Report

Nursing Students' Attitudes Towards Nursing Process / Diagnosis Instruction Across a Multi-Year Academic Curriculum

複数学年開講科目における看護過程・看護診断に対する 看護学生の態度に基づく看護過程・看護診断教育の課題

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Abstract

We performed a cross-sectional analysis of nursing students' attitudes towards a curriculum that continuously incorporated opportunities to study the nursing process and nursing diagnosis (through lectures and unfolding case study practicums) from year 1 to the first semester of year 3 of their studies, and, having identified those attitudes, we investigated how best to educate students on these topics. Specifically, we determined nursing students' awareness, self-assessed learning attainment, difficulties, and preparedness regarding the nursing process/nursing diagnosis, and then analyzed the associations between these constructs in order to determine the current state of instructional content. A self-administered anonymous questionnaire study was carried out a total of four times: once after the introductory course for first-year students (Group 1), once each before and after the intermediate course for second-year students (Groups 2 and 3), and once after the applied course for third-year students (Group 4). We determined nursing students' actual level of awareness, self-assessed learning attainment, self-assessed difficulties in studying, and preparedness regarding the nursing process/nursing diagnosis. Then, we analyzed the correlations among these measures.

Regarding awareness, significantly greater percentages of respondents responded to items in such a way as to indicate that they were highly aware of the nursing process/nursing diagnosis in Groups 1 and 3 than in Groups 2 and 4. In Group 4, a significant positive correlation was found between preparedness and self-assessment. The poor awareness rate in Group 2 suggests that although learning about the nursing process and nursing diagnosis at a stage in which understanding remains at a purely theoretical level can boost student awareness, the effect is not long lasting. The results suggest that introducing nursing diagnosis while students are still learning about the nursing process might confuse them, thus pointing to the need for better integrated education of the nursing process and nursing diagnosis.

要　　旨

　本研究では、1 年から 3 年までの複数学年で開講される看護過程・看護診断教育の中での看護学生の看護過程・看護診断に対する態度についての横断的な分析を行い、教育のあり方を検討した。具体的には、(1) 看護過程・看護診断に対する認識、(2) 学習到達度自己評価、(3) 学習上の困難感、(4) 準備状態の観点から明らかにした。

その結果、初級編後で認識は高まるが、その後に認識や自己評価が低下していた。中級編学習後では、看護ケアの視点で意義を認識している傾向が見られた。到達度自己評価では、中級編前や看護診断学習後では低い傾向であった。自己評価と認識等との関連性では、看護診断学習後で到達できたと自己評価した学生の方が看護診断の意義について認識している傾向があった。看護診断学習後で自己評価と認識の間に関連性が示されており、達成感を維持し、初期より連続性を維持した継続的カリキュラム構成とする必要性が示唆された。

I Background

Nursing diagnosis has been incorporated into the basic nursing education curriculum in most or some subjects (Kuroda et al., 2001), with most institutions teaching nursing diagnosis in some form as part of the nursing process. However, instructional content differs between educational institutions, suggesting that each institution is engaged in its own process of trial and error in educating students about the nursing process and nursing diagnosis (Takamura & Hirota, 2013). Consistent efforts and understanding from teaching staff are required to develop an integrated curriculum that continuously incorporates opportunities to study the nursing process and nursing diagnosis throughout the four years of basic nursing education (Kodaira, 2015). The trial to analyze the planning for the teaching of the methodological foundations of the nursing processes is also reported (Leadebal, et al., 2010). However, it is unclear regarding how "nursing diagnosis" places within the general concept of "the nursing process," and whether "nursing diagnosis" should be taught from the outset of nursing education. To clarify this, the impacts and challenges of continuous instruction of the nursing process and nursing diagnosis must be examined over several academic years.

Attitudes towards nursing diagnosis can be changed through training and educational programs aimed at familiarizing even registered nurses with the topic (Romero-Sánchez et al., 2013). A study on education and attitude shows that carrying out continuing nursing education for nurses can improve their attitudes toward and accuracy of nursing diagnosis (Collins, 2013). However, no study has conducted detailed examination of the curriculum content and the attitude and awareness of nursing students toward nursing diagnosis. A recent study showed different challenges in performing the nursing process such as intangible understanding of the meaning of nursing process, difference in attitudes toward the nursing process, and lack of awareness (Zamanzadeh, et al., 2015). Therefore, we evaluated the educational curriculum with a focus on the attitudes of nursing students towards education on the nursing process and nursing diagnosis. "Attitude" was based on Allport's definition (1935)―"a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon an individual's response to all objects and situations with which it is related." (p. 810). Allport proposed that attitude comprises various components (e.g., mental readiness/behavioral preparedness and acquired dispositions, or tendencies systemized via experience). We considered nursing students' attitudes towards learning about the nursing process and nursing diagnosis together, and specified the following as acquired dispositions of this attitude：awareness, self-assessed learning attainment, and self-assessed difficulties in relation to learning about the nursing process/nursing diagnosis. We also included preparedness for the nursing process/nursing diagnosis, with a similar meaning as Allport's concepts of mental readiness/behavioral preparedness (Figure 1).

