Development of examination objectives based on nursing competency for the Korean Nursing Licensing Examination: a validity study

Sujin Shin¹, Gwang Suk Kim², Jun-Ah Song³, Inyoung Lee¹*

¹College of Nursing, Ewha Womans University, Seoul, Korea
²College of Nursing, Mo-Im Kim Nursing Research Institute, Yonsei University, Seoul, Korea
³College of Nursing, BK21 FOUR R&E Center for Learning Health Systems, Korea University, Seoul, Korea

Purpose: This study aimed to develop the examination objectives based on nursing competency of the Korean Nursing Licensing Examination.

Methods: This is a validity study to develop the examination objectives based on nursing competency. Data were collected in December 2021. We reviewed the literature related to changing nurse roles and on the learning objectives for the Korea Medical Licensing Examination and other health personnel licensing examinations. Thereafter, we created a draft of the nursing problems list for examination objectives based on the literature review, and the content validity was evaluated by experts. A final draft of the examination objectives is presented and discussed.

Results: A total of 4 domains, 12 classes, and 85 nursing problems for the Korean Nursing Licensing Examination were developed. They included the essentials of objectives, related factors, evaluation goals, related activity statements, related clients, related settings, and specific outcomes.

Conclusion: This study developed a draft of the examination objectives based on clinical competency that were related to the clinical situations of nurses and comprised appropriate test items for the licensing examination. Above results may be able to provide fundamental data for item development that reflects future nursing practices.

Keywords: Nursing licensure; Nurse’s role; Nursing education; Republic of Korea

Introduction

Background/rationale

The Korean Nursing Licensing Examination aims to verify the minimum competency required to perform the clinical practice as a new nurse. However, the items for the Korean Nursing Licensing Examination were written according to the subject-centered learning objectives of the nursing college curriculum [1]. Limitations have been raised in the evaluation of the minimum competency required to perform as a registered nurse [2]. To overcome these limitations, many studies have been conducted to reflect clinical practice in the exams such as job analysis and defining the minimum competency of new nurses, and linking this with learning objectives [3-5], Kim et al. [6] in 2018 presented an activity statement suitable for the Korean clinical situation based on the previous study that was analyzed the duties of new nurses, linked them with learning objectives, and defined the minimum competency of...
new nurses [5]. These studies provide a basis for proposing an integrated model for the Korean Nursing Licensing Examination. Although previous studies have suggested the basis for verifying the competence of new nurses to be evaluated in the Korean Nursing Licensing Examination, there is a limit to applying this result to the implementation of the Korean Nursing Licensing Examination. The examination objectives for the licensing examination should consider the competency for expansion of nurses’ workplaces and their expanding roles according to changes in the medical environment, such as the increase in the elderly population, the pandemic of infectious disease, and the development of the technology. In medical education, the objectives for the Korean Medical Licensing Examination of theoretical knowledge and practicum have been developed and used to develop items for licensure examination [7,8]. The development of examination objectives for the Korean Nursing Licensing Examination is required as an essential research task that can no longer be delayed.

Therefore, in this study, we developed a draft of the examination objectives for the Korean Nursing Licensing Examination that reflects clinical practice to evaluate the minimum competency of new nurses and presented the specific contents of each objective for the examinations.

Objectives
This study aimed to develop the examination objectives for the Korean Nursing Licensing Examination, verify its content validity, and present the specific contents of each objective for the examinations.

Methods

Ethics statement
To confirm the validity of the content, information on the examination objectives developed by the experts and explanations of the research objectives were provided. The validity of the experts was not exposed to personal information at the time of the survey and was carried out in terms of enlargement. Therefore, responding to the inquiry was regarded as prior consent.

Study design
It is a validity study. This was conducted in the following phases: (1) review and analysis of related literature, (2) development of a draft of examination objectives, (3) verifying the contents validity by experts, (4) expert consulting, and (5) a public hearing from related experts.

Setting
A validity survey was conducted with experts from 17th to 29th, December 2021 to select the final list to be developed as the objective for examination. The experts were selected from nursing education and clinical professionals.

