

국내 간호대학생을 대상으로 한 감염관련 연구 동향분석

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Analysis of Research Trends Related to Infection for Nursing Students in Korea

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한국간호연구학회지 『별책』 제5권 제2호 2021년 6월

The Journal of Korean Nursing Research

Vol. 5, No. 2, June. 2021

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Abstract

Purpose : This study aims to provide basic data for future research direction on infection related to nursing students by analyzing and confirming the trends of infection-related research targeting domestic nursing students.

Methods : Literature search was conducted through four databases (KERIS, Nanet, KoreaMed, KISS), and literatures published from 2011 to April 2021 were targeted. Key words were searched by combining ‘infection’, ‘nursing infection’, ‘infection education’, and ‘infection education for nursing college students’. 54 research papers that meet the selection criteria were selected for the final analysis.

Results : As a result of the study, the most common studies related to the guidelines of standard attention were found to have significant effects on the knowledge, attitude and performance of infection, which are the main factors.

Conclusion : This study is meaningful in developing infection-related research in nursing college students by closely analyzing and presenting the trends of infection-related research.

Key words : Nursing student, Infection control, Literature review, Trends

I. 서론

1. 연구의 필요성

2000년대에 들어서면서 2003년 중증급성호흡기증후군(Severe Acute Respiratory Syndrome, SARS)을 시작으로 2009년 신종플루(Novel Swine-origin Influenza A, H1N1), 2015년 중동호흡기증후군(Middle East Respiratory Syndrome, MERS), 2019년 코로나바이러스감염증-19(Coronavirus Disease 2019, COVID-19) 등의 신종감염병(Emerging Infectious Disease, EID)으로 인해 현재 전 세계가 사투를 벌이고 있다[1].

이러한 신종감염병(EID)의 특징은 새로이 발견된 미지의 미생물이거나 옛날부터 존재했지만 새로운 병원성을 획득했거나, 과거에 발생하지 않았던 새로운 지역 또는 새로운 종으로 전파되어 발생한 감염병으로 발생원인, 전파경로 등의 감염회로 파악 및 예측이 어렵다는 점이다[1,2]. 인류는 그동안 화학요법 및 백신개발 등을 통해 각종 감염병을 퇴치에 노력해왔으나 인구의 증가, 도시화에 따른 사회·자연환경의 변화, 교통수단의 발달 및 야생동물과의 접촉 기회 증가 등으로 말미암아 전 세계적으로 다양한 감염병 발생을 증가시키고 있으며[2], 감염과 관련된 새로운 건강 문제가 발생되고 있다. 따라서 이에 대한 효율적인 대처를 위해 더욱 적극적이며 체계적인 감염관리체계 마련 활동이 필요하다.

특히, 세계보건기구(World Health Organization, WHO)와 미국 질병관리본부(Center for Disease Control and Prevention, CDC)에서는 병원감염관리 전략을 제시하여 전 세계적인 노력이 필요함을 말하고 있으며[3], 우리나라 질병관리청에서는 2017년 의료관련감염 표준예방지침을 제작하여 임상 실무에서의 감염지침을 제시하였다[4]. 의료관련감염이란 의료와 관련된 모든 감염을 뜻하며 입원뿐만 아니라 외래에서의 진료, 병원 직원 또는 병원 방문자에게 발생한 감염까지도 포함한다[2]. 의료관련감염은 환자뿐만 아니라 의료종사자, 방문자 등 광범위한 대상자를 포함하기에 지역사회로의 전파의 위험성이 매우 높아 더욱 감염

관리가 중요하며 필수적임을 시사한다.

이런 의료관련 감염 관리능력은 인간의 건강을 다루는 간호학에서 중요한 내용 중 하나라고 할 수 있으며 간호사는 대상자의 치료적 환경을 조성하는 주체로서 자신은 물론 대상자를 감염으로부터 보호할 책임과 의무가 있다[2]. 이에 간호대학생은 간호사로서 종사하기 전에 학교에서 충분한 감염관련 지식습득과 일정수준의 간호수행능력을 갖추기 위한 임상실습이 필요하며[5], 이러한 교육은 감염에 대한 문제해결능력을 증진시켜 추후 간호사로서 근무하게 될 때 감염관리 수행에 대한 자신감을 높여 줄 수 있을 것이다. 또한 질병관리청에서는 의료종사자뿐만 아니라 의대 및 간호대학생, 환자, 가족, 방문객에게도 감염관리 교육을 제공할 것을 권고하고 있으며[4], 감염을 예방하고 발생한 감염을 줄이는 활동 중 가장 중요한 방법으로 감염관리 교육이 거론하고 있다[6]. 이에 학교 및 의료기관은 간호대학생을 대상으로 한 감염관리 지침 및 규정 마련, 감염관리 프로그램 등을 개발하고 적용할 필요가 있다[7-9].

간호대학생을 대상으로 한 국내 감염관련 선행연구를 살펴보면, 시뮬레이션 기반 적용 연구[10-12], 웹기반 적용 연구[13], 비디오 및 시청각 자료 적용 연구[8, 14], 감염관련 태도, 지식, 실천 등의 요인과 관련된 상관관계 분석연구[15-18] 등을 볼 수 있다. 국내 감염관련 선행연구에서 중재 및 상관연구를 통해 감염관리 효과를 규명하였으나, 각 연구에서 적용된 중재 기반이 다양하고 효과를 측정하는 도구 및 방법 등이 각각 달라 종합적으로 감염관리 효과 및 실태 등을 파악하는데 어려움이 있다. 또한 국내 간호대학생을 대상으로 한 감염과 관련된 연구들에 대한 체계적이고 종합적인 분석이 미비한 실정이다. 간호사는 의료관련감염으로부터 자신 및 대상자를 보호할 책임과 의무가 있는 직업으로[2], 학교는 예비 간호사인 간호대학생에게 감염관련 기본지식, 태도, 술기 등을 이해하고 습득할 수 있도록 다양한 프로그램 등을 제공해야 할 필요가 있다[8]. 이에 본 연구에서는 2011년부터 2021년까지 최근 10년간의 국내 간호대학생을 대상으로 한 감염관련 연구에 대한 동향을 분석하고 확인함으로써, 향후 국내 간호대학생 감염관련 교육과 연구의

중재 및 구성 전략 등에 활용할 수 있는 기초자료를 제공하고자 한다.

2. 연구의 목적

본 연구의 목적은 국내 간호대학생의 감염관련 선행연구에 대한 동향분석을 위한 것으로 구체적인 목적은 다음과 같다.

첫째, 국내 간호대학생 대상 감염관련 연구의 일반적 특성을 파악한다.

둘째, 국내 간호대학생 대상 감염관련 연구의 주요 용어를 파악한다.

셋째, 국내 간호대학생 대상 감염관련 연구의 주요 요인 및 효과를 파악한다.

II. 연구 방법

1. 연구설계

본 연구는 최근 10년간(2011~2021년) 국내 학회지, 학위논문 등에 게재된 국내 간호대학생을 대상으로 한 감염관련 연구를 분석한 서술적 조사연구이다.

2. 연구대상 및 자료수집 방법

본 연구의 분석 대상이 된 논문의 구체적인 선정기준은 국내 간호학에서 감염 관련 문헌으로 학술지에 출판된 논문 및 학위논문을 중심으로 자료를 수집하였다. 학술지와 학위논문 중복 시 학술지 논문을 선택하였다. 분석 대상 연구에 대한 구체적인 제외 기준은 본 연구에서 정의한 감염관련 간호학 연구의 범주가 아닌 논문, 감염 관련 간호학과 무관한 내용의 논문, 간호대학생이 대상이 아닌 문헌, 학술대회 발표논문이다. 자료수집 및 분석 기간은 2021년 4월 1일부터 4월 30일까지였으며, 논문검색에 사용된 주요 핵심단어는 ‘감염’, ‘간호 감염’, ‘감염 교육’, ‘간호대학생 감염교육’을 주요어로 검색하였다. 인터넷 검색에서 확인되지 않은 논문들을 찾기 위하여 주제와 관련된 논문 등에 대한 검색을 병행하였으며, 중복게재된 학술지 논문과 여러 DB에서 중복이 확인된 논문은 제외하였다. 첫 단계에서 탐색된 논문은 KERIS에서 56편, Nanet 20편, Korea Med 121편, KISS에서 15편이었다.