II Objective

We performed a cross-sectional analysis of nursing student attitudes towards a curriculum that continuously incorporates opportunities to study the nursing process and nursing diagnosis (through lectures and unfolding case study practicums) from year 1 to the first semester of year 3 of their studies; having identified those attitudes, we aimed to clarify how best to instruct students on the nursing process and nursing diagnosis. Specifically, we compared the actual states of (1) awareness, (2) self-assessed learning attainment, (3) self-assessed difficulties in learning, and (4) preparedness regarding the nursing process/nursing diagnosis among first- to third-year
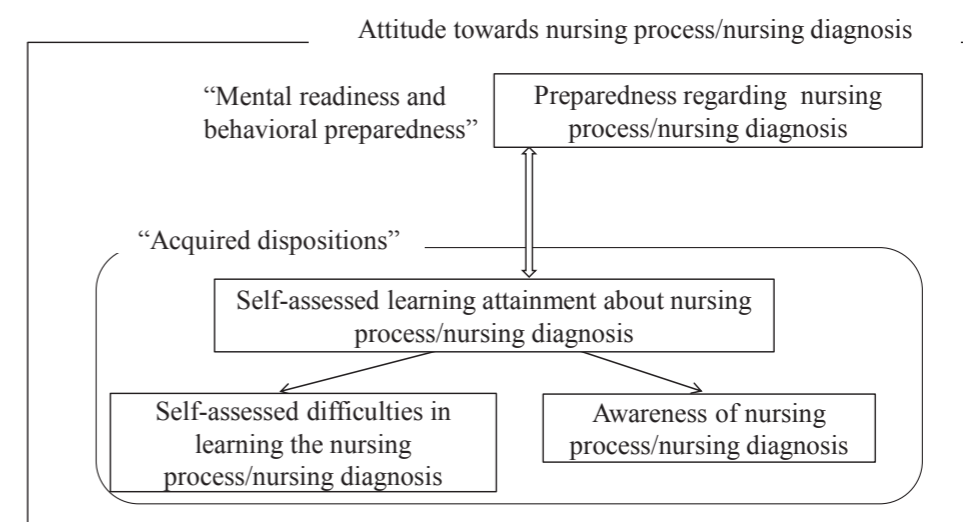

Figure 1 Diagram of nursing students' attitude towards nursing process/nursing diagnosis

students, and identified trends in each year of study. We also analyzed the associations between these constructs to clarify the current state of instructional content.

III Methods

1. Definition

Drawing on Allport's (1935) definition and components, we defined the attitude of nursing students toward the nursing process/nursing diagnosis as follows: "a state of preparedness, which includes acquired dispositions as well as mental readiness and behavioral preparedness, to deploy the practical knowledge of the nursing process/nursing diagnosis formed after studying these topics."

2. Subjects

Subjects were 90 first-year, 101 second-year, and 88 third-year nursing students at a university in Japan, who provided written consent to participate after hearing about the study purpose and content from.

3. Current Instructional Content

The nursing process/nursing diagnosis was taught in a phased manner from the first semester of year 1 to the first semester of year 3. In the first semester of year 1 (General Theory of Nursing), the significance and general overviews of the nursing process were taught. In the second semester, in the introductory course Basic Nursing Skill Practice I (in-school education), which includes both basic review of the nursing process and unfolding case studies of paper patients, students experienced the processes of information-gathering, data analysis, and identification of nursing problems in elementary case studies. In the second semester of year 2, the paper patients were again used for deploying the nursing process in unfolding case studies from assessment to planning. In Basic Nursing Practice II (a two-week clinical practice course), with the thought processes learned from deploying the nursing process in unfolding case studies as foundations, students actually broke down and evaluated assistance plans for daily life assistance skills. The main content for Basic Nursing Practice II is support for daily life, with a focus on nursing issues, which show the need and ground for support. Subsequently, in the Nursing Diagnostics Practicum, a two-unit university-based practice course taught during the first semester of year 3, students were lectured on nursing diagnosis concepts and the diagnostic process as well as the connection of these concepts to related theories, and concluded the course by utilizing nursing diagnosis in unfolding case studies (Figure 2).

4. Data Collection

Following a previous study in Turkey (Yönt, Khorshid, & Eser, 2009), we devised and implemented a 50-item self-administered anonymous questionnaire. Each item is rated on a five-point scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). The questionnaire study was carried out a total of four times between October 18, 2011 and February
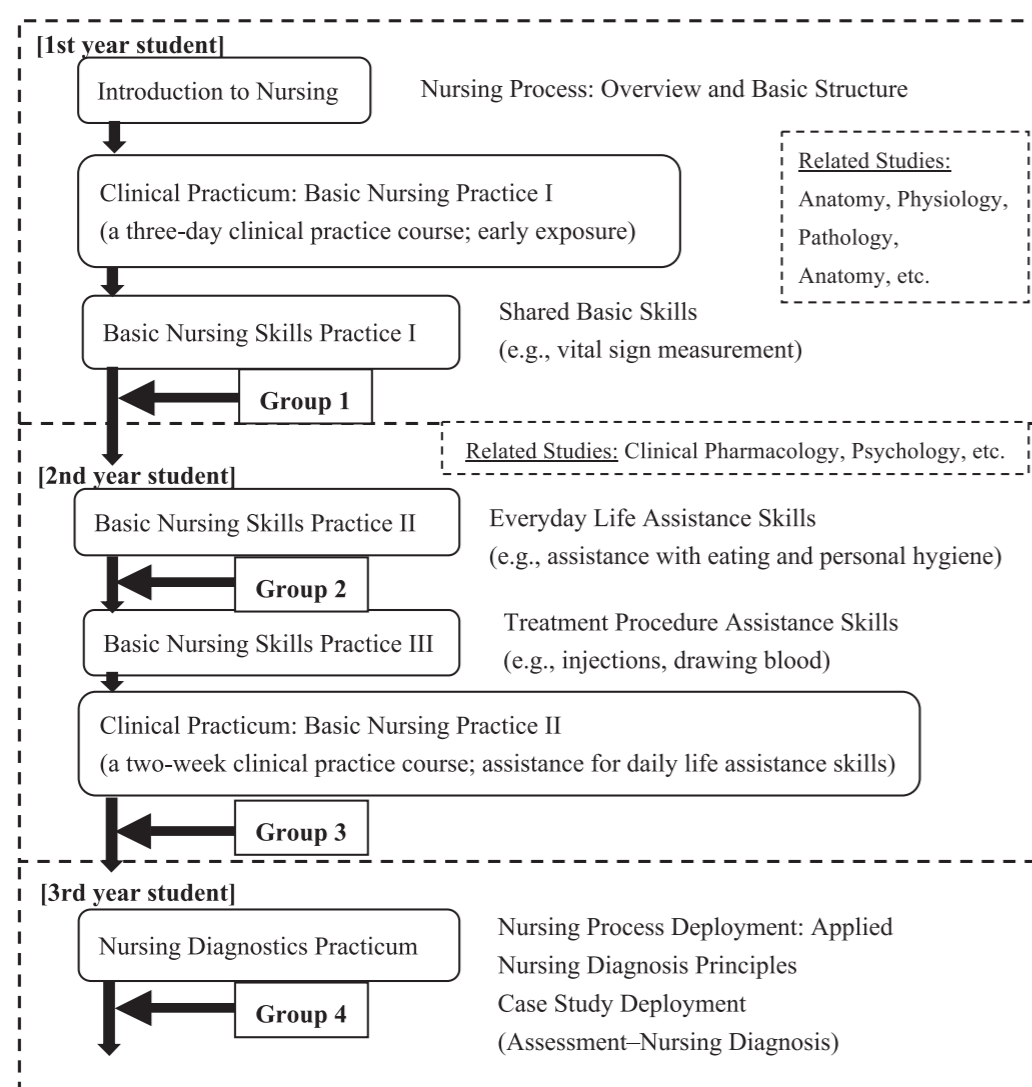
Figure 2 Current instructional content on nursing process and study period