Participants
Experts for validation were selected from the nursing educator and clinical nurses. The inclusion criteria were nursing college professors or clinical nurses who had experience in developing or reviewing items in the Korean Nursing Licensing Examination and educational nurses participating in newly graduated nurses’ education. A total of 50 individuals (30 professors and 20 clinical nurses) participated in the survey. The average length of the education experience of professors was 20.3 ± 7.7 years, and the average length of clinical experience of clinical nurses was 18.8 ± 11.4 years (Table 1).

Variables and measurement
We reviewed the current Korean Nursing Licensing Examination objectives and presented the specific contents of each objective for the examinations.

Table 1. The characteristics of participants (N=50)

| Characteristic                         | No. (%) |
|---------------------------------------|---------|
| Age (yr)                              |         |
| ≤ 40                                  | 9 (18.0) |
| 41–50                                 | 16 (32.0) |
| 51–60                                 | 19 (38.0) |
| > 60                                  | 6 (12.0) |
| Location of worksite                  |         |
| Seoul                                 | 17 (34.0) |
| Incheon, Gyeonggi, Gangwon           | 8 (16.0) |
| Gwangju, Jeolla                       | 4 (8.0) |
| Busan, Ulsan, Daegu, Gyengsan        | 11 (22.0) |
| Daejeon, Chungcheong                  | 10 (20.0) |
| Affiliation                           |         |
| Nursing education institution         | 30 (60.0) |
| Clinical setting                      |         |
| Hospital                              | 16 (32.0) |
| Public health                         | 2 (4.0) |
| Occupational                          | 1 (2.0) |
| Long-term care facilities             | 1 (2.0) |
| Education                             |         |
| Baccaluarete                          | 7 (14.0) |
| Master                                | 5 (10.0) |
| Dorctoral                             | 38 (76.0) |
| Experience in the Korean Nursing Licensing Examination |         |
| No                                    | 19 (38.0) |
| Yes                                   |         |
| Item development                     |         |
| Item developmenta                     | 22 (44.0) |
| Test consultaionf                     | 18 (38.0) |
| Item reviewi                          | 20 (40.0) |

aMultiple responses.
Selection of nursing problem list for developing examination objectives

An initial list of examination objectives was developed based on a literature review of the nursing licensing examination and nursing problems of the North American Nursing Diagnosis Association International (NANDA-I) [12], which is a standardized nursing classification system. A total of 13 domains, 45 classes, and 171 nursing problems were derived from the list of problems faced by new nurses. A content validity survey was conducted with a group of experts to determine the priority of the derived nursing problems. The validity of importance in practice was 0.52 to 1.00 and the average was 0.86; the validity of possibility for the items was 0.46 to 1.00 and the average was 0.84. Of the 171 nursing problems, 130 had a CVI ≥ 0.75 in both importance and possibility validity. Based on the results of the validation by the experts, a total of 13 domains, 45 classes, and 88 nursing problems were selected to develop the examination objectives (Table 2). Raw responses data of participants are available from Dataset 1.

Development of the draft examination objectives for the Korean Nursing Licensing Examination

For the final list of examination objectives for the Korean Nursing Licensing Examination, expert consultation was conducted by 2 nursing college professors and 2 clinical nurses with experience in writing and reviewing items for the Korean Nursing Licensing Examination. After consulting experts, 3 similar nursing problems were integrated, and finally, 4 domains, 12 classes, and 85 nursing problems were selected. The contents were derived from previous studies related to nursing problems and minimum competency. The examination objectives were comprised of the necessity or rationale of each examination objective, related factors, evaluation goals, related activity statements, related clients (individual, family, community/population group), related settings (acute, chronic disease management, wellness, prevention, regenerative/restorative, hospice/palliative), and specific outcomes.

