to two reviewers for double blinded peer review. A third reviewer will be assigned if there is discrepancy. Authors will receive notification of the publication decision, along with copies of the reviews and instruction for revision, if appropriate, within two months after receipt of the submission.

**Final revised manuscript:** A final version of the accepted manuscript should be submitted on the web. If aspects of the research are reported elsewhere, include a copy of the publication(s). Include all main manuscript material in one file (with exception of title page). Save your file as MS Word. Failure to resubmit the revised manuscript within two weeks of the editorial decision is regarded as a withdrawal and will be treated as a new submission if submitted again later.

**Peer review process for handling submissions from editors, employees, or members of the editorial board:** All manuscripts from editors, employees, or members of the editorial board are processed same to other unsolicited manuscripts. During the review process, submitters will not engage in the selection of reviewers and decision process. Editors will not handle their own manuscripts if they are commissioned ones.

**Table 1.** Examples of data sharing statements that fulfill the requirements of the International Committee of Medical Journal Editors.

Element	Example 1	Example 2	Example 3	Example 4
Will individual participant data be available (including data dictionaries)?	Yes	Yes	Yes	Yes
What data in particular will be shared?	All individual participant data collected during the trial, after deidentification.	Individual participant data that underlie the results reported in this article, after deidentification (text, tables, figures, and appendices).	Individual participant data that underlie the results reported in this article, after deidentification (text, tables, figures, and appendices).	Not available
What other documents will be available?	Study protocol, statistical analysis plan, informed consent form, clinical study report, analytic code	Study protocol, statistical analysis plan, analytic code	Study protocol	Not available
When will data be available (start and end dates)?	Immediately following publication. No end date.	Beginning at 3 months and ending at 5 years following the article publication.	Beginning at 9 months and ending at 36 months following the article publication.	Not applicable
With whom?	Anyone who wishes to access the data.	Researchers who provide a methodologically sound proposal.	Investigators whose proposed use of the data has been approved by an independent review committee ("learned intermediary") identified for this purpose.	Not applicable
For what types of analyses?	Any purpose	To achieve aims in the approved proposal.	For individual participant data meta-analysis.	Not applicable
By what mechanism will data be made available?	Data are available indefinitely at (link to be included).	Proposals should be directed to xxx@yyy. To gain access, data requestors will need to sign a data access agreement.	Proposals may be submitted up to 36 months following article publication. After 36 months the data will be available in our University's data warehouse but without investigator support other than deposited metadata.	Not applicable
		Data are available for 5 years at a third-party website (link to be included).	Information regarding submitting proposals and accessing data may be found at (link to be provided).	

### 1-5. COPYRIGHTS AND CREATIVE COMMONS ATTRIBUTION NON-COMMERCIAL LICENSE

The author will also be asked to confirm that the material has not been published or submitted for publication elsewhere. All material published in the Journal will be copyrighted by Korean Society of Women Health Nursing. This is an Open Access journal distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### 1-6. ELECTRONIC SUBMISSION OF MANUSCRIPT

Authors are requested to submit their papers electronically through the online manuscript management system (<http://submit.kjwhn.org>). Once a manuscript has been submitted, the order and number of authors should not change. Any inquiries on the submitted manuscript should be made to the editorial office.

Please read all instructions before submitting.

Be prepared to enter:

- The full title of the article.
- The full names and institutional affiliations of all authors, and the name (with complete address, phone number, and e-mail) to whom correspondence should be directed.
- A running title of no more than 45 characters (including spaces).
- A structured abstract of no more than 250 words, stating purpose, methods, results (including the sample size), and conclusion drawn from the study.
- Up to five keywords (MeSH terms, in alphabetical order).

### 1-7. COPYRIGHT TRANSFER FORM AND FORM OF CONFLICTS OF INTEREST

Copyright Transfer Agreement form and form of Conflicts of interest should be submitted online at submission. Manuscripts cannot be published without this form.

### 1-8. ARTICLE PROCESSING CHARGES AND REPRINTS

Upon acceptance, an article processing charge (APC) of 400 USD (approximately 400,000 Korean Won) per article is requested to the corresponding author. Further information can be found at

[https://kjwhn.org/authors/processing\\_charge.php](https://kjwhn.org/authors/processing_charge.php).

### 1-9. SUBSCRIPTION

The full text is freely available from the website (<https://kjwhn.org>) according to the Creative Commons License (<https://creativecommons.org/licenses/by/4.0/>). Print copies can be dispatched to members of the Korean Society of Women Health Nursing and libraries world- wide upon the policy of the Society. Those who wish to receive copies and obtain further information should contact the office of the Society (<http://www.women-health-nursing.or.kr>).