국내 간호학술지로서 한국간호과학회지, Asian Nursing Research, 성인간호학회지, 지역사회간호학회지, 기본간호학회지, 여성건강간호학회지, 아동간호학회지, 간호행정학회지, 정신간호학회지, 간호교육학회

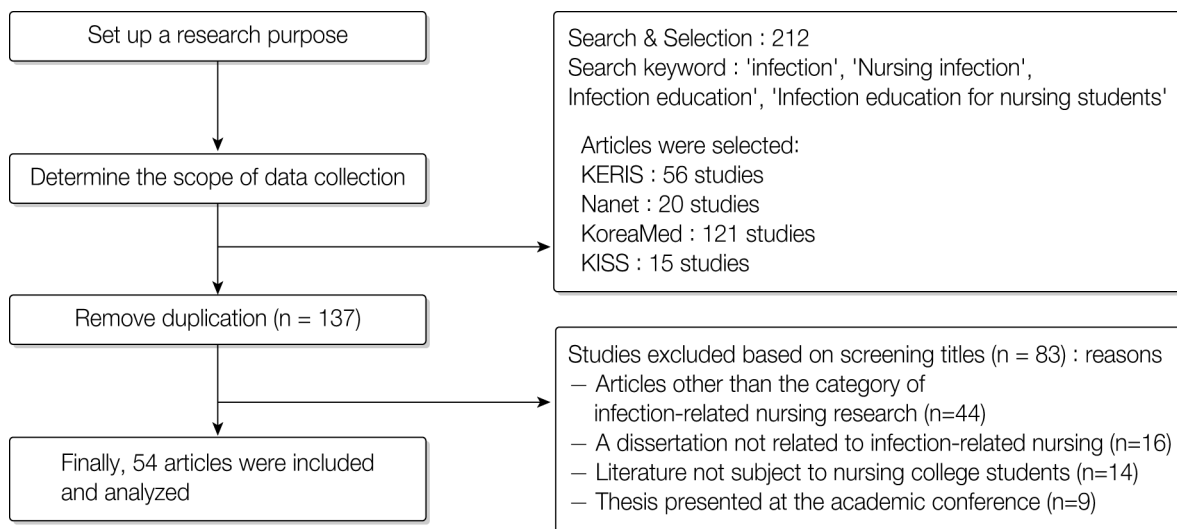


Figure 1. Flowchart of included studies through Database Search

지, 보건간호학회지, 직업건강학회지, 노인간호학회지, 임상간호연구지 등 간호분야 학술지가 제공하는 자체 논문검색 서비스를 추가로 검색하여 재확인하였다.

1차 검색된 논문은 논문 수집 양식에 기록하였으며, 논문 선정기준에 부합되는지 확인을 위하여 Cochrane hand-book에서 제시하는 실험군과 대조군의 특성, 중재의 적용, 연구 결과를 비교 분석하여 기술할 수 있는 기준을 바탕으로 논문 수집 양식을 구성하였다. 이 과정을 통해 1차 선정된 137편의 원본을 확보하여 연구자와 교수 2인이 함께 선정기준 부합 여부를 확인하는 과정을 <Figure 1>과 같이 거쳤으며 총 54편이 분석대상으로 선정되었다.

3. 자료 분석 방법

최근 10년간(2011~2021년) 국내 학회지에 게재된 논문 전수인 137편을 본 연구자들인 간호학을 전공한 3인 교수와 연구책임자가 사전 연구를 통해 마련한 일차적인 분석틀에 의해 분석하였으며, 분석 시 명확하지 않거나 확인이 필요한 부분은 재확인하는 과정을 통해 54편의 최종 자료 분석을 완성하였다. 분석의 구성 틀은 논문의 일반적 특성인 연구발표년도, 게재된 학회지, 측정 도구로 분석하였으며 연구설계 부분에서는 양적 연구, 중재 연구, 질적 연구, 기타 연구의 부분으로 구분하였다. 각 연구설계로 나눈 후 세부적으로 저자, 제목, 발표년도, 논문출처, 논문설계, 대상자, 측정 도구, 자료수집 방법, 자료 분석 방법, 연구결과를 포함하여 분석하고 분석 후 연구자들이 검토 후 최종 분석대상 논문으로 결정하였다. 최종 결정된 수집된 자료는 SPSS/WIN 23.0 통계 프로그램을 사용하여 실수와 백분율을 산출하여 분석하였다.

Ⅲ. 연구 결과

1. 감염 관련 연구의 일반적인 특성

분석논문의 일반적인 특성은 <Table 1>과 같다. 전

체 54편의 연도별 편수는 2011~2015년 7편(13%), 2016~2021년 47편(87%)이었다. IRB 승인유무는 승인을 받은 논문 20편(37%), 승인을 받지 않은 논문 34편(63%)이었다. 연구설계는 양적연구가 43편(79.6%)로 가장 많았으며, 질적연구 2편(3.7%), 실험연구 7편(12.9%), 종설연구 1편(1.9%), 혼합설계연구 1편(1.9%)이었다. 분석편수는 101~300편이 30편(55.6%)으로 가장 많았으며, 100편 미만 15편(27.7%), 301~500편 9편(16.7%)순이었다.

2. 감염관련 연구의 주요 용어

분석논문의 주요 용어를 확인한 결과는 <Table 2>와 같다. 감염 관련 연구에서 사용된 주요 용어로는 표준주의지침이 34편(62.8%)으로 가장 많이 사용되었으며, 구체적으로는 표준주의지침 수행도가 13편(24%), 표준주의지침 인지도 11편(20.3%), 표준주의지침 지식 10편(18.5%) 순이었다. 그다음으로는 코로나19가 많이 사용되었으며, 구체적으로는 코로나19 감염예방행위 6편(11.1%), 코로나19 태도 4편(7.4%), 코로나19 지식 3편(5.6%) 순이었다. 한편 감염관련 연구의 주요 용어로 병원감염관리 수행이 3편(5.6%) 사용되었으며, 혈액 및 체액노출 현황, 임파워먼트, 의료관

Table 1. Characteristics of Included Studies (N = 54)

Variable	Category	n	%
Published year	2011~2015	7	13
	2016~2021	47	87
IRB	Yes	20	37
	No	34	63
Study design	Quantitative research	43	79.6
	Qualitative research	2	3.7
	Experimental research	7	12.9
	Review article	1	1.9
	Mixed Design	1	1.9
	Research	1	1.9
Sample size	Below 100	15	27.7
	101~300	30	55.6
	301~500	9	16.7

Table 2. Key Words in Search (N = 54)

No	Key Words	n	(%)
1	Standard precaution performance	13	24
2	Standard precaution awareness	11	20,3
3	Standard precaution knowledge	10	18,5
4	Preventive behaviors for coronavirus Disease-19	6	11,1
5	Attitude toward coronavirus disease-19	4	7,4
6	Coronavirus disease-19 related knowledge	3	5,6
7	Hospital infection management performance	3	5,6
8	Awareness of new infectious diseases	2	3,7
9	Blood and body fluid exposure status	2	3,7
10	Empowerment	2	3,7
11	Hospital infection management about performance observation	2	3,7
12	Hospital infection management degree of direct performance	2	3,7
13	Hospital infection management perceived conflict	2	3,7
14	Hospital infection management perceived importance	2	3,7
15	Infection control attitude	2	3,7
16	Infection control confidence	2	3,7
17	Infection control knowledge	2	3,7
18	Knowledge about MERS	2	3,7
19	Medical related infection control guidelines intention to perform	2	3,7
20	Medical-related infection recognition	2	3,7
21	Multidrug resistant bacteria infection control knowledge	2	3,7
22	Possible MERS infection	2	3,7
23	Ability to perform infection control	1	1,9
24	About corona 19 information comprehension	1	1,9
25	Anxiety for coronavirus disease-19	1	1,9
26	Anxiety related to infection	1	1,9
27	Attitude toward infection	1	1,9
28	Attitude toward tuberculosis	1	1,9
29	Attitudes to prevent medical-related infection	1	1,9
30	Awareness of blood borne infection	1	1,9
31	Career decision self-efficacy	1	1,9
32	COVID-19 to prevent infection social distancing	1	1,9
33	Cervical cancer and HPV infection preventive action intention	1	1,9
34	Cervical cancer knowledge	1	1,9