Discussion

Interpretation

In this study, we explored the significance of the licensing examination for nurses and the importance of objectives for examinations, defined examination objectives for nursing licensing examinations, and developed examination objectives for the Korean Nursing Licensing Examination. Since they were developed based on the minimum competency of nurses and clinical situations, there are no boundaries between nursing subjects. In this study, based on NANDA-I, a globally standardized nursing classification...
Table 2. Content validity index for nursing problems

| Domain/class                  | Nursing problems                          | Importance |   | Possibility |   |
|-------------------------------|-------------------------------------------|------------|---|-------------|---|
|                               |                                           | CVI<sup>a</sup> | Mean | CVI<sup>a</sup> | Mean |
| **1. Health promotion**       |                                           |             |     |             |     |
| Health awareness              | Sedentary lifestyle                       | 0.84       | 3.06 | 0.78        | 2.90 |
|                               | Readiness for enhanced health literacy    | 0.74       | 3.00 | 0.68        | 2.82 |
| Health management             | Frail elderly syndrome                    | 0.80       | 3.22 | 0.82        | 3.18 |
|                               | Deficient community health               | 0.72       | 2.88 | 0.74        | 2.94 |
|                               | Risk-prone health behavior                | 0.82       | 3.28 | 0.86        | 3.32 |
|                               | Ineffective health maintenance behaviors  | 0.84       | 3.32 | 0.84        | 3.30 |
|                               | Ineffective family health self-management | 0.78       | 2.98 | 0.78        | 3.02 |
|                               | Ineffective home maintenance behaviors    | 0.66       | 2.70 | 0.58        | 2.69 |
|                               | Ineffective protection                    | 0.68       | 2.82 | 0.60        | 2.88 |
| **2. Growth/development**     |                                           |             |     |             |     |
| Growth                        | Growth                                    | 0.88       | 3.42 | 0.84        | 3.42 |
| Development                   | Delayed child development                 | 0.90       | 3.46 | 0.94        | 3.54 |
|                               | Delayed infant motor development         | 0.86       | 3.34 | 0.88        | 3.36 |
| **3. Nutrition**              |                                           |             |     |             |     |
| Ingestion                     | Imbalanced nutrition                      | 0.98       | 3.70 | 0.96        | 3.72 |
|                               | Insufficient breast milk production       | 0.78       | 3.10 | 0.80        | 3.08 |
|                               | Ineffective breastfeeding                 | 0.84       | 3.24 | 0.86        | 3.28 |
|                               | Obesity                                   | 0.82       | 3.34 | 0.82        | 3.38 |
|                               | Overweight                                | 0.82       | 3.18 | 0.80        | 3.24 |
|                               | Impaired swallowing                       | 0.94       | 3.68 | 0.94        | 3.68 |
| Digestion                     | Impaired digestion                        | 0.96       | 3.68 | 0.92        | 3.62 |