### 1-10. CONTACT US

Any inquiries regarding suitability of manuscripts according to the aims and scope of the Journal, submission, review, publication, or journal-related issues are welcomed. Please contact the Editorial Office ([kjwhn@kjwhn.org](mailto:kjwhn@kjwhn.org)).

For manuscript submission, please visit:  
<http://submit-kjwhn.org>

## 2. Publication Type and Manuscript Preparation

### 2-1. WRITING MANUSCRIPTS

All manuscripts must be prepared in accordance with the “Uniform Requirements for Manuscripts Submitted to Biomedical Journals” available at <http://www.icmje.org>. Manuscripts are accepted for publication with the understanding that their contents, or their essential substance, have not been published elsewhere, except in abstract form or by the express consent of the Editors. Materials taken from other sources must be accompanied by written permissions for reproduction, obtained from the original publisher. Statistical methods should be identified. Priority claims are discouraged. All materials must be written in clear, appropriate English using Microsoft Word (doc or docx). Each page must be numbered at the lower central portion. Number pages consecutively.

### 2-2. TITLE PAGE

On the title page include title (only capitalize first letter of the first word); subtitle (if any); running title, first name, middle initial, and last names of each author, ORCID number (required for all authors), name of department(s) and institution(s) to which the work should be attributed. The address, phone number, and email of the person responsible for correspondence concerning the manuscripts should be listed separately and clearly labeled as such. List keywords and present authors’ contributions. The jour-

nal does not limit first author status to only one person, in cases where equal contribution is evident. Describe contributions, such as the following:

#### *Example 1:*

Conceptualization: Piao H, Kim MH; Formal analysis: Piao H, Kim MH, Cui M, Choi G; Writing–original draft: Piao H, Kim MH; Writing–review & editing: Piao H, Choy JH.

#### *Example 2:* All work was done by Jeong GH.

Also, describe conflicts of interest, funding, data availability, and acknowledgements (acknowledge only those people and their institutions that have made significant contributions to the study). If applicable, state disclaimers, such as whether manuscript was adapted from thesis/dissertation.

The title page must be submitted separately from the manuscript. A template is available online (<https://www.kjwhn.org/authors/authors.php>).

### 2-3. MAIN MANUSCRIPT

Organize the main manuscript in the following order; title, abstract and keywords, summary statement, text, references, tables, figures, and pictures.

#### Original articles

##### Abstract and Keywords

An abstract of no more than 250 words should be typed double-spaced on a separate page. It should cover the main factual points, according to the following subheadings: Purpose, Methods, Results, and Conclusion. The abstract should be accompanied by a list of up to five keywords for indexing purposes. Be very specific in your word choice. Use MeSH keywords (<http://www.nlm.nih.gov/mesh/meshhome.html>). and present keywords in alphabetical order.

##### Summary Statement

Following the abstract, describe a summary statement on a separate page according to the following subheadings, with 30 words or less under each subtitle.

- What is already known about this topic?

*Example:* The 75 years and older age group, with its complex health needs, is likely to make up an increasing proportion of the workload of accident and emergency strain the coming years.

- What this paper adds

*Example:* An alcohol-based surgical hand rub is more effective than a 6-minute surgical hand scrub using 4% chlorhexidine gluconate in terms of microbial counts immediately after scrubbing.

- Implications for practice, education and/or policy

*Example:* Parents' ability and willingness to participate in their child's care in the hospital should be thoroughly assessed and their participation needs to be supported.

### Main Text

Maximum word count should be within 5,000 words, although less is preferred, excluding tables, figures, and references. The manuscript should be written on A4 sized paper, in Times New Roman 12-point font, double-spaced and have margins of at least one inch (2.54 cm). In general, the text should be organized under the following headings: Introduction, Methods, Results, and Discussion.

**Introduction:** Clearly state the need of this study and main question or hypothesis of this study. Summarize the literature review or background in the area of the study.

**Methods:** Present an "Ethics statement" immediately after the heading "Methods" in a boxed format.

*Example 1:*

**Ethics statement:** This study was approved by the Institutional Review Board of XXXX University (IRB-201903-0002-01). Informed consent was obtained from the participants.

*Example 2:*

**Ethics statement:** Obtaining informed consent was exempted by the Institutional Review Board (IRB) of YYYY University (IRB-201903-0002-01) because there was no sensitive information and the survey was anonymously treated.