29, 2012： Group 1 was carried out after the Basic Nursing Skills Practice I in the second semester of year 1; Group 2 before the start of the Basic Nursing Skills Practice III; Group 3 after the Basic Nursing Practice II; and Group 4 at the end of the Nursing Diagnostics Practicum.

For questionnaire distribution and collection, a researcher who was not the main course instructor explained matters such as how participation in the study must be voluntary, and that respondents should deposit their questionnaires into a collection box that could not be seen by the individual teaching the classes.

5. Analytical Methods

The data were analyzed using SPSS version 19.0 (SPSS, Tokyo, Japan). χ^2 test was used to compare awareness, self-assessed learning attainment, self-assessed challenges, and preparedness regarding the nursing process/nursing diagnosis of the four groups. Spearman's rank correlation coefficient was used to determine the associations between awareness, self-assessed learning attainment, self-assessed challenges, and preparedness regarding the nursing process/ nursing diagnosis. For all analyses, $p < .05$ was considered statistically significant.

6. Ethical Considerations

Before the study, a researcher who was not the main course instructor provided an explanation, both verbally and in writing, of the study's objectives, content, personal data privacy policy, necessity of voluntary participation, and the fact that participation would have absolutely no bearing on their grades. This study was reviewed and approved by the Ethics Committee of Senri Kinran University (No. 44).

IV Results

The analysis sets in this study were as follows： 78 students responded to Group 1 (response rate 87.8%, valid response rate 98.7%), 99 to Group 2 (response rate 98.0%, valid response rate 100%), 45 to Group 3 (response rate 47.5%, valid response rate 93.8%), and 67 to Group 4 (response rate 79.5%, valid response rate 95.7%).

1. Awareness

For all groups, 70–90% of respondents selected either 4 ("strongly agree") or 5 ("completely agree") as their response to the item, "nursing should prioritize the nursing process." For the items regarding the use of and need to record nursing problems/diagnoses, we noted significant differences between the four groups ($p < .01$ or $p < .05$). Specifically, 25.6%, 1.0%, 35.6%, and 7.5% of Groups 1, 2, 3, and 4, respectively, responded with "completely agree" to the item, "identifying nursing problems/diagnoses develops nursing practice." Furthermore, 29.5%, 23.3%, 37.8%, and 6.0% of Groups 1, 2, 3, and 4, respectively, gave this response to "identifying nursing problems is useful for providing patient-centered nursing care." In Group 3, there was a higher number of respondents indicating agreement with items related to making decisions on nursing problems. However, in Group 2, few participants overall expressed strong agreement with any of the items.

2. Self-Assessed Learning Attainment

For the items on self-assessed learning attainment, we noted significant differences between the four groups ($p < .01$). Specifically, 24.3%, 8.1%, 44.4%, and 19.4% of Groups 1, 2, 3, and 4, respectively, gave ratings of 4 or 5 to the item, "gathering information from databases." Furthermore, 22.5%, 10.1%, 31.1%, and 16.4% of Groups 1, 2, 3, and 4, respectively, gave ratings of 4 or 5 to the item, "determining the relevance of the information gathered," while 30.8%, 9.1%, 37.8%, and 7.5% gave these ratings to "assessing the mental state of patients and their families." For the item, "understanding the values and beliefs of patients and their families," 24.4%, 10.1%, 24.4%, and 6.0% of Groups 1, 2, 3, and 4 gave ratings of 4

or 5, respectively, while 26.9%, 5.1%, 26.7%, and 9.0% gave these ratings to the item of "distinguishing problems that specifically concern nurses" (Table 1).

3. Self-Assessed Difficulties in Learning

As shown in Figure 3, there were significant differences between the four groups ($p < .01$) in the items reflecting self-assessed difficulties in learning. Specifically, for the item, "dealing with learning topics within the time available," 30.8%, 51.5%, 62.2%, and 76.1% of Groups 1, 2, 3, and 4 gave ratings of 4 or 5, respectively. Furthermore, 26.9%, 40.4%, 44.4%, and 74.7% of Groups 1, 2, 3, and 4 gave these ratings to the item, "understanding the nursing process/ nursing diagnostic terminology," respectively. The item "documenting assessment details" was selected by 76.8%, 76.8%, 44.5%, and 73.1% of Groups 1, 2, 3, and 4, respectively, while the item of "creating relationship diagrams based on pathophysiology" was selected by 29.5%, 57.6%, 44.5%, and 61.2% of the groups, respectively. Finally, the items, "basic knowledge required to understand case studies," and "preparing related reference materials" were selected by 48.7%, 75.8%, 75.6%, and 73.1% and 44.9%, 76.8%, 44.5%, and 73.1% of Groups 1, 2, 3, and 4, respectively.