| Absorption                    | Impaired absorption                       | 0.96       | 3.62 | 0.92        | 3.54 |
| Metabolism                    | Risk for unstable blood glucose level     | 1.00       | 3.94 | 1.00        | 3.90 |
|                               | Hyperbilirubinemia                        | 0.92       | 3.62 | 0.92        | 3.54 |
|                               | Risk for impaired liver function          | 0.98       | 3.82 | 0.98        | 3.78 |
|                               | Risk for metabolic syndrome               | 1.00       | 3.84 | 1.00        | 3.86 |
| Hydration                     | Risk for electrolyte imbalance            | 1.00       | 3.94 | 1.00        | 3.94 |
|                               | Risk for imbalanced fluid volume          | 1.00       | 3.88 | 0.98        | 3.84 |
|                               | Deficient fluid volume                    | 1.00       | 3.88 | 0.98        | 3.84 |
|                               | Excess fluid volume                       | 0.98       | 3.82 | 0.98        | 3.82 |
| **4. Elimination and exchange**|                                           |             |     |             |     |
| Urinary function              | Disability-associated urinary incontinence| 0.84       | 3.24 | 0.82        | 3.24 |
|                               | Urinary incontinence                      | 0.86       | 3.44 | 0.92        | 3.54 |
|                               | Impaired urinary elimination              | 1.00       | 3.78 | 1.00        | 3.80 |
|                               | Urinary retention                         | 0.98       | 3.70 | 0.96        | 3.66 |
| Gastrointestinal function     | Constipation                              | 0.90       | 3.50 | 0.88        | 3.48 |
|                               | Bowel continence                          | 0.84       | 3.30 | 0.82        | 3.26 |
|                               | Diarrhea                                  | 0.96       | 3.70 | 0.98        | 3.68 |
|                               | Impaired gastrointestinal motility        | 0.96       | 3.68 | 0.96        | 3.70 |
| Integumentary function        | Impaired integumentary function           | 0.96       | 3.62 | 0.98        | 3.64 |
| Respiratory function          | Impaired gas exchange                     | 1.00       | 3.88 | 1.00        | 3.88 |
| **5. Activity/rest**          |                                           |             |     |             |     |
| Sleep/rest                    | Sleep disturbance                         | 0.88       | 3.30 | 0.84        | 3.24 |
| Activity/exercise             | Decreased activity tolerance              | 0.86       | 3.26 | 0.86        | 3.26 |
|                               | Risk for disuse syndrome                  | 0.82       | 3.14 | 0.78        | 3.10 |
|                               | Impaired mobility                         | 0.92       | 3.46 | 0.90        | 3.44 |
|                               | Impaired sitting                          | 0.82       | 3.08 | 0.80        | 3.06 |
|                               | Impaired standing                         | 0.80       | 3.10 | 0.80        | 3.08 |
| Energy balance                | Imbalanced energy field                   | 0.66       | 2.78 | 0.62        | 2.68 |
|                               | Fatigue                                   | 0.80       | 3.18 | 0.80        | 3.18 |