No	Key Words	n	(%)
35	Clinical decision making anxiety	1	1,9
36	Clinical decision making confidence	1	1,9
37	Clinical judgement	1	1,9
38	Clinical performance capability	1	1,9
39	COVID-19 infection control education importance	1	1,9
40	COVID-19 infection control education performance	1	1,9
41	COVID-19 infection prevention intentions	1	1,9
42	COVID-19 infection prevention subjective norms	1	1,9
43	CRE infection control awareness	1	1,9
44	Critical thinking tendency	1	1,9
45	Education satisfaction	1	1,9
46	Ethical decision making	1	1,9
47	Health belief	1	1,9
48	Hospital infection control subjective norms	1	1,9
49	Hospital infection control willingness	1	1,9
50	Hospital infection management Attitude	1	1,9
51	Hospital infection management control of perceived behavior	1	1,9
52	Hospital infection management education status	1	1,9
53	HPV vaccination related health belief	1	1,9
54	Infection control awareness	1	1,9
55	Infection control capability	1	1,9
56	Infection control performance	1	1,9
57	Infection control standardism performance	1	1,9
58	Knowledge about tuberculosis	1	1,9
59	Knowledge of blood borne infection	1	1,9
60	Knowledge of infection	1	1,9
61	Learning immersion	1	1,9
62	Medical institution to prevent infection safety environment	1	1,9
63	Medical-related infection Implementation of management guidelines attitude	1	1,9
64	Medical-related infection prevention awareness	1	1,9
65	Medical-related infection prevention knowledge	1	1,9
66	Medical-related infection prevention Performance	1	1,9
67	MERS implementation of infection prevention actions	1	1,9
68	MERS infection prevention act performance	1	1,9

No	Key Words	n	(%)
69	MERS possibility of preventing infection	1	1.9
70	MRSA infection control awareness	1	1.9
71	MRSA infection prevention implementation	1	1.9
72	Multidrug resistant bacteria infection control capability	1	1.9
73	Multidrug resistant bacteria infection control confidence in performing	1	1.9
74	Multidrug resistant bacteria infection control health belief	1	1.9
75	New infectious diseases ethical decision-making in pandemic situations	1	1.9
76	New infectious diseases ethics awareness in pandemic situations	1	1.9
77	New infectious diseases patient nursing intention	1	1.9
78	Infection prevention environment	1	1.9
79	Nursing performance ability	1	1.9
80	Patient safety attitude	1	1.9
81	Patient safety control attitude	1	1.9
82	Perceived motive	1	1.9
83	Prevention compliance behavior of blood bone infection control	1	1.9
84	Preventive behaviors for coronavirus disease-19	1	1.9
85	Protection motivation	1	1.9
86	Recognition of new infectious diseases	1	1.9
87	Recommendation intention	1	1.9
88	Risk perception for coronavirus Disease-19	1	1.9
89	Satisfaction with infection	1	1.9
90	Self-efficacy	1	1.9
91	Standard Caution Guidelines for performing safety environment	1	1.9
92	Standard caution guidelines perform safety motivation	1	1.9
93	Standard caution guidelines perform health belief	1	1.9
94	Standardism health belief	1	1.9
95	Standardism safety environment	1	1.9
96	Tuberculosis preventive action	1	1.9
97	Visiting nursing knowledge	1	1.9
98	VRE infection control knowledge	1	1.9
99	VRE infection control performance capability	1	1.9

런 감염 인지도 등은 각각 2편(3.7%)이었고, 환자안전에 대한 태도, 환자안전관리 태도, 혈액매개감염관리 지식 등은 각각 1편(1.9%)이었다.

3. 감염관련 연구의 주요 요인 및 효과

분석논문의 주요 요인 및 효과를 확인한 결과는 <Table 3>과 같다. 2011년부터 2015년 사이에 발표된 논문의 주요 개념은 병원감염관리 및 표준주의지침 3편[A2, 4, 6], 혈액 및 체액 2편[A5, 7], 다제내성균 1편[A1], 반코마이신내성장구균 1편[A3] 등이었다. 병원 감염관리 및 표준주의지침 연구 중 2편은 서술적 조사연구였으며, 1편은 시뮬레이션 기반 감염관리 교육 프로그램의 효과를 확인하기 위한 유사실험설계 연구로 시뮬레이션 교육프로그램이 간호대학생의 임상수행능력, 임상판단능력, 감염관리 수행 자신감을 향상시키는 효과가 있는 것으로 나타났다.

2016년부터 2021년 사이에 발표된 논문의 주요개념은 2016년에는 총 6편의 논문 중 병원감염관리 및 표준주의지침 3편[A8, 10, 13], 결핵균감염 1편[A9], 인간유두종바이러스 1편[A11], 호흡기계감염 1편[A12]이었으며, 2017년에는 총 8편의 논문 중 병원감염관리 및 표준주의지침 6편[A15-20], 중동호흡기증후군 1편[A14], 메티실린내성황색포도상구균 1편[A22]으로 나타났다. 2018년에는 총 3편의 논문 중 혈액매개감염 1편[A23], 병원감염관리 및 표준주의지침 1편[A25], 기타 1편[A24]으로 나타난 반면, 2019년에는 총 12편의 논문 중 병원감염관리 및 표준주의지침 11편[A26-36], 대유행감염 2편[A37-38], 다제내성균 1편[A39]이었다. 2020년에는 11편의 논문 중 코로나19 9편[A41, 43-50], 표준주의 1편[A42], 기타 1편[A40]으로 나타났으며, 2021년에는 5편의 논문 중 코로나19 3편[A51, 52, 54], 병원감염관리 및 표준주의지침 2편[A53, 55]이었다. 병원감염관리 및 표준주의지침 연구 중 대부분은 서술적 조사연구였으며, 질적연구 1편, 유사실험설계연구 4편으로 확인되었다. 2016년부터 2021년 사이에 발표된 논문의 주요 결과는 Kim 등[A8]의 연구에서 병원감염관리 집중교육프로그램에 참여한 학생이 대조