4. Preparedness

For the items on preparedness regarding the nursing process/nursing diagnosis, we noted significant differences between the four groups ($p < .01$ or $p < .05$). Again, looking at the items for which respondents gave ratings of 4 or 5, we found that "I am intellectually equipped to make decisions on nursing problems/ nursing diagnosis" was selected by 29.5%, 3.0%, 26.7%, and 25.4% of Groups 1, 2, 3, and 4. Furthermore, 35.9%, 8.1%, 51.1%, and 32.8% of Groups 1, 2, 3, and 4 selected "I am mentally prepared to make decisions on nursing problems/nursing diagnosis," while 38.5%, 7.1%, 44.4%, and 20.9% of the groups selected "understanding the nature of the nursing process."

5. Associations Between Variables

Self-assessed learning attainment and awareness. There were few significant correlations between items of self-assessed learning attainment and awareness in

Table 1 Responses to the Items on the Self-Assessment of Learning Attainment Regarding the Nursing Process/Nursing Diagnosis

		Group 1 (n = 78)		Group 2 (n = 99)		Group 3 (n = 45)		Group 4 (n = 67)		χ^2
		n	(%)	n	(%)	n	(%)	n	(%)	p
Gathering information from databases	Disagree[a]	10	(12.8)	33	(33.3)	5	(11.1)	14	(20.9)	
	Somewhat agree	49	(62.8)	58	(58.6)	20	(44.4)	40	(59.7)	33.628
	Agree[b]	19	(24.3)	8	(8.1)	20	(44.4)	13	(19.4)	< .001
Assessing a patient's level of growth and development	Disagree[a]	16	(20.5)	50	(50.6)	4	(8.9)	21	(31.4)	
	Somewhat agree	39	(50.0)	38	(38.4)	32	(71.1)	38	(56.7)	37.745
	Agree[b]	23	(29.5)	11	(11.1)	9	(20.0)	8	(11.9)	< .001
Assessing a patient's social and household roles	Disagree[a]	12	(15.4)	41	(41.4)	7	(15.6)	16	(23.9)	
	Somewhat agree	45	(57.7)	47	(47.5)	22	(48.9)	43	(64.2)	30.492
	Agree[b]	21	(26.9)	11	(11.1)	16	(35.6)	8	(11.9)	< .001
Gathering information on daily living habits by comparing data before and after admission	Disagree[a]	11	(14.1)	35	(35.3)	7	(15.6)	21	(31.4)	
	Somewhat agree	44	(56.4)	54	(54.5)	20	(44.4)	39	(58.2)	31.746
	Agree[b]	23	(29.5)	10	(10.1)	18	(40.0)	7	(10.4)	< .001
Gathering information on pathophysiology, symptoms, and treatment	Disagree[a]	11	(14.1)	41	(41.4)	4	(8.9)	20	(29.9)	
	Somewhat agree	50	(64.1)	44	(44.5)	17	(37.8)	36	(53.7)	46.484
	Agree[b]	17	(21.8)	14	(14.1)	24	(53.3)	11	(17.4)	< .001
Assigning meaning to the information gathered	Disagree[a]	23	(29.4)	58	(58.6)	10	(22.2)	30	(44.8)	
	Somewhat agree	34	(43.7)	35	(35.4)	22	(48.9)	26	(38.8)	30.024
	Agree[b]	21	(26.9)	6	(6.1)	13	(28.9)	11	(16.4)	< .001
Determining the relevance of the information gathered	Disagree[a]	26	(33.3)	71	(71.7)	8	(17.8)	30	(44.8)	
	Somewhat agree	34	(43.6)	18	(18.2)	23	(51.1)	26	(38.8)	49.407
	Agree[b]	18	(22.5)	10	(10.1)	14	(31.1)	11	(16.4)	< .001
Utilizing overall/relationship diagrams	Disagree[a]	21	(26.9)	72	(72.8)	2	(4.4)	22	(32.8)	
	Somewhat agree	41	(52.6)	20	(20.2)	24	(53.3)	33	(49.3)	80.856
	Agree[b]	16	(20.5)	7	(7.1)	19	(42.2)	12	(17.9)	< .001
Addressing assessed problems	Disagree[a]	27	(34.6)	69	(69.7)	8	(17.8)	31	(46.3)	
	Somewhat agree	33	(42.3)	25	(25.3)	29	(64.4)	28	(41.8)	45.301
	Agree[b]	18	(23.0)	5	(5.1)	8	(17.8)	8	(11.9)	< .001
Assessing living context based on household/social roles	Disagree[a]	18	(23.0)	50	(50.5)	10	(22.2)	28	(41.8)	
	Somewhat agree	37	(47.4)	41	(41.4)	19	(42.2)	32	(47.8)	32.825
	Agree[b]	23	(29.5)	8	(8.1)	16	(35.6)	7	(10.4)	< .001
Assessing the mental state of patients and their families	Disagree[a]	14	(18.0)	47	(47.5)	5	(11.1)	24	(35.8)	
	Somewhat agree	40	(51.3)	43	(43.4)	23	(51.1)	38	(56.7)	44.416
	Agree[b]	24	(30.8)	9	(9.1)	17	(37.8)	5	(7.5)	< .001
Understanding the values and beliefs of patients and their families	Disagree[a]	20	(25.6)	55	(55.6)	11	(24.4)	31	(46.3)	
	Somewhat agree	39	(50.0)	34	(34.8)	23	(51.1)	32	(47.8)	28.917
	Agree[b]	19	(24.4)	10	(10.1)	11	(24.4)	4	(6.0)	< .001
Describing evidence-based nursing problems/diagnosis	Disagree[a]	24	(30.7)	66	(66.7)	5	(11.1)	26	(38.8)	
	Somewhat agree	38	(48.7)	26	(26.3)	22	(48.9)	32	(32.0)	55.427
	Agree[b]	16	(20.5)	7	(7.1)	18	(40.0)	9	(13.4)	< .001
Distinguishing between overt and latent problems	Disagree[a]	23	(29.5)	65	(65.7)	9	(20.0)	27	(40.3)	
	Somewhat agree	37	(47.4)	28	(28.3)	20	(44.4)	31	(46.3)	44.489
	Agree[b]	18	(23.0)	6	(6.1)	16	(35.6)	9	(13.4)	< .001
Distinguishing problems that specifically concern nurses	Disagree[a]	18	(23.0)	50	(50.5)	10	(22.2)	27	(40.3)	
	Somewhat agree	39	(50.0)	44	(44.4)	23	(51.1)	34	(50.7)	31.848
	Agree[b]	21	(26.9)	5	(5.1)	12	(26.7)	6	(9.0)	< .001
Determining the order of priority of nursing problems/diagnosis	Disagree[a]	17	(21.7)	59	(59.6)	4	(8.9)	33	(49.2)	
	Somewhat agree	42	(53.8)	32	(32.3)	27	(60.0)	20	(29.9)	50.527
	Agree[b]	19	(24.3)	8	(8.1)	14	(31.1)	14	(20.9)	< .001