(Continued to next page)
| Domain/class | Nursing problems | Importance | Possibility |
|--------------|------------------|------------|-------------|
|              |                  | CVI         | Mean        | CVI         | Mean        |
| Cardiovascular/pulmonary responses | Wandering (dementia) | 0.68 | 2.98 | 0.72 | 3.02 |
|               | Ineffective breathing pattern | 0.98 | 3.90 | 1.00 | 3.92 |
|               | Decreased cardiac output | 1.00 | 3.94 | 1.00 | 3.94 |
|               | Risk for impaired cardiovascular function | 1.00 | 3.88 | 1.00 | 3.88 |
|               | Ineffective lymphedema self-management | 0.92 | 3.50 | 0.90 | 3.50 |
|               | Impaired spontaneous ventilation | 0.98 | 3.82 | 0.98 | 3.80 |
|               | Risk for unstable blood pressure | 1.00 | 3.88 | 1.00 | 3.88 |
|               | Risk for thrombosis | 1.00 | 3.90 | 1.00 | 3.88 |
|               | Risk for decreased cardiac tissue perfusion | 1.00 | 3.86 | 0.98 | 3.84 |
|               | Risk for ineffective cerebral tissue perfusion | 1.00 | 3.90 | 1.00 | 3.88 |
|               | Ineffective peripheral tissue perfusion | 0.98 | 3.82 | 1.00 | 3.82 |
|               | Dysfunctional ventilatory weaning response | 0.94 | 3.58 | 0.94 | 3.56 |
| Self-care     | Activity of daily living self-care deficit | 0.86 | 3.34 | 0.86 | 3.34 |
|               | Self-neglect | 0.60 | 2.76 | 0.60 | 2.74 |
| 6. Perception/cognition | Unilateral neglect | 0.96 | 3.56 | 0.94 | 3.52 |
|               | Impaired orientation | 0.98 | 3.74 | 0.96 | 3.74 |
|               | Impaired sensation/perception | 0.98 | 3.76 | 0.96 | 3.76 |
|               | Acute confusion | 0.96 | 3.72 | 0.96 | 3.74 |
|               | Chronic confusion | 0.92 | 3.46 | 0.92 | 3.50 |
|               | Labile emotional control | 0.82 | 3.38 | 0.82 | 3.38 |
|               | Ineffective impulse control | 0.80 | 3.28 | 0.78 | 3.28 |
|               | Deficient knowledge | 0.94 | 3.58 | 0.90 | 3.46 |
|               | Impaired memory | 0.84 | 3.34 | 0.82 | 3.28 |
|               | Disturbed thought process | 0.84 | 3.26 | 0.82 | 3.22 |
| Communication | Impaired verbal communication | 0.86 | 3.46 | 0.88 | 3.50 |
| 7. Safety/protection | Risk for infection | 1.00 | 3.92 | 1.00 | 3.94 |
|               | Risk for surgical site infection | 0.94 | 3.72 | 0.94 | 3.70 |
| Physical injury | Ineffective airway clearance | 1.00 | 3.92 | 1.00 | 3.92 |
|               | Risk for aspiration | 1.00 | 3.92 | 1.00 | 3.92 |
|               | Risk for bleeding | 1.00 | 3.94 | 1.00 | 3.94 |
|               | Impaired dentition | 0.62 | 2.58 | 0.52 | 2.44 |
|               | Risk for dry eye | 0.78 | 3.12 | 0.74 | 3.04 |
|               | Ineffective dry eye self-management | 0.74 | 2.98 | 0.74 | 2.92 |
|               | Risk for dry mouth | 0.80 | 3.20 | 0.80 | 3.14 |
|               | Risk fall | 1.00 | 3.82 | 1.00 | 3.84 |
|               | Risk for injury | 0.92 | 3.60 | 0.90 | 3.60 |
|               | Risk for corneal injury | 0.84 | 3.20 | 0.82 | 3.20 |
|               | Nipple-areolar complex injury | 0.72 | 2.86 | 0.66 | 2.78 |
|               | Risk for urinary tract injury | 0.90 | 3.52 | 0.90 | 3.52 |
|               | Risk for perioperative positioning injury | 0.90 | 3.40 | 0.88 | 3.34 |
|               | Risk for thermal injury | 0.88 | 3.50 | 0.92 | 3.54 |
|               | Impaired oral mucous membrane integrity | 0.88 | 3.44 | 0.86 | 3.38 |
|               | Risk for peripheral neurovascular dysfunction | 0.94 | 3.64 | 0.96 | 3.60 |
|               | Risk for physical trauma | 0.94 | 3.66 | 0.90 | 3.60 |
|               | Risk for vascular trauma | 0.94 | 3.60 | 0.94 | 3.60 |
|               | Adult pressure injury | 0.98 | 3.82 | 0.98 | 3.80 |
|               | Child pressure injury | 0.88 | 3.48 | 0.82 | 3.36 |
|               | Neonatal pressure injury | 0.88 | 3.44 | 0.80 | 3.28 |
|               | Risk for shock | 1.00 | 3.90 | 1.00 | 3.90 |
|               | Impaired skin integrity | 0.94 | 3.74 | 0.98 | 3.74 |
### Table 2. Continued