Describe the study design, setting and samples, and measurements, procedure, analysis used. Authors are encouraged to describe the study according to the reporting guidelines relevant to their specific research design, such as those outlined by the EQUATOR Network (<http://www.equator-network.org/home/>) and the United States National Institutes of Health/ National Library of Medicine ([http://www.nlm.nih.gov/services/research\\_report\\_guide.html](http://www.nlm.nih.gov/services/research_report_guide.html)).

Ensure correct use of the terms sex (when reporting biological factors) and gender (identity, psychosocial or cultural factors), and, unless inappropriate, report the sex or gender of study par-

ticipants, the sex of animals or cells, and describe the methods used to determine sex or gender. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., ovarian cancer). Authors should define how they determined race or ethnicity and justify their relevance.

**Results:** Describe the main results in a concise paragraph. This section should be the most descriptive. Note levels of statistical significance and confidence intervals where appropriate.

**Discussion:** Make discussions based only on the reported results. Describe conclusions and recommendations for further study needed. Do not summarize the study results.

**Abbreviations:** Use standard abbreviations and units recommended in the publication manual of the to the NLM Style Guide for Authors, Editors, and Publishers (2007), 2nd ed., National Library of Medicine, Bethesda, MD, USA (<http://www.nlm.nih.gov/citingmedicine>). Non-standard abbreviations should be defined the first time they appear in the text. At first usage, spell out terms and give abbreviations in parentheses. Thereafter, use only abbreviations. It is not necessary to spell out standard units of measure, even at first usage.

### Review article

An invited review will be published on an interesting or a new topic. Also submitted reviews are welcomed on any field according to the aims and scope, including systematic review and meta-analysis, scoping reviews, and integrative reviews. The main text is composed of introduction, methods, results, and discussion. There is no limit to the total number of references for a review article. The word count for the main text should be within 8,000 words.

### Invited paper

It is a commissioned article for specific purpose only with request base. The topics were discussed between editors and authors before submission. The main text is composed of 3 sections: introduction, text, and conclusion. The total number of references article is recommended to be equal to or less than 30. The word count for the main text should be within 8,000. An abstract is optional and is limited to 250 words.

### Issues and perspectives

Issues and Perspectives is usually an invited short article, which deals with the present hot issues in women's health nursing, al-

though not limited to this field. Authors of general interest to nursing and health care are also invited. Its format consists of introduction, main content, and conclusion. Length of the main text is limited to 2,000 words and keywords are limited to 5, preferably in MeSH terms. Number of references is limited to 20 and figures and tables are limited to 10 in total.

### Special essay

It is a commissioned publication type for the presentation of experiences in nursing or health field. Authors are invited by the editor-in-chief. Topics are discussed upon request. There is no specific format.

### Editorials

An editorial is usually invited by the Editorial Board. It provides the brief review and comments on pressing developments and events in the field of women's health nursing. It also may deal with a change in the journal's style and format and communication with an outside organization or professional. Other various topics shall be dealt by the Editorial Board as deemed appropriate. Divisions in the body of an editorial are not required. The total number of references is recommended to be equal to or less than 10. The word count of the main text should be less than 2,500 words.

### Letter to the editor

Any opinion or inquiry on a paper published can be addressed to the editor. Title, author, affiliation, main text and the references are the required sections. The total number of references is recommended to be less than 10. The word count of main text should be equal to or less than 1,000 words.

### In reply

As the reply to "Letter to the editor" its format is same to the "Letter to the editorial" and will be published simultaneously.

### 2-4. References

In the text, references should be cited with Arabic numerals in brackets (e.g. [1]), numbered in the order cited.

In the references section, the references should be numbered in order of appearance in the text and listed in English citation form.

Journal titles should be described in NLM style.

References within the past 5 years are encouraged, and unpublished PhD or master's thesis are not recommended as reference.

Other types of references not described below should follow the NLM Style Guide for Authors, Editors, and Publishers (<http://www.nlm.nih.gov/citingmedicine>). There are no limits to the number of references. However, limit supporting citations in text to 1-2 per statement. Note the DOI in URL form, if available.