Note. [a]Completely disagree/Somewhat disagree, [b]Strongly agree/Completely agree.
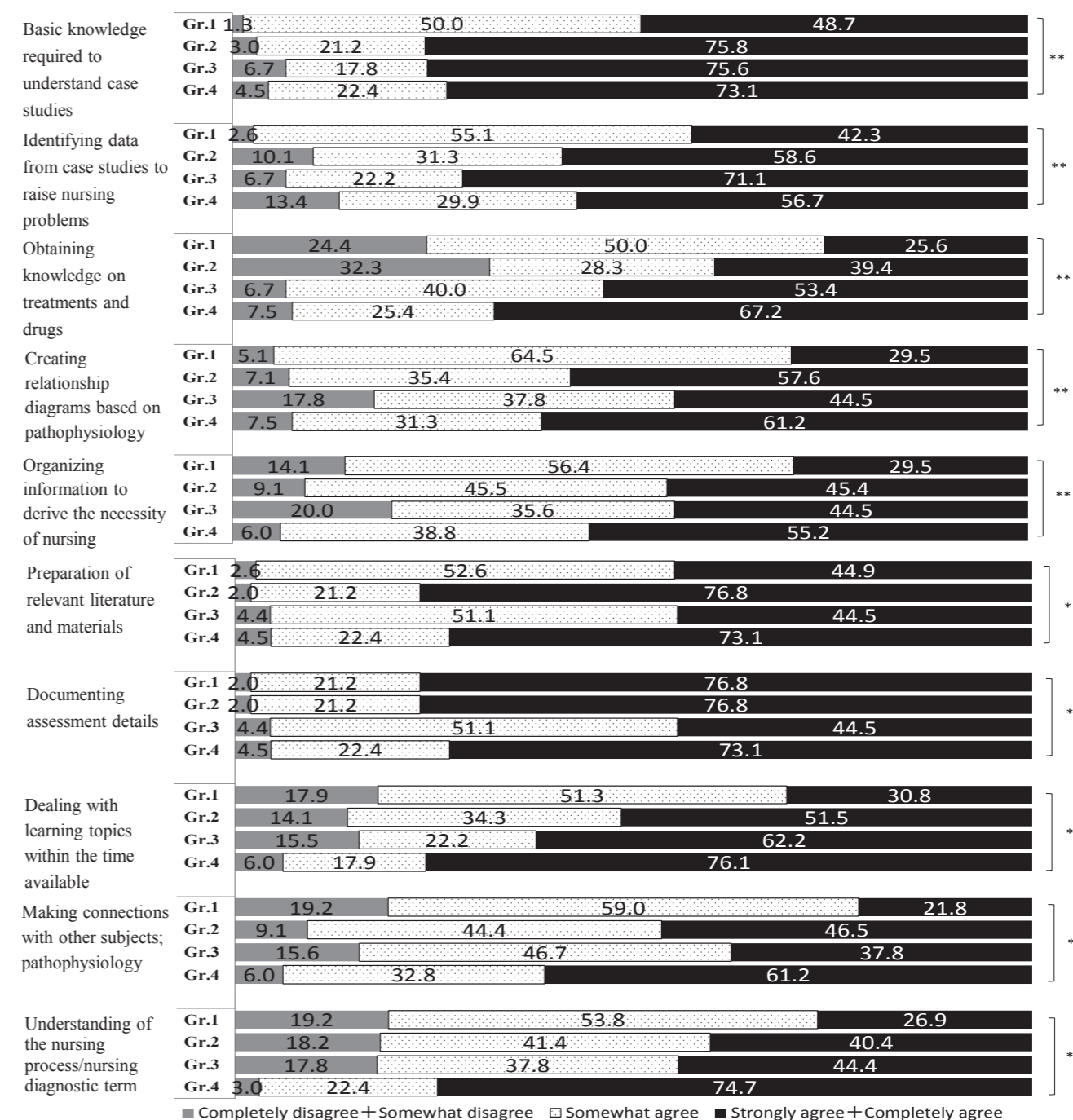
Figure 3 Self-assessed difficulties in learning the nursing process/nursing diagnosis

Note. Gr. = Group
**p < .01 using χ^2 test.

was a significant positive correlation between the self-assessment item "assessing patients' social and household roles" and the awareness item, "identifying nursing problems clarifies the official opinions and position of nurses." In Group 2, the self-assessment items "assigning meaning to the information gathered" showed positive correlations with the awareness items and several other items regarding determination of nursing problems (p < .05). In Group 3, there were few correlations between items.