| Domain/class          | Nursing problems                                      | Importance | Possibility |
|-----------------------|--------------------------------------------------------|------------|-------------|
|                       | CVI | Mean | CVI | Mean |
| Risk for sudden infant death | 0.90 | 3.54 | 0.94 | 3.54 |
| Risk for suffocation   | 0.92 | 3.72 | 0.92 | 3.66 |
| Delayed surgical recovery | 0.96 | 3.52 | 0.96 | 3.50 |
| Impaired tissue integrity | 0.96 | 3.60 | 0.94 | 3.56 |
| Violence               | CVI | Mean | CVI | Mean |
| Risk for female genital mutilation | 0.82 | 3.28 | 0.82 | 3.24 |
| Risk for other-directed violence | 0.80 | 3.24 | 0.76 | 3.12 |
| Risk for self-directed violence | 0.74 | 3.14 | 0.74 | 3.08 |
| Self-mutilation        | 0.84 | 3.30 | 0.82 | 3.28 |
| Risk for suicidal behavior | 0.92 | 3.58 | 0.90 | 3.54 |
| Environmental hazards  | CVI | Mean | CVI | Mean |
| Contamination          | 0.86 | 3.28 | 0.80 | 3.20 |
| Risk for occupational injury | 0.82 | 3.20 | 0.78 | 3.14 |
| Risk for poisoning     | 0.90 | 3.40 | 0.86 | 3.32 |
| Defensive processes    | CVI | Mean | CVI | Mean |
| Risk for adverse reaction to iodinated contrast media | 0.94 | 3.36 | 0.92 | 3.36 |
| Risk for allergy reaction | 1.00 | 3.70 | 1.00 | 3.70 |
| Risk for latex allergy reaction | 0.64 | 2.80 | 0.62 | 2.72 |
| Thermoregulation       | CVI | Mean | CVI | Mean |
| Hyperthermia           | 1.00 | 3.84 | 1.00 | 3.82 |
| Hypothermia            | 0.98 | 3.80 | 0.98 | 3.78 |
| Neonatal hypothermia   | 0.92 | 3.62 | 0.92 | 3.60 |
| Risk for perioperative hypothermia | 0.90 | 3.30 | 0.90 | 3.34 |
| Ineffective thermoregula | 0.96 | 3.64 | 0.96 | 3.66 |
| 8. Comfort             | CVI | Mean | CVI | Mean |
| Physical comfort       | CVI | Mean | CVI | Mean |
| Impaired physical comfort | 0.94 | 3.54 | 0.94 | 3.54 |
| Nausea                | 1.00 | 3.64 | 1.00 | 3.64 |
| Acute pain            | 1.00 | 3.88 | 1.00 | 3.86 |
| Chronic pain          | 1.00 | 3.72 | 1.00 | 3.68 |
| Labor pain            | 0.90 | 3.50 | 0.90 | 3.48 |
| Environmental comfort  | CVI | Mean | CVI | Mean |
| Impaired environmental comfort | 0.78 | 3.08 | 0.70 | 2.90 |
| Social comfort         | 0.74 | 2.96 | 0.70 | 2.88 |
| 9. Role relationship   | CVI | Mean | CVI | Mean |
| Caregiving roles       | CVI | Mean | CVI | Mean |
| Impaired parenting     | 0.80 | 3.12 | 0.84 | 3.14 |
| Caregiver role strain (burden) | 0.80 | 3.08 | 0.80 | 3.02 |
| Family relationships   | CVI | Mean | CVI | Mean |
| Risk for impaired attachment | 0.78 | 3.12 | 0.80 | 3.10 |
| Disturbed family identity syndrome | 0.68 | 2.80 | 0.66 | 2.82 |
| Dysfunctional family processes | 0.70 | 2.90 | 0.76 | 2.96 |
| Role performance       | CVI | Mean | CVI | Mean |
| Ineffective relationship | 0.68 | 2.88 | 0.66 | 2.86 |
| Parental role conflict | 0.78 | 3.02 | 0.74 | 2.96 |
| Ineffective role performance | 0.74 | 3.00 | 0.74 | 2.96 |
| Impaired social interaction | 0.72 | 2.94 | 0.74 | 2.92 |
| 10. Sexuality          | CVI | Mean | CVI | Mean |
| Sexual identity        | CVI | Mean | CVI | Mean |
| Sexual identity        | 0.70 | 2.78 | 0.74 | 2.82 |
| Sexual dysfunction     | 0.74 | 3.00 | 0.78 | 2.98 |
| Ineffective sexuality pattern | 0.76 | 2.92 | 0.76 | 2.88 |
| Reproduction           | CVI | Mean | CVI | Mean |
| Ineffective childbearing process | 0.90 | 3.38 | 0.90 | 3.42 |
| Risk for disturbed maternal-fetal dyad | 0.84 | 3.28 | 0.84 | 3.28 |
| 11. Coping/stress tolerance | CVI | Mean | CVI | Mean |
| Post-trauma responses  | CVI | Mean | CVI | Mean |
| Risk for complicated immigration transition | 0.60 | 2.60 | 0.50 | 2.52 |
| Post-trauma syndrome   | 0.86 | 3.36 | 0.90 | 3.36 |
| Rape-trauma syndrome   | 0.82 | 3.22 | 0.80 | 3.14 |
| Relocation stress syndrome | 0.78 | 3.10 | 0.76 | 3.06 |
| Coping responses       | CVI | Mean | CVI | Mean |
| Ineffective activity planning | 0.66 | 2.90 | 0.68 | 2.92 |