Table 3. Summary of the Literature

No	Author	Major field	Year	Purpose	Type/Design	Method	Sample	Main result
A1	Kyung-Mi Kim, Og Son Kim, Mi-Yang Jeon	Journal of Korean Biol Nurs Sci	2012	This study was undertaken to identify the knowledge and compliance level of nursing students. It was based on self-administered questionnaires about multidrug-resistant organisms.	Quantitative research/ Descriptive survey research	Questionnaire	n=184	The average knowledge level of MDROs was 16.20 (correct answer rate: 67.5%). The nurses' compliance level of MDROs infection control was on average 40.50 (range: 13-52). "Hand hygiene" ranked highest in the compliance level of MDROs infection control. The lowest level of MDRO infection control was the wearing of disposable aprons or gowns, C.
A2	Ji-Mee Kim, Seon-Hye Lee	Journal of Korean Acad Soc Nurs Edu	2012	The purpose of this study was to evaluate the theory of planned behavior (TPB) in the structural relationship of nursing students' performance related to nosocomial infection control (NIC).	Quantitative research/ Descriptive survey research	Questionnaire	n=238	These three variables explained 47.6% of the total variance of the intention of nursing students' on NIC. In predicting the performance related to NIC, the PBC resulted in the direct and main influencing factor of nursing students' performance related to NIC ($p<0.010$). Intention was not a significant determinant. These two variables explained 13.2% of total variance of the performance related to NIC.
A3	Ju Gong, Ji-yeon Kang	Journal of Kor Acade Fundam Nurs	2012	The purpose of this study was to develop a web-based education program on control vancomycin-resistant enterococci (VRE) infections and to identify the effects of the program on knowledge and performance of nursing students.	Experimental research/Non equivalent control-group pretest-posttest design	Questionnaire	n=34	The contents of the education program included diagnosis, transmission, and treatment of VRE, contact precautions, hand washing, personal protective equipment, environment management, and quizzes. The lecture portion was filmed in a virtual screen studio using flash animation, video, and sound effects, and it was uploaded on an internet site. The knowledge and performance scores of the experimental group after using the education program were significantly higher than those of the control group.
A4	Sun-Yung Hong, Young-Sook Kwon, Hee-Ok Park	Journal of Korean Acade Society of Nursing Education	2012	The purpose of this study was to investigate nursing students' awareness and performance on standard precautions and to provide meaningful information for nursing students' education regarding hospital infection control.	Quantitative research/ Descriptive survey research	Questionnaire	n=447	The level of students' awareness in the standard precautions was higher than performance. The higher levels of students' awareness and performance on standard precautions included patient care equipment, safe injection practices, and worker safety.
A5	Hee-Jung Kim, Nam-Cho Kim	Journal of Korean Society for School & Community Health Education	2014	The purpose of this study was to investigate the status of exposure to blood and body fluid and factors affecting on blood and body fluid exposure of nursing students including knowledge, performance regarding standard precautions.	Quantitative research/ Descriptive survey research	Questionnaire	n=280	The factors affecting on blood and body fluid exposure of nursing students were knowledge level and education type about infection control. Conclusions: Based
A6	Seon-Hwa Kim	Kyungpook Nat'l Univ. Doctoral dissertation	2015	This study was conducted to develop a simulation-based education program for healthcare-associated infection control and to identify the effects of the healthcare-associated infection control knowledge, clinical competency, clinical judgment and confidence in infection control performance after applying to nursing students.	Experimental research/Non equivalent control-group pretest-posttest design	Questionnaire	n=56	Simulation-based education program for fourth is effective for clinical performance, clinical judgment and confidence in infection control performance to nursing students.
A7	Mi-Hyun Jeong	The Korea Contents Society	2015	The purpose of this study was to investigate the actual situation of nursing students' exposure to blood and body fluids, and their knowledge, awareness and performance of standard precautions in an attempt to offer basic data for education of nursing students concerning infection control.	Quantitative research/ Descriptive survey research	Questionnaire	n=309	The awareness ($=.274$) of standard precautions only stood out significantly among the factors affecting the performance of standard precautions, accounting for 8.6% in the performance variance of standard precautions.
A8	Yun-Mi Kim, Mi-Young Kim, Young-Hee Seo	Journal of Korean Biological Nursing Science	2016	This study was to develop and conduct an intensive education program on infection control and investigated how the program influenced nursing students' knowledge, attitude, and confidence in the infection control.	Experimental research/Non equivalent control-group pretest-posttest design	Questionnaire	n=65	The experimental group showed statistically significant improvements in knowledge ($t=2.02, p=.048$), attitude ($t=2.04, p=.045$), and performance confidence ($t=2.75, p=.008$) in infection control when compared to the control group.
A9	Seung-Joo Lim, Hyun-Joo Lee	Journal of Korean Biological Nursing Science	2016	This study aimed to identify the relationship among knowledge, attitudes and prevention behaviors (PB) on tuberculosis (Tb) infection in nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=129	The PB differed according to grades ($F=7.02, p<.001$) and EETb ($F=4.55, p=.004$). Significant correlations were found between knowledge and PB ($r=.20, p=.001$), attitudes and PB ($r=.33, p<.001$). The most significant factor influencing PB was attitudes with R^2 value of 13.9% ($F=11.81, p<.001$).
A10	Ja-Young Oh, Ji-Yeon Mun, Hye-Kyun Oh	Journal of Health Informatics and Statistics	2016	The purpose of this study was to investigate the affecting factors on nursing students' performance of standard precautions for Healthcare associated Infection Control and Prevention. It was conducted to offer basic data for education of nursing students concerning Healthcare associated Infection Control and Prevention.	Quantitative research/ Descriptive survey research	Questionnaire	n=199	There was positive correlation between the Awareness and Performance of Standard Precautions. Awareness of standard precautions only stood out significantly among the factors affecting the performance of standard precautions, accounting for 25% in the performance variance of standard precautions.

No	Author	Major field	Year	Purpose	Type/Design	Method	Sample	Main result
A11	Won-Hee Choi, Gyo-Young Cho	Korean Society Fishries And Sciences Education	2016	The purpose of this study was to identify factors of influencing cervical cancer and Human papilloma virus(HPV) infection preventive behavioral intention of nursing students,	Quantitative research/ Descriptive survey research	Questionnaire	n=218	The significant factors of cervical cancer and HPV infection preventive behavioral intention was cervical cancer knowledge ($\beta=.246, p<.001$), health belief about HPV vaccination ($\beta=-.223, p<.001$), HPV vaccination ($\beta=.173, p=.008$), and Gynecological Disease History ($\beta=.145, p=.026$). And these factors explained 15.4% of the variance in the cervical cancer and HPV Infection preventive behavioral intention.
A12	Og-Son Kim, Jin-Hwan Oh, Kyung-Hye Lee	Journal of the Korea Convergence Society	2016	The purpose of this study was to provide basic materials on establishing convergence oriented respiratory infection management system in nursing students attending clinical training by analyzing anxiety, knowledge, possibility of infection, possibility of prevention, and compliance level of preventive behavior	Quantitative research/ Descriptive survey research	Questionnaire	n=222	The results are as follows. The anxiety was 42.70 (max 80 points), but possibility of infection was 22.55 (max 100 points). Also, knowledge (11.73 out of 16 points), possibility of prevention (7.37 out of 10 points), and compliance level of preventive behavior (34.55 out of maximum 48points) were slightly above average. The influencing factors on compliance of preventive behavior were anxiety and possibility of prevention
A13	Jong-Rim Choi, Il-Sun Ko, Yeong-Yi Yim	Journal of Korean Acad Fundam Nurs	2016	This study was done to investigate the level of nursing students' awareness, attitude, safety climate, and performance of infection control, and to identify factors influencing performance,	Quantitative research/ Descriptive survey research	Questionnaire	n=239	Of the participants, 216 (90.4%) had experienced contact with infectious diseases. The performance of personal hygiene was scored the highest followed by standard precautions, transmission precautions, and vaccination. There were significant correlations between awareness, attitude, safety-climate and performance. Awareness, safety-climate, attitude, contents of infection control education, and direct exposure to infectious disease collectively explained 30% of the variance in performance, and awareness was the most influential factor.
A14	Mi-Ja Kim	Journal of the Korea Convergence Society	2017	We investigated knowledge, attitudes and preventive behaviors against MERS in nursing students who will serve as future nurses,	Quantitative research/ Descriptive survey research	Questionnaire	n=350	As a result, there was a statistically significant positive correlation between attitudes and prevention behaviors against MERS. ($r=.387, p<.001$). The effect of knowledge and attitudes on preventive behaviors against MERS was analyzed by 15.2% of the explanatory power of regression model and statistically significant by regression equation ($F=31.081, p<.001$).
A15	Eun-Young Jung, Ae-Ran Park, Jeong-Hyun Kong	Journal of Humanities and Social Sciences 21	2017	This study was to provide basic data for nosocomial infection prevention education for nursing students by examining the state of education on nosocomial infection control for nursing college students and blood·body fluid exposure during nursing college student's practice,	Quantitative research/ Descriptive survey research	Questionnaire	n=245	66.5% of the subjects had experience of nosocomial infection prevention education, and 62.9% of the blood and body fluid exposures were experienced. The exposure period was the highest at 68.8% in the first semester of the 3th grade. At the time of exposure, the ward was the highest with 52.7% in the internal ward and at the time of exposure blood sugar test was the highest at 47.3%. The degree of anxiety after exposure was 4.63 points out of 10, and proper reporting or post-treatment was not performed well.
A16	Hye-Soon Yu	Journal of the Korean Data Analysis Society	2017	The purpose of this study was to investigate factors influencing performance on standard precautions of infection control in nursing students,	Quantitative research/ Descriptive survey research	Questionnaire	n=305	Factors influencing performance on standard precautions of infection control were gender, pierced wound history, knowledge, perception and environment for infection control.
A17	Ji-Hye Seo, Eun-Young Jung	Journal of Korean Biological Nursing Science	2017	The purpose of this study was to identify the factors that affect nursing students' performance on standard precaution of infection control,	Quantitative research/ Descriptive survey research	Questionnaire	n=203	The knowledge score was 20.08 ± 2.09 , the awareness score was $4.63 \pm .41$, and the performance score was $4.34 \pm .55$. In the relationship between the standard precautions knowledge, awareness, and performance, the awareness and the performance were in positive correlations, while the factors that affected the performance level of the standard precautions were awareness and the school year (third year), which had 37.0% of the total exposures
A18	SO-Jin Lee, Ju-Young Park, Na-Ri Jo	Journal of Korean Academy of Nursing Administration	2017	In this study an examination was done of nursing students' knowledge, awareness and performance of standard precaution guidelines designed to prevent medical-related infections,	Quantitative research/ Descriptive survey research	Questionnaire	n=184	Stepwise regression analysis showed that the factors affecting the performance of standard precaution totaled 27.3% of determination coefficient due to the degree of observation and knowledge, awareness of standard precautions,
A19	Ji-Eun Cha, Ji-Young Cho, Yu-Gyeon Kim, Guk-Hee Nam,	Journal of the Korea Academia- Industrial cooperation Society	2017	This study was conducted to investigate nursing students' safety-climate: perception and performance of standard precautions for healthcare-associated infection control,	Quantitative research/ Descriptive survey research	Questionnaire	n=246	The biggest difference between perception and performance was in the usage of personal protective equipment and safe injection practices. We also detected significant positive correlations among safety-climate, perception, and performance of standard precautions. In the regression analysis, performance of standard