In Group 4, self-assessment items such as "gathering information from databases," "gathering information on pathophysiology, symptoms and treatment," "determining the relevance of information gathered," and "utilizing overall/relationship diagrams" showed significant positive correlations with a comparatively high number of awareness items, such as "identifying nursing problems improves the performance of the nursing process," and "identifying nursing problems is useful for providing patient-centered nursing care" (p

< .01) (Table 2).

Self-assessed learning attainment and self-assessed difficulties in learning. Group 1 results showed few significant correlations between the self-assessment and difficulties in learning items. However, in Group 2, a range of self-assessment items—from those relating to information collection to those relating to data analysis and identification of nursing problems—showed significant negative correlations with a variety of items in difficulties in learning. In Group 3, the self-assessment item "gathering information from databases" showed significant negative correlations with difficulties in learning items such as "obtaining knowledge on treatments and drugs," "documenting assessment details," "learning the required content in the allotted time," and "making connections with other subjects (e.g., pathophysiology)." Group 4 showed few significant correlations, but the self-assessment items "distinguishing between overt and latent problems" and "deciding the order of priority of nursing problem/diagnosis" showed significant negative correlations with difficulties in learning items such as "documenting assessment details." Several significant negative correlations between self-assessment items and difficulties in learning items were observed. For instance, negative correlations were found between "distinguishing between overt and latent problems" and "documenting assessment details" as well as between "determining the order of priority of nursing problems/diagnosis" and "making connections with other subjects."

Self-assessed learning attainment and preparedness. In Groups 1 and 2, preparedness items such as "I am intellectually equipped to make decisions on nursing problems/nursing diagnosis," and "I am mentally prepared to make decisions on nursing problems/nursing diagnosis" showed significant positive correlations with almost all of the self-assessment learning attainment items ($p < .01$, $p < .05$, respectively). Compared with Groups 1 and 2, Group 3 results showed fewer significant correlations, but the self-assessment learning attainment item "assigning meaning to the information gathered" showed comparatively strong positive correlations with the preparedness items "I am mentally prepared to make decisions on nursing problems/nursing diagnosis" (rs

= .506, $p < .01$). Furthermore, in Group 3, the self-assessment learning attainment item "devising plans that consider safety, comfort, and independence" showed a comparatively strong positive correlation with "I am mentally prepared to make decisions on nursing problems/nursing diagnosis" ($rs = .583$, $p < .01$). Group 4 results showed much the same results as Group 1 or 2. In Group 4, the self-assessment item "utilizing overall/relationship diagrams" showed a positive correlation with the preparedness item "I am mentally prepared to make decisions on nursing problems/nursing diagnosis" ($rs = .502$, $p < .01$) (Table 2).

V Discussion

Because Group 3 was conducted after the end of clinical practice, the deadline for the collection period of the study sheets was extended, given the burden on the students. However, since the students had fewer opportunities to go to school compared to ordinary semester periods, such a situation may have affected the response rate. Therefore, the results of Group 3 should be interpreted with caution.

Over 70% of respondents agreed with all awareness items across all groups. This is somewhat higher than the approximately 60% agreeing with the same items in the study of Yönt et al. (2009). However, fewer respondents agreed with the awareness items in Groups 2 and 4. Relatedly, the overall tendencies for self-assessed learning attainment indicated significantly more positive responses in Groups 1 and 3 than in Groups 2 and 4. These results indicate that more students agreed with awareness items when they had high levels of knowledge on the subject (i.e., Group 1); however, after the gap in learning between Groups 1 and 2, fewer students agreed because their awareness had decreased, which prevented them from forming their opinions and thus resulted in low self-assessments. In Group 3, more participants tended to agree with awareness items related to the links to nursing care, more specific information collection, creation of association charts, and documentation of nursing problems. This is most likely because the study was conducted after nursing process case studies and practical clinical experiences. In contrast, in Group 4, few respondents agreed with both awareness

Table 2 Association between Self-Assessed Learning Attainment, Awareness, and Preparedness Regarding the Nursing Process/Nursing Diagnosis