#### *Journal article with up to six authors:*

Chung CW, Hwang EK, Hwang SW. Details of lymphedema, upper limb morbidity, and self- management in women after breast cancer treatment. *Korean J Women Health Nurs*. 2011;17(5):474-483. <https://doi.org/10.4069/kjwhn.2011.17.5.58>

#### *Journal article with more than six authors:*

Hong GH, Koh HJ, Kim KS, Kim SH, Kim JH, Park HS, et al. A survey on health management of during pregnancy, childbirth, and the postpartum of immigrant women in a multi-cultural family. *Korean J Women Health Nurs*. 2009;15(4):261-269. <https://doi.org/10.4069/kjwhn.2009.15.4.65>

#### *Book:*

Davidson MR, London ML, Wieland Ladewig PA. *Olds' maternal-newborn nursing and women's health across the lifespan*. 8th ed. Upper Saddle River, NJ: Pearson Prentice Hall; 2008. p. 20- 25.

#### *Book Chapter:*

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in

**Table 2.** Recommended maximums for articles submitted to the *Korean Journal of Women Health Nursing*

Publication type	Abstract (word count)	Text (word count) <sup>a)</sup>	References	Tables & figures	Invited or unsolicited
Original articles	250	5,000	No limit	6	Unsolicited
Review articles	250	8,000	No limit	6	Invited or unsolicited
Invited papers	Optional (250)	8,000	30	10	Invited
Issues and Perspectives	None	2,000	20	10	Invited
Special essays	None	3,000	20	10	Invited
Editorials	None	2,500	10	5	Invited
Letter to the editor	None	1,000	10	3	Unsolicited
In reply	None	1,000	10	3	Invited

<sup>a)</sup>Maximum number of words excludes the abstract, references, tables, and figure legends

Above limitations are negotiable. If more word count or number of figures and tables are required, authors can contact the editor-in-chief.



human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York, NY: McGraw-Hill; 2002. p. 93-113.

**Unpublished thesis or dissertation:**

Chang YE. The analysis of the association factors which influence on the breast and cervix cancer screening in Korean women: Based on the 2005 Korean national examination health and nutrition survey [master's thesis]. Seoul: Korea University; 2010. 55 p.

Lee SK. The effects of group coaching on emotional intelligence and self-efficacy of nurses [dissertation]. Seoul: Yonsei University; 2007. 85 p.

**Web reference:**

Statistics Korea. 2010 life tables for Korea [Internet]. Seoul: Author; 2011 [cited 2012 Jan 16]. Available from: [http://kostat.go.kr/portal/korea/kor\\_nw/3/index.board?bmode=read&a-Seq=252533](http://kostat.go.kr/portal/korea/kor_nw/3/index.board?bmode=read&a-Seq=252533)

## 2-5. Tables/Figures/Pictures

Each table, figure, and picture should be placed on a separate sheet. Number tables consecutively and supply a brief title at the top for each. Footnotes to tables should be indicated by superscript symbols (†, ‡, §, ||, ¶, #, ††, ‡‡...) unless abbreviations are explained in which case superscripts are not required. All abbreviations used should be described in table footnote by writing the abbreviation followed by colon sign and definition, placed in alphabetical order.

Tables and figures are printed only when they express more than can be done by words in the same amount of space.

Do NOT indicate placement of tables of figures in the text. The editor will automatically place your tables and figures.

## 3. How The Journal Handles Complaints and Appeals

The policy of *Korean Journal of Women Health Nursing* is primar-

ily aimed at protecting the authors, reviewers, editors, and the publisher of the journal. If not described below, the process of handling complaints and appeals follows the COPE guidelines available from: <https://publicationethics.org/appeals>

### **Who complains or makes an appeal?**

Submitters, authors, reviewers, and readers may register complaints and appeals in a variety of cases as follows: Falsification, fabrication, plagiarism, duplicate publication, authorship dispute, conflicts of interest, ethical treatment of animals, informed consent, bias or unfair/inappropriate competitive acts, copyright, stolen data, defamation, and legal problem. If any individuals or institutions want to inform the cases, they can send a letter via the contact page on our website (<https://kjwhn.org/about/contact.php>). For the complaints or appeals, concrete data with answers to all factual questions (who, when, where, what, how, why) should be provided.

### **Who is responsible for resolving and handling complaints and appeals?**

The Editor, Editorial Board, or Editorial Office is responsible for them. A legal consultant or ethics editor may be able to help with decision making.

### **What may be the consequence of the remedy?**

It depends on the type or degree of misconduct. The consequence of resolution will follow the guidelines of COPE.

## 4. Direct Marketing

Journal propagation has been done through the journal website and distribution of an introduction pamphlet. Invitations to submit a manuscript are usually focused on the presenters at conferences, seminars, or workshops if the topic is related to the journal's aims and scope.