No	Author	Major field	Year	Purpose	Type/Design	Method	Sample	Main result
	Seo-Young Lee, Sun-Young Lee, A-Rim Lee, Ji-Yae Lee, Su-Bin Chae							precautions was influenced by safety-climate and grade accounting for 10.7% of variance.
A20	Mi-Young Kim, Myeon-Gjun Kim, Jong-Won Kim, Jise-On Maeng, Su-Min Park, Ji-A Son,	Journal of Perspectives in Nursing Science	2017	To study the internal psychological conflicts among nursing students during an infection control protocol carried out in the hospital by measuring their observation skills and performance during clinical training	Quantitative research/ Descriptive survey research	Questionnaire	n=54	Generally, there was a negative correlation between observation skills and internal conflict in every aspect of infection control practice ($r=-.281$, $p=.031$). Internal conflict was significantly higher than expected in the context of hand hygiene ($t=-2.135$, $p=.037$), personal hygiene ($t=-3.48$, $p=.002$), and ventilator management ($t=-3.69$, $p<.001$). Clinical performance of students in the context of hand hygiene ($t=4.69$, $p<.001$), personal hygiene ($t=2.06$, $p=.044$), and ventilator management ($t=2.68$, $p<.001$) was significantly lower than expected prior to clinical training
A21	Og-Son Kim	Journal of Convergence for Information Technology	2017	The purpose of this study was to examine the knowledge of nursing students on methicillin-resistant <i>Staphylococcus aureus</i> (MRSA), and the compliance level of infection prevention during their clinical practice	Quantitative research/ Descriptive survey research	Questionnaire	n=234	As for the factors affecting compliance of MRSA infection prevention, education of MRSA and awareness about the possibility of MRSA infection during the clinical practice were significant.
A22	Seong-Mi Ryu, Jeong-Hyeon Kong, Hye-Ok Choi	Journal of Korea Academy Industrial Cooperation Society	2018	The purpose of this study is to identify nursing college students' knowledge, awareness and adherence to preventive behavior of blood-borne infection, and the factors affecting the adherence to preventive behavior of blood-borne infection.	Quantitative research/ Descriptive survey research	Questionnaire	n=475	Nursing college students' adherence to preventive behavior of blood-borne infection showed a positive correlation between knowledge of blood-borne infection and awareness of blood-borne infection. The factors affecting the adherence to preventive behavior of blood-borne infection were found to be age, education experience, exposure, knowledge of blood infection, and the explanatory power of these variables was 16.3%.
A23	Suzy-Lee, Gis-Oo Shin, Mi-Kyoung Cho	Journal of Korea Academy Industrial Cooperation Society	2018	This study was conducted to identify the factors influencing patient safety behavior and performance of infection control in nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=174	Patient safety behavior was positively influenced by confidence levels of patient safety and awareness of the infection control, and the explanatory power of the model (R2)[ED highlight-should this be R2? If so, change throughout the paper.] was 55.1%. Predictors of the performance of infection control were patient safety knowledge, confidence levels regarding patient safety, and awareness of infection control, and the R2 was 68.1%.
A24	Eun-Joo Yoon, Young-Mi Park	Journal of Convergence for Information Technology	2018	The goal of this study was to survey the degree of nursing students' knowledge of standard precaution, intention about performance, attitude toward performance, safety climate, performance of standard precaution and to identify factors influencing performance	Quantitative research/ Descriptive survey research	Questionnaire	n=296	The factors that affecting performance of standard precaution among nursing students are intention about performance and safety climate, which explained 20% of the variances
A25	Ji-Hyun Kim, Hyo-Suk Song	Asia-Pacific Journal of Multimedia Services Convergent with Art, Humanities, and Sociology	2019	this study was to investigate the effect of Scenario based infection control education on the awareness, performance of the standard precaution of nursing college students.	Experimental research/ one group pretest-posttest design	Structured Questionnaire	n=105	The score of standard precaution awareness ($t=-2.84$, $p=.005$) and standard precaution performance ($t=-11.38$, $p<.001$). Also, there was a positive correlation between awareness and performance ($r=.209$, $p=.033$). It was confirmed that Scenario based infection control education was effective in improving the awareness and performance of standard precaution of nursing college students.
A26	Sang-Sook Kim	Chung-Ang Univ. Master's Thesis	2019	The this study was conducted to develop and apply an education program using standard patient for infection control and to identify the effects of infection-related anxiety, standard precaution knowledge, standard precaution awareness, self-efficacy, and infection control performance	Experimental research/Non equivalent control-group pretest-posttest design	Questionnaire	n=62	There was no statistically significant difference between the two groups in the pre-post difference scores on standard precaution knowledge, infection-related anxiety, standard precaution awareness, and self-efficacy. The infection control performance was significantly higher in the group that applied infection control education using standardized patients than the group that applied conventional infection control education.
A27	Chang-Sung Ok, Kyeong-Yae Sohn, Kyung-He Kim, Jong-Soo Won, Min-Jung Choi,	Journal of Korean Acad Fundam Nurs	2019	In the nursing profession, it is imperative that students are able to transfer their undergraduate knowledge and skills into practice to become competent nurses. The aim of this study was to illuminate how infection prevention and control (IPC) education would be conducted in undergraduate nursing programs	Qualitative research/ Focus Group Interview	Interview	n=12	Focus group interview analysis showed that IPC education in undergraduate nursing programs for fostering IPC competency was composed of two categories: a pre-clinical course and a clinical course. Each included three subcategories -education contents, education strategies, and considerations of how infection control is taught to students as they continue from beginning to advanced-and the themes of each subcategory were derived.