Self-assessed learning attainment		Awareness of the nursing process/nursing diagnosis						Preparedness regarding nursing process/nursing diagnosis	
		Identifying nursing problems/ diagnoses develops nursing practice	Identifying nursing problems is useful for providing patient-centered nursing care	Identifying nursing problems improves the performance of the nursing process	Identifying nursing problems clarifies the official opinions and position of nurses	Identifying nursing problems clarifies the nature of nursing	I intend to take further opportunities to study the nursing process in the future	I am intellectually equipped to make decisions on nursing problems/ nursing diagnosis	I am mentally prepared to make decisions on nursing problems/ nursing diagnosis
Gathering information from databases	Gr. 1							.503 **	.501 **
	Gr. 2						.263 **	.426 **	
	Gr. 3								.323 *
	Gr. 4	.251 *	.308 *	.312 **		.307 *		.449 **	.417 **
Assessing a patient's level of growth and development	Gr. 1	.240 *				.248 *		.407 **	.456 **
	Gr. 2					.330 **		.376	
	Gr. 3								
	Gr. 4		.400 **	.389 **				.392 **	.397 **
Assessing patient's social and household roles	Gr. 1	.350 **			.239 *			.389 **	.390 **
	Gr. 2					.234 *		.358 **	
	Gr. 3								
	Gr. 4		.317 **					.282 *	
Gathering information on daily living habits by comparing data before and after admission	Gr. 1	.303 **			.223 *		.287 *	.337 **	.405 **
	Gr. 2							.375 **	
	Gr. 3			-.461 **					.298 *
	Gr. 4		.280 *	.247 *				.302 **	.304 *
Gathering information on pathophysiology, symptoms, and treatment	Gr. 1							.434 **	.385 **
	Gr. 2	.224 *						.302 **	
	Gr. 3							.370 **	.488 **
	Gr. 4		.350 **	.336 **				.452 **	.371 **
Assigning meaning to the information gathered	Gr. 1							.549 **	.347 **
	Gr. 2	.236 *	.267 **	.312 **	.214 *		.257 *	.406 **	
	Gr. 3							.323 *	.506 **
	Gr. 4		.302 *	.318 **				.426 **	.374 *
Determining the relevance of the information gathered	Gr. 1							.520 **	.390 **
	Gr. 2		.324 **	.335 **	.338 **	.314 **		.367 **	
	Gr. 3								.315 *
	Gr. 4		.389 **	.421 **	.260 *	.244 *		.348 **	.329 **
Utilizing overall/relationship diagrams	Gr. 1			.239 *				.528 **	.504 **
	Gr. 2		.240 *		.246 *			.290 **	
	Gr. 3					.384 **			
	Gr. 4	.255 *	.380 **	.391 **	.290 *			.471 **	.502 **
Addressing assessed problems	Gr. 1							.434 **	.478 **
	Gr. 2		.267 **					.299 **	
	Gr. 3							.361 *	
	Gr. 4		.396 **	.361 **	.392 **			.309 **	
Assessing living context based on household/social roles	Gr. 1							.512 **	.474 **
	Gr. 2							.400 **	
	Gr. 3							.304 *	.416 **
	Gr. 4		.384 **	.353 **				.313 **	.298 *
Assessing the mental state of patients and their families	Gr. 1							.608 **	.526 **
	Gr. 2							.331 **	
	Gr. 3	.298 *							.319 *
	Gr. 4		.287 *	.335 **	.237 *			.297 *	.248 *
Understanding the values and beliefs of patients and their families	Gr. 1							.482 **	.426 **
	Gr. 2			.222 *	.304 **			.334 **	
	Gr. 3							.318 *	.325 *
	Gr. 4		.384 **	.462 **	.268 *			.264 *	
Describing evidence-based nursing problems/diagnosis	Gr. 1							.548 **	.441 **
	Gr. 2		.226 *					.439 **	
	Gr. 3								
	Gr. 4	.256 *	.379 **	.436 **	.331 **			.458 **	.393 **
Distinguishing between overt and latent problems	Gr. 1							.468 **	.477 **
	Gr. 2		.240 *	.207 *				.314 **	
	Gr. 3								.330 *
	Gr. 4		.366 **	.428 **	.286 *			.362 **	.307 *
Distinguishing problems that specifically concern nurses	Gr. 1							.484 **	.427 **
	Gr. 2							.290 **	
	Gr. 3								
	Gr. 4			.366 **	.273 *			.295 *	.250 *
Devising plans that consider safety, comfort, and independence	Gr. 1								
	Gr. 2	.222 *						.324 **	.282 **
	Gr. 3							.346 *	.583 **
	Gr. 4		.290 *	.299 *				.310 *	.332 **

Note. Spearman's rank correlation coefficient computed. Gr. = Group
* $p < .05$. ** $p < .01$.

and self-assessment items, likely because there were considerable differences between the nursing diagnosis

process as they were taught and its deployment in the practical training scenes were unclear, and

that the nursing diagnosis education was perhaps inappropriately placed in the curriculum. Notably, our study accords with the findings of Junttila, Salanterä, and Hupli (2005), in that insufficient motivation and information and lack of understanding may be barriers to the utilization of nursing diagnosis.

For self-assessed difficulties in learning, significantly more respondents agreed in Groups 3 and 4 than in Groups 1 and 2, although there were differences in which items showed high percentages of agreement across the groups. Oda et al. (2004) analyzed instructors' comments on the creation of association charts for paper-patient cases, noting that students lacked knowledge necessary to understand the cases and had problems in utilizing their knowledge, which coincide with the difficulties noted in this study. The results of Groups 1 and 2 indicate difficulties related to the basics of the nursing process, such as knowledge of its deployment, assessment content, and preparation of materials. In Group 3 (after basic practical training), it seemed that being directly in charge of patients reduced respondents' difficulties with association charts of clinical conditions; however, respondents also realized that they lacked basic knowledge and had difficulty in extracting important information from large bodies of data. Finally, Group 4 suggests that respondents had difficulty in conducting case studies, understanding the nursing diagnosis content within the designated time, gathering the necessary materials, and documenting the assessment contents using the knowledge obtained from these materials.

Associations Between Variables

In Group 1, few awareness and self-assessment items were correlated significantly. This is probably because during this learning stage, respondents had not learned enough about the nursing process to experience a sense of achievement. However, in Group 2, there were significant correlations between self-assessment items regarding how collected data were analyzed and awareness items regarding decisions related to nursing problems. This presumably reflects students' learning achievements at Group 2, which was conducted after case study exercises covering gathering of information up to extraction of nursing problems. Group 3 had a negative correlation between self-assessment items on gathering information on daily life habits and

awareness items on making decisions regarding nursing-related problems. As the main purpose of the Basic Nursing Practice II is to teach nursing students how to provide support for patients in daily life, with a focus on nursing problems, the fact that they may need support in this area suggests that some respondents might have been more oriented towards creating support plans based on patients' daily life habits than towards solving nursing-related problems. Regarding Group 4, few respondents agreed that they had reached their learning goals, but those who did appear to be more strongly aware of the importance of nursing diagnosis. The preparedness item related to learning motivation at higher grades showed a significant positive correlation numerous with numerous self-assessment items in Groups 1–3. To further enhance respondents' learning motivation, it may be necessary to set up classes such that in the introductory stage, students feel a sense of achievement related to the gathering and interpretation of necessary information, while in the intermediate stage, they can feel a sense of achievement in using association charts. Furthermore, in the unfolding case studies of nursing diagnosis, teaching materials and speeds conducive to sense of achievement should be utilized.