(Continued to next page)
system, nursing problems experienced by new nurses in the workplace are set as clinical situations, and the importance of clinical situations is judged based on the common training contents of new nurses, and the clinical situation of nurses and the minimum competency were linked.

The content validity by the experts in selecting the list of the final objectives for examination verified the importance in practice and the possibility of the items in the licensing examination. As a result, we removed the list of objectives with low practical importance and low possibility. Although the CVI for both importance and possibility was low, there were also items with an average expert validity score of 3 or higher.

Items that are important in the practice of new nurses but are inappropriate for items in the licensing exams include “impaired environmental comfort,” “impaired parenting,” “stress overload,” “moral distress,” “disturbed personal identity” and “situational low self-esteem.” These are important in practice and should be included in education; however, they can be evaluated as inappropriate as items. Contrarily, the nursing problems such as “dysfunctional family processes,” “sexual dysfunction,” and “ineffective denial” are not problems that new nurses often encounter or have fatal consequences if they do not apply appropriate intervention. However, these problems can be dealt with like items for the licensing examination. As such, for the development of the examination objectives of the Korean Nursing Licensing Examination, there may be problems that are important in the practice of new nurses but are not appropriate for the examination. Therefore, the objectives for the examination are related to major nursing problems rather than including all job situations, and it is necessary to include items that are valid as exam items.

There was a study on the standard setting of the Korean Nursing Licensing Examination using Angoff method [13]. For this high-stakes examination, the classification of nursing problems is also essential to set the cut score because the performance level

Table 2. Continued

| Domain/class | Nursing problems                      | Importance |       |       | Possibility |       |
|--------------|---------------------------------------|------------|-------|-------|-------------|-------|
|              |                                       | CVI\(^a\)  | Mean  | CVI\(^a\) | Mean       |
| Anxiety      |                                       | 0.98       | 3.60  | 0.96   | 3.56        |
| Ineffective coping |                                 | 0.92       | 3.50  | 0.88   | 3.38        |
| Ineffective community coping |                                 | 0.74       | 3.08  | 0.66   | 3.00        |
| Compromised family coping |                                 | 0.72       | 3.04  | 0.68   | 2.94        |
| Death anxiety |                                      | 0.88       | 3.42  | 0.84   | 3.28        |
| Ineffective denial |                                 | 0.72       | 3.04  | 0.76   | 2.98        |
| Fear         |                                       | 0.80       | 3.26  | 0.78   | 3.14        |
| Maladaptive grieving |                                | 0.74       | 3.08  | 0.72   | 2.96        |
| Impaired mood regulation |                               | 0.78       | 3.18  | 0.76   | 3.10        |
| Powerlessness |                                      | 0.80       | 3.18  | 0.76   | 3.06        |
| Impaired resilience |                               | 0.72       | 3.04  | 0.70   | 2.94        |
| Chronic sorrow |                                     | 0.70       | 2.94  | 0.68   | 2.90        |
| Stress overload |                                   | 0.76       | 3.18  | 0.72   | 3.10        |
| Neurobehavioral stress |                              | 0.86       | 3.30  | 0.88   | 3.30        |
| Neurobehavioral stress |                              | 0.82       | 3.12  | 0.82   | 3.12        |
| Autonomic dysreflexia |                                | 0.74       | 2.98  | 0.70   | 2.94        |
| Neonatal abstinence syndrome |                          | 0.80       | 3.00  | 0.80   | 2.96        |
| Disorganized infant behavior |                        | 0.76       | 3.18  | 0.72   | 3.10        |
| 12. Life principles |                              | 0.84       | 3.22  | 0.84   | 3.12        |
| Value/belief/action congruence |                     | 0.72       | 2.98  | 0.66   | 2.84        |
| Impaired emancipated decision-making |                 | 0.76       | 3.02  | 0.60   | 2.82        |
| Moral distress |                                      | 0.52       | 2.54  | 0.46   | 2.42        |
| Impaired religiosi |                                   | 0.60       | 2.64  | 0.52   | 2.52        |
| Spiritual distress |                                   | 0.72       | 2.96  | 0.68   | 2.86        |
| Self-concept |                                      | 0.72       | 2.96  | 0.68   | 2.86        |
| Hopelessness |                                       | 0.76       | 3.02  | 0.74   | 2.94        |
| Risk for compromised human dignity |                       | 0.74       | 3.04  | 0.68   | 2.86        |
| Disturbed personal identity |                            | 0.76       | 3.08  | 0.68   | 2.88        |
| Self-esteem |                                      | 0.72       | 3.08  | 0.68   | 2.88        |
| Chronic low self-esteem |                         | 0.72       | 3.08  | 0.68   | 2.88        |
| Situational low self-esteem |                        | 0.76       | 3.08  | 0.68   | 2.88        |
| Body image |                                         | 0.82       | 3.18  | 0.78   | 3.06        |

\(^a\)CVI, content validity index.
description of the overall exam and each subject is the basic step.