No	Author	Major field	Year	Purpose	Type/Design	Method	Sample	Main result
A28	Seung-Kyo Chaung Eun-Su Do, Soori-Gu Kim	Journal of the Korea Academia-Industrial cooperation Society	2019	This study was conducted to examine the effects of awareness of infection control, career decision making self efficacy and critical thinking disposition on the performance of infection control among nursing students	Quantitative research/ Descriptive survey research	Questionnaire	n=404	The average score of awareness of infection control was 4.75 points, career decision making self efficacy was 3.02 points, critical thinking disposition was 4.73 points and performance of infection control was 4.46 points. Performance of infection control was positively influenced by age, awareness of infection control and career decision making self efficacy. The explanatory power of the model was 38.6%.
A29	Hyo-Shin Kim	Journal of Journal of Korean Nursing Research	2019	This study was attempted to investigate healthcare associated infection of nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=172	The recognition of healthcare associated infection in the 4th grades was significantly higher than that of first grades. The recognition of healthcare associated infections who had more than 6 times of handwashing per day was significantly higher than that of students who had less than 5 times.
A30	Yu-Jeong Kim	Journal of Korean Entertainment Industry Association	2019	The purpose of this study was to investigate nursing students' knowledge, awareness and performance and to identify the influencing factors on performance of standard precaution for Healthcare-associated Infection.	Quantitative research/ Descriptive survey research	Questionnaire	n=334	The results of stepwise multiple regression indicates that awareness ($\beta=.507, p=.000$) and grade ($\beta=.169, p=.000$) and experience of infection prevention education ($\beta=.094, p=.043$) predicts 30.8% in performance of standard precaution ($F=50.520, p=.000$).
A31	Sung-Jung Hong, Hyun-Ji Bae, Ji-Min Lee	Journal of the Korean Data Analysis Society	2019	The purpose of this research was to evaluate the knowledge and attitudes for infection prevention and the satisfaction for education.	Experimental research/ Nonequivalent control-group pretest-posttest design	Questionnaire	n=60	The smartphone-based education group demonstrated significantly better knowledge ($t=-10.317, p<.001$) and attitude score than participants in the control group ($t=-2.626, p=.005$). And the scores on satisfaction was showed significantly differences between two groups ($t=3.738, p<.001$).
A32	Mi-Ra Jung, Eun Jeong	Journal of Korean Academy of Nursing Administration	2019	This study was to examine relationships among empowerment, awareness and performance on standard precautions and identify the factors that affect performance of standard precaution in nursing students experiencing clinical practice.	Quantitative research/ Descriptive survey research	Questionnaire	n=168	The result of the stepwise multiple regression indicates the awareness predict 77.7% ($F=579.84, p<.001$) in the performance of standard precaution.
A33	Min-Kyoung Park, Mi-Na Ahn	Journal of the Korea Convergence Society	2019	The purpose of this study was to investigate the relationship between attitude toward patient safety, empowerment and awareness, performance of standard precaution for healthcare associated infection control and prevention and to identify the influencing factors of the performance in nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=185	As a result of multiple regression analysis showed that the factors influencing the performance of the standard precaution were awareness, empowerment, participation in the patient safety campaign and the performance was explained by 51.0%
A34	Mi-Ok Song, Jeong-Eun Moon	Journal of the Korea Convergence Society	2019	In this preliminary study exploring the development of an convergent educational program, we identified the factors that affect adherence to healthcare-associated infection (HAI) control guidelines.	Quantitative research/ Descriptive survey research	Questionnaire	n=183	The model fit was $\chi^2=52.06$ ($df=9, p<.01$), GFI=.93, RMSEA=.16, NFI=.85, and CFI=.90, and the explanatory power was 26.2%. As a result in this study, it was found that the theory of planned behavior (TPB) was appropriate for explaining the intention about healthcare-associated infection control guidelines.
A35	Jung-Tae Son, Bo-Gyeong Lee, Eun-Kyung Lee	Journal of Korean Data and Information Science Society	2019	This study was to identify the protective motivation, standard precaution attitude and infection control confidence of nursing college students, and try to understand the effect of protection motivation and standard precaution attitude on infection control confidence.	Quantitative research/ Descriptive survey research	Questionnaire	n=104	The results showed that protective motivation and standard precaution attitude of nursing college students had a significant relationship with infection control confidence, and the more positive the protective motivation and standard precaution attitude were, the more the infection control confidence improved.
A36	Yun-Soo Kim, Sung-Sil Hong	Journal of Korean Society of Public Health Nursing	2019	This study attempts to identify the level of awareness, ethical awareness, and decision-making among nursing students, in response to pandemic infectious diseases.	Quantitative research/ Descriptive survey research	Questionnaire	n=210	Ethical awareness of pandemic infectious diseases was high, with demands for accurate information and proper protective equipment. Overall, ethical decision-making when responding to pandemic infectious diseases represented a high score. Also, higher awareness levels of pandemic infectious diseases would result in increased ethical and ethical decision-making
A37	Bong-Hee Kim, Hee-Young Kang	Journal of Korean Society of Industrial Science and Technology	2019	This study seeks to establish the degree of personal protective system knowledge, awareness, and attitudes and relationships with acute respiratory infections in nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=200	The subject's personal protective reserve-related knowledge score was 17.83 out of 20, the recognition score was 3.68 out of 5, and the attitude score was 4.14 out of 5. Therefore, the level of knowledge and attitude was high, and awareness was moderate. Nursing school students' attitudes related to personal protective areas have a significant static correlation with knowledge and perception, so individual protection-related attitudes were higher levels of knowledge and awareness.

No	Author	Major field	Year	Purpose	Type/Design	Method	Sample	Main result
A38	Da-Jung Ryu, Eun-Jung Ryu	Journal of Korean Biological Nursing Science	2019	The aim of this study was to identify awareness and competency for Multi-Drug Resistant Organisms (MDRO) infection control in nursing students with experience of clinical practice.	Quantitative research/ Descriptive survey research	Questionnaire	n=231	The awareness and the competency for Carbapenem Resistant Enterobacteriaceae (CRE) infection control were lower than that of Methicillin-Resistant Staphylococcus aureus (MRSA). The agreement between the awareness and the competency of MDRO infection control in participants was low with regard to isolation, contact precautions, and disinfection for MRSA. Also, it was low with respect to disinfection, isolation, contact precautions, and carrier identification for CRE. The awareness and the competency of MDRO infection control exhibited significant positive correlation
A39	Hae-Jin Kim, Eun-Kyung Kim	Journal of Learner-Centered Curriculum and Instruction	2020	This study is a systematic review of literature to analyze the characteristics and effects of infection management education programs conducted for nursing students.	Literature review	Thesis review	n=9 theses	The number of studies on infection management education programs targeting nursing students was insufficient compared to the recent demands of healthcare workers for infection control and education was mostly focused on third grade students. The infection management education was found to have a positive effect on the subject's knowledge, attitude, and performance of infection management, the main outcome variable.
A40	Eun-Young Yoo	Journal of Digital Convergence	2020	This study aims to identify the importance and degree of performance of COVID19 infection control educational program for 4th grade nursing college students, and to prepare the basic data for developing COVID19 infection control nursing education program based on this study	Quantitative research/ Descriptive survey research	Questionnaire	n=72	The overall average of importance of COVID19 infection control nursing was 4.4 out of 5, and the overall average of performance was 2.4 out of 5. The greatest difference in importance and performance were the sectors of personal protection (equipment dressing & undressing) and collecting safe sample
A41	Keong-Sook Jang, So-Ra Choi, Ja-Ok Lee	Journal of Learner-Centered Curriculum and Inst	2020	This study is to identify level of knowledge of standard precautions, health belief, and self-efficacy and identify influencing factors of performance on standard precautions of infection control in nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=190	The knowledge of standard precautions was 18.29, health belief was 3.55, self-efficacy was 4.40, and the performance of standard precautions was 4.81. self-efficacy ($\beta=.409, p<.001$) and perceived severity ($\beta=.188, p=.007$) were the factors influencing performance of standard precautions and explained 20.3% of variance of performance of standard precautions.
A42	Eun-Young Yoo, Yun-Kyoung Jung	Journal of Humanities and Social Sciences 21	2020	This study aims to i) develop a training simulation for COVID-19 infection control and ii) assess its nursing performance, anxiety and self-confidence in clinical decision-making for the 4th year nursing students	Experimental research/ one-group pretest-posttest design	Questionnaire	n=65	Results show significant growth in self-confidence ($t=11.42, p=.001$) and nursing performance ($t=-22.15, p=.001$), while anxiety in decision-making significantly dropped ($t=-22.00, p=.001$).
A43	Eun-Joo Ji, Hyung-Eun Seo	Journal of Convergence for Information Technology	2020	This study was to investigate effect of simulation based education using standardized patient for contact precaution infection control for nursing student	Mixed method design research/ Quasi-experimental study, one-group pretest-posttest design	Questionnaire	n=67	There were 39 significant statements, which were classified into 13 categories, suggesting that education on simulation program using standardized patient for contact precaution infection control is effective strategy to enhance knowledge and performance confidence related to MDRO infection control and practical nursing infection control skill, patient centered care, inter-professional collaboration.
A44	Young-Sun Ha, Myung-Ji Sohn	Journal of the Korea Convergence Society	2020	This study examined the effect of using web-based distance program in home health education for nursing college students in COVID-19 special disaster area.	Experimental research/Non equivalent control-group pretest-posttest design	Questionnaire	n=49	The experimental group had significantly different in knowledge related home health nursing, perceived motivation, and learning commitment in comparison to the control group.
A45	Chang-keum Lee, Jun-hee Ahn	Journal of Korea Academy Industrial Cooperation Society	2020	This study explores experiences of college nursing students during the COVID-19 pandemic.	Qualitative Study/ Phenomenological Analysis	Interview	n=10	We identified a total of 6 theme clusters: increased fear of an infection, feeling isolated due to the changed way of life, feeling perplexed about unexpected circumstances, inability to adapt to the sudden change in classroom instruction, feeling burdened about clinical practice, and confronting the reality as a preliminary nurse. The analyzed data revealed that subjects had numerous experiences about COVID-19.
A46	Eun-Bi Jo, Cho Rong-Hwang, Jae-Oak Yu, Hye-Yon Jin, Yu-Jin Kim, A-Ron Choi, Han-Na Lee	Journal of East-West Nursing Research	2020	This study aims to understand the effect of attitudes toward COVID-19, subjective norms, and intentions toward social distancing as a preventative measure for COVID-19 in nursing university students, and to provide basic data for COVID-19 prevention.	Quantitative research/ Descriptive survey research	Questionnaire	n=169	Intention was the most influential factor on social distancing ($\beta=.29, p=.002$), followed by the number of breakfasts per week ($\beta=.18, p=.005$), school grade ($\beta=-.16, p<.001$), and smoking status ($\beta=-.13, p=.046$). These variables explained 35.0% of factors influencing social distancing ($F=12.24, p<.001$).