Regarding the relations between difficulties and self-assessment items, Group 1 showed almost no correlations; this indicates that difficulty of case study learning at this stage was such that it did not result in much difference between individuals. Group 3 had negative correlations between difficulties and self-assessment items related to information gathering from databases, completing assignments within the designated time, and linking information with other subjects (e.g., pathophysiology). The Basic Nursing Practice II requires students to gather and analyze information in the actual environment and provide daily life assistance. During this course, students must construct databases from large bodies of information, which is noticeably different from when dealing with written cases. Thus, students likely found these skills difficult to perform, which would in turn produce difficulties in making assessments and creating practicum records within the designated time. Furthermore, students with low self-assessments in relation to gathering and identifying linkages in

information tended to express difficulty in organizing information and creating association charts, while students with low self-assessment in goal setting, planning, and assessment tended to have difficulty with data extraction and information organization. Thus, whether the students are actually able to establish assistance plans appears to be related to their assessment ability. According to another study, students in their final year also found assessments based on critical thinking to be rather difficult (Azizi-Fini, Hajibagheri, & Adib-Hajbaghery, 2015), which suggests that the difficulty of the assessment may influence the nursing process. In Group 4, few items exhibited correlations. However, distinguishing between latent and overt problems, identifying problems that nurses can deal with on their own, prioritization, and creation of association charts were found to be negatively correlated with difficulties in organizing information and conducting assessments. These results suggested that students who have difficulty in organizing information to create association charts and making assessments in case studies after learning about nursing diagnosis tend to have poor learning achievement in identifying nursing diagnosis problems and prioritization.

Considering the aforementioned results, we suggest the following improvements to the curriculum assignments and education methods. First, our results suggest that the basic material on nursing diagnosis should be taught before the third year (i.e., in the first and second years) in a comprehensive step-by-step framework, as students had insufficient knowledge of nursing diagnosis and found it difficult to carry out case studies. Additionally, as students had difficulty in learning the basic aspects of the nursing process, we suggest that more time be spent lecturing on basic knowledge and vocabulary and having students conduct paper-patient case studies. Notably, although students' awareness of the nursing process was rather clear early on in curriculum, this awareness was not maintained in later years. This suggests that when students understand only the basic facts of nursing process/nursing diagnosis, their initially high awareness and self-assessed achievements may decline over time. Additionally, the learning gap between Groups 1 and 2 may have led to a decline

in students' awareness of the necessary content and their self-assessments of learning achievement; thus, it is important for curriculums to offer continuous learning. Cholowski and Chan (2004) noted that to solve nursing-related problems more effectively and obtain higher-quality diagnoses, the extraction and organization of appropriate knowledge are important. For nursing students to learn the thought processes necessary for effective deployment of the nursing process and nursing diagnosis, they must build knowledge continuously and organize that knowledge appropriately.

Group 3's results indicated that students' awareness and self-assessments benefitted greatly from their practicum experiences, as it offered them a glimpse of actual nursing conditions. Thus, a curriculum that ensures continuity between in-school learning and on-site training would be necessary. It is has also been pointed out that while even first-year students can perform nursing diagnosis, clinical practice is needed for understanding a wider range of issues (Yönt et al., 2013). Kodaira (2015) stated that joint effort and understanding between instructors and staff are crucial for constructing a cohesive curriculum that continuously incorporates the nursing process and nursing diagnosis. Thus, there is a need to share the challenges that we noted among nursing instructors and to consider a continuous approach to education of the nursing process/nursing diagnosis through classes and clinical practice.

VI Limitations and Future Directions

Although we selected respondents from each course year, this was not a longitudinal study. Moreover, because it concerns the curriculum of just one educational facility, it is likely to be most useful to facilities implementing similar curricula. The response rate of one group was low due to the study period, which requires careful consideration in interpreting the results. To better define the kind of educational support required to enable nursing students to study the nursing process and nursing diagnosis efficiently, we must devote further thought to questionnaire content to gain a clearer picture of nursing students' attitude and identify the factors that affect it.

VII Conclusion

In this study, during intermediate-level courses and after on-site training, students tended to recognize the importance of the nursing process through nursing care and present positive self-assessment. However, the learning gap after the introductory level resulted in reduced awareness and self-assessment, suggesting the need for a continuous curriculum structure. Also during intermediate-level courses and after the basic nursing practicum, students reported difficulties in learning basic knowledge and knowledge on specific diseases and in extracting appropriate data.

Regarding the relationship between self-assessed learning attainment, awareness, and difficulties, correlations were found between the knowledge that students should attain and student awareness. Furthermore, after learning about nursing diagnosis, many students who reported having achieved their learning goals had greater awareness of the significance of nursing diagnosis. As educational content became more complex, correlations were found between other self-assessment and awareness items, revealing how important it is for students to maintain a sense of achievement. We also noted that after learning nursing diagnosis, students showed difficulties in finishing assignments within the designated time, understanding the nursing diagnosis terminology, and documenting the assessment contents. Thus, it seems that to avoid confusion while advancing students' knowledge of nursing diagnosis and case studies, these topics should be taught within a comprehensive framework from the first and second years of the program and on a continuous basis. Additionally, the fact that the students presented awareness and self-assessment that reflected their practicum experience reiterates the need for curricula that maintain continuity between in-school education content and the content of the on-site practicum.

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Conflicts of Interest

There is not the problem about the profit reciprocity.

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