No	Author	Major field	Year	Purpose	Type/Design	Method	Sample	Main result
A47	Hee-Jung Kim	Journal of Korean Society of Public Health Nursing	2020	This study aimed to identify the factors influencing competency for Multi-Drug Resistant Organisms (MDRO) infection control in nursing students with clinical practice experience.	Quantitative research/ Descriptive survey research	Questionnaire	n=175	Factors influencing the competency of MDRO infection control were perceived benefit ($\beta=.38$, $p<.001$), knowledge toward MDRO infection control ($\beta=.21$, $p=.001$), attitude in patient safety management ($\beta=.17$, $p=.028$), and perceived barrier ($\beta=-.15$, $p=.029$) with an explanatory power of 34.2%.
A48	Hae-Ran Kim, Eun -Young Choi, Shin-Young Park, Eun-A Kim	Journal of Korean Acad Nurs	2020	Coronavirus Disease 2019 (COVID-19), an emerging infectious disease introduced in South Korea in 2020, Medically inclined college students are more susceptible to be infected by the virus.	Quantitative research/ Descriptive survey research	Questionnaire	n=400	The study subjects had high knowledge and optimism related to COVID-19. Preventive behavior against COVID-19 was affected mostly by attitude ($\beta=.32$, $p<.001$). Such behavior was also high in relation to knowledge ($\beta=.17$, $p<.001$), and nursing students ($\beta=.15$, $p=.002$).
A49	Mih-Wa Park	Journal of Digital Convergence	2020	This study was a descriptive research study to identify of awareness about pandemic influenza, ethical awareness, and ethical decision-making in the situation of COVID-19 pandemic.	Quantitative research/ Descriptive survey research	Questionnaire	n=194	Ethics awareness and ethical decision-making levels were higher for those who had a history of infection with new type of infectious disease than those who did not. Awareness about pandemic influenza is positively correlated with ethical awareness ($r=.291$, $p<.001$) and ethical decision-making related to pandemic influenza ($r=.143$, $p=.046$), ethical awareness is a positive correlation with ethical decision-making ($r=.274$, $p<.001$).
A50	Ha-Ni Yi, Han-Na Jeong, Jin-Shil Kim	Journal of Nursing and Health Issues	2021	This study aimed to examine the correlations among college students' knowledge, attitudes, and compliance with preventative behaviors regarding COVID-19; and compare these COVID-19-related perspectives among college students majoring in nursing, other health sciences, and non-health sciences.	Quantitative research/ Descriptive survey research	Questionnaire	n=400	A significant difference was found in attitudes, with nursing students and other health science students having more positive attitudes toward COVID-19 guidelines than non-health science students ($H=6.63$, $p=.036$).
A51	Jin-Hee Park, Ji-Hye Kim, Hyun-Ju Lee, Purum Kang	Journal of the Korean Applied Science and Techn	2021	This study aimed to explore anxiety, risk perception, information literacy, and performance level of infection prevention practices against coronavirus disease (COVID-19) among nursing students during the pandemic.	Quantitative research/ Descriptive survey research	Questionnaire	n=224	The higher the level of anxiety, risk perception, and information literacy, the higher the level of infection prevention practices. The level of anxiety with respect to infection and risk perception may increase when new types of infectious diseases such as COVID-19 break out.
A52	Yeoung-Suk Song, So-Hae Byun, Sun-Yeong Kang, Da-Min Jeong, Yu-Jin Choi, Ji Won Jang, Ye-Ryeong Han, Ung-Hoon Lee	Journal of Health Informatics and Statistics	2021	This study was conducted to investigate the effect of health beliefs, safety motivations, and safety-climate on the performance of taking standard precautions of nursing college students with clinical practice experience.	Quantitative research/ Descriptive survey research	Questionnaire	n=173	Factors affecting the performance of taking standard precautions are health belief ($\beta=0.33$, $p=0.003$), safety motivation ($\beta=0.28$, $p=0.003$), safety-climate ($\beta=0.20$, $p=0.009$).
A53	Sun-Jung Park, Ji-Eun Han, Keun-Hey Kwak	Journal of Korean Nursing Research	2021	This study is a descriptive survey research in order to grasp the influence of nursing students' knowledge, attitudes and infection prevention behaviors for COVID-19 upon the nursing intention for patients with the emerging infectious diseases.	Quantitative research/ Descriptive survey research	Questionnaire	n=233	As for the findings, there was a positive correlation ($r=.143$, $p=.046$) between the knowledge ($r=.72$, $p<.001$), attitudes ($r=.68$, $p<.001$) & infection prevention behaviors ($r=.85$, $p<.001$) for COVID-19 and the nursing intention for patients with the emerging infectious diseases. Also, the influence upon the nursing intention for patients with the emerging infectious diseases was in order of infection prevention behaviors ($\beta=1.64$, $p<.001$), attitudes ($\beta=1.50$, $p<.001$) and knowledge ($\beta=.86$, $p<.001$) for COVID-19.
A54	Ji-Young Ahn	Daejeon Univ Master's Thesis	2021	This study was to investigate the influence of knowledge, health belief, nursing professionalism on performance of standard precaution in nursing students.	Quantitative research/ Descriptive survey research	Questionnaire	n=189	Factors affecting performance of standard precautions included major health belief of standard precaution ($\beta=.287$, $p=.001$), nursing professionalism ($\beta=.197$, $p=.008$). The explanatory power of the model was 15.9%.

군에 비해 지식, 태도, 수행자신감이 높은 것으로 확인되었으며, Kim & Song[A25]의 연구에서는 사례기반 감염관리 교육 후 표준주의 인지도 및 수행도의 점수가 사전조사보다 유의하게 증가한 것으로 나타났다. 또한 Kim[A26]의 연구에서도 표준화 환자를 활용한 감염관리 교육을 적용한 그룹이 대조군보다 감염관리 실천율이 유의하게 높은 것으로 확인되었다. Hong 등[A31]의 연구에서는 모바일 기반 애플리케이션의 감염관리 교육프로그램을 제공하였으며, 실험군은 대조군에 비해 감염에 대한 지식, 태도의 점수에서 유의한 차이가 있는 것으로 나타났다.

IV. 논의

2019년 12월 처음 확인된 SARS-CoV-2 감염증의 확산에 따라 2020년 3월 11일 세계보건기구가 대유행(pandemic)을 선언하였고, 많은 나라가 국경을 봉쇄하는 사태까지 이르게 되는 등 감염병에 대한 새로운 패러다임의 전환이 일어나게 되었다[1]. 이에 본 연구에서는 최근 10년간 게재된 국내 간호대학생 감염 관련 연구 논문을 문헌고찰 방법으로 분석하여 향후 필요한 연구의 방향을 제시하고자 시도되었으며, 본 연구에서 도출된 주요 결과를 토대로 다음과 같이 논의하고자 한다.

국내 간호대학생 감염 관련 연구를 통해 나타난 일반적 특성의 결과 2015년 이전 7편에서 2016년 이후 47편으로 뚜렷한 증가세를 보였다. 이는 2015년 중동과 북아프리카, 12개국에서 발생한 MERS-CoV(중동호흡기증후군 코로나바이러스), 2016년 중남미 및 43개국에서 발생한 ZIKA-virus(지카바이러스) 그리고 2019년 12월 중국, 41개국(2020년 2월 기준)에서 발생한 2019-nCoV(코로나바이러스감염증-19)와 관련이 깊은 것으로 보이며[19], 특히 국내 간호학의 감염 관련 연구는 감염병 대유행에 따라 증가한 것으로 확인됨에 따라 향후 감염병 유행과 관련된 연구의 탐색 영역이 확장될 것으로 여겨진다. 또한 연구의 63%가 IRB 승인을 받지 않은 것으로 나타났으며 이는 국내의 다

양한 문헌고찰 연구와 유사한 결과[20]로 나타났다. 최근 대부분의 학술지에서 IRB 승인 허가를 요구하고, 연구윤리 지침에 대한 준수를 요구할 뿐만 아니라 연구자, 연구에 참여하는 자, 독자 모두가 신뢰할 만한 과정을 통해 연구가 진행되기를 요구하고 있어[21] 향후 진행되는 연구에서는 연구윤리의 강화가 필요함을 시사한다.

감염과 관련되어 이루어진 연구는 양적 연구가 80%이었으며, 실험연구 12.9%, 질적연구 3.7%, 종설연구와 혼합설계연구가 각각 1.9%로 확인되었다. 국내 학술지에 게재된 연구는 양적연구가 차지하는 비중이 가장 높은 것으로 나타난 반면, 양적 연구를 제외한 나머지 연구설계는 비중이 낮은 것으로 확인되었다. 양적연구는 현상에 대한 풍부한 자료를 얻고 이를 통해 현상을 이해하는데 효과적인 연구 방법이므로[22] 감염과 관련된 여러 가지 현상을 탐구하기 위해 다수의 조사연구가 진행된 것으로 볼 수 있다. 추후 감염과 관련되어 나타나는 현상에 대한 심도 깊은 이해나 근거를 확인하기 위해서는 비교적 덜 알려진 영역에서 사회적 실체와 연상이 어떻게 해석되고, 이해되고, 경험되는지에 관심을 두고 본질적인 형태의 분석과 설명을 강조한 질적연구나[23] 실체적 현상을 조금 더 체계적으로 객관화하는 실험연구 등 다양한 연구설계가 필요할 것이다.

감염과 관련된 연구의 주요 용어는 표준주의 지침이 가장 많이 사용되었으며, 수행, 인지, 지식 순으로 높았다. 표준주의지침은 병원감염관리 주요 지침으로 환자와 의료진의 병원 감염관련 10개의 영역을 포함하고 있으며 병원감염으로부터 환자와 의료진을 보호하는 것이 주요 목적으로[24] 감염병의 예방을 위한 행위에 관한 연구가 비중 있게 다루어졌음을 확인할 수 있었다. 다음으로는 코로나 19가 다수 사용되었으며, 감염예방, 감염예방 행위, 태도, 지식 순으로 나타났다. 이는 2019년 이후 발생한 신종 감염병인 코로나 19에 대한 관심도가 매우 증가했을 뿐만 아니라 이를 극복하고자 하는 예방행위와 지식에 대한 요구가 높아진 것[25]과 같은 맥락의 결과라 할 수 있다. 다음으로는 감염병 관련 수행, 혈액 및 체액노출 현황, 임파위

먼트, 의료 관련 감염인지도, 환자 안전에 대한 태도, 관리, 혈액 매개 감염관리 지식들이 주요 용어로 확인되었다. 이는 의료진의 감염에 대한 인지와 환자의 안전에 초점을 둔 연구들로 의료진의 행위의 결과가 환자 안전으로 귀결되는 현상[26]에 대한 고찰이 심도 있게 다루어진 결과로 볼 수 있다. 이러한 결과는 향후 이루어질 연구가 감염과 관련된 사건이나 새로운 감염병의 출현을 중심으로 확대되고, 환자의 안전 문제를 포함하는 연구의 영역이 확장될 것임을 시사한다.

감염과 관련된 요인 및 효과를 확인한 결과 2015년 이전 기준으로 감염병 관리와 표준주의, 혈액 및 체액, 다제내성구균, 반코마이신내성장구균으로 확인되었으며, 서술적 조사연구나 시뮬레이션 교육프로그램을 중재에 대한 임상수행능력, 임상수행판단능력, 감염관리 수행 자신감을 향상시키는 효과를 확인하는 연구들로 나타났다. 이는 2011년부터 이루어진 의료기관인증제에서 환자 안전과 감염에 대한 지표들이 주요한 평가 내용으로 다루어지기 시작한 시점[27]과 관련이 있는 것으로 볼 수 있다. 2015년 이후에는 표준주의지침과 함께 호흡기계 감염이 다루어지기 시작했고, 메티실린내성황색포도상구균, 혈액매개 감염, 대유행감염, 코로나19에 대한 연구들로 나타났다. 병원감염관리와 표준주의지침은 대부분 서술적 조사연구였으며, 표준 환자를 활용한 감염관리 교육 후 표준주의 인지도와 수행을 확인하거나, 사례중심의 시뮬레이션을 활용한 교육의 효과로 감염관리 실천율을 비교하는 연구가 이루어졌음을 확인할 수 있었다. 이는 임상을 준비하는 교육환경에서도 감염관리에 대한 효율적 대처에 대한 요구가 증가하고 있으며[28], 이를 확인하고자 하는 연구의 시도가 뒷받침되고 있음을 나타낸다. 또한 사례기반 시뮬레이션 교육은 발생 가능한 임상 상황에 대한 시나리오를 재현하고 디브리핑의 과정을 거쳐 상황을 고찰하는 과정을 통해 간호 지식과 술기를 습득하는 교육방법으로 반복 학습과 시행착오가 허용되는 장점을 통해 임상 수행 능력을 향상시킬 수 있는 매우 효과적인 교육 방법[29]으로 앞으로 감염 교육에 적극 활용되리라 본다.

현재 간호교육 환경은 감염병 확산과 더불어 새로

운 교육의 패러다임 전환을 요구하고 있어, 교육환경에서 일어나는 변화에 대한 다양한 감염 관련 연구가 필요할 것이다. 특히, 간호 학생을 대상으로 하는 감염과 관련된 연구에서는 비대면 교육 즉 VR을 활용한 교육, 시각화 시뮬레이션(visualization simulation)을 활용한 감염 관련 교육의 효과를 확인하는 활발한 연구가 이루어질 것으로 예상된다.

V. 결론 및 제언

본 연구는 국내 간호대학생을 대상으로 한 감염관련 연구 동향분석을 통해 일반적 특성, 주요 용어, 주요 요인 및 효과 등을 종합적으로 확인하고, 향후 감염관련 연구 방향성을 제시한 점에 그 의의가 있다. 또한 본 연구의 결과를 기초적인 기틀로 하여 향후 간호대학생의 감염관련 교육 및 프로그램 등의 과학적 검증 및 효과성 분석을 위한 자료로 활용될 수 있을 것으로 기대한다. 본 연구 결과를 바탕으로 다음을 제언하고자 한다. 첫째, 국내 간호대학생을 대상으로 진행된 감염관련 연구의 연구 설계는 주로 양적연구 조사연구가 주로 진행되었다. 이에 추후 연구에서는 다양한 연구방법인 질적연구, 실험연구, 종설연구 방법론 등의 연구방법론 적용이 필요하다. 둘째, 본 연구 결과를 바탕으로 감염과 관련된 주요 변수 연구에 대한 다각적인 측면과 반복적인 연구가 진행되어야 하며, 감염 관련 필요성과 중요성에 따라 좀 더 과학적이고 타당성 있는 연구들이 시행되어야 할 것이다. 또한 간호대학생의 감염의식을 높일 수 있는 감염관리 개발 프로그램을 개발하고 그 효과를 확인하는 연구를 제언한다.

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