Limitations
A total of 85 nursing problems were selected as examination objectives for the Korean Nursing Licensing Examination based on a literature review and expert consultation. Objectives for the examination of the selected nursing problems were developed and comprised rationales, related factors, evaluation goals, related activity statements, related goals, related clients, related settings, and specific outcomes. However, the validation of the specific contents of the objectives has not been evaluated.

Generalizability
Results in this study may be able to be applied to other countries because the nursing competency is almost the same in all countries.

Suggestions
The developed objectives for the examination presented relevant activity statements and outcomes; however, there is a limit to direct application to develop items for evaluation. Therefore, through further research, it is necessary to organize relevant activity statements into core competencies and verify their validity by modifying them to become guidelines for item development. Based on the objectives of the examination, it is necessary to review the linkage with the existing Korean Nursing Licensing Examination test items and investigate the basis for developing it as an objective for examination that can be used as a unit of items.

In addition, it must be revised and developed so that it can supply objectives for the examination of integrated items without boundaries of nursing subjects. Furthermore, it is necessary to develop an examination objective that can extend the applicability of appropriate clinical judgment and nursing processes to major nursing situations faced by new nurses.

Conclusion
This study developed the examination objectives of the Korean Nursing Licensing Examination to reflect the practical situation of nurses. The developed objectives are related to the job situation of new nurses and consist of problems that are appropriate for evaluation during the exam. This provides a basis for the practical competency evaluation of nurses. Therefore, this study provides fundamental data for future test plans centered on practical competency.

ORCID
Sujin Shin: https://orcid.org/0000-0001-7981-2893; Gwang Suk Kim: https://orcid.org/0000-0001-9823-6107; Jun-Ah Song: https://orcid.org/0000-0002-2736-4037; Inyoung Lee: https://orcid.org/0000-0003-1282-515X

Authors’ contributions
Conceptualization: SS, GSK, JS. Data curation: SS, IL. Methodology/formal analysis/validation: SS, GSK, JS. Project administration: SS, IL. Funding acquisition: SS, IL. Writing–original draft: SS, GSK, JS, IL. Writing–review & editing: SS, GSK, JS, IL.

Conflict of interest
No potential conflict of interest relevant to this article was reported.

Funding
This work was supported by the Korea Health Personnel Licensing Examination Institute (Fund ref ID: 10.13039/50110003647) research 2021 fund (RE02-2201-05).

Data availability
Data files are available from Harvard Dataverse: https://doi.org/10.7910/DVN/PAAQ53
Dataset 1. Raw response data of participants.

Acknowledgments
None.

Supplementary materials
Supplement 1. Audio recording of the abstract.

References
1. Park HR, Kim KH, Kang YS, Kim SY, Park EH. A comparative study of the educational contents of subjectives related to the nursing licensing examination [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2011 [cited 2022 May 30]. Available from: https://rnd.kuksiwon.or.kr/last/selectFileDown.do?attach_id = 2015030500032.
2. Song R, Kim YK, Kang SY, Park YW, Park HS, Shin S, Shin YS, Oh SE. The model construction for integrated test items for the Nursing licensing examination. Seoul: Korean Nurses Associa-
tion; 2011.
3. Park IS, Kang SY, Ko IS, Park IH, Park HS, Suh YO, An SY. The research report about the nurses’ job analysis 2nd [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2012 [cited 2022 May 30]. Available from: https://rnd.kuksiwon.or.kr/last/selectFileDown.do?attach_id = 201503050036.
4. Park IS, Kang SY, Kim GS, Park HS, Suh YO, An SY. The linkage of job analysis, learning outcomes, and the licensing examination of nurses [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2014 [cited 2022 May 30]. Available from: https://rnd.kuksiwon.or.kr/last/selectFileDown.do?attach_id = 2016042700001.
5. Kang SY, Kim KH, Kim GS, Park IS, Park HS, Suh YO, An SY. A study on the minimum competency for new graduated nurses and the application to the nursing licensing examination [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2016 [cited 2022 May 30]. Available from: https://rnd.kuksiwon.or.kr/last/selectFileDown.do?attach_id = 2017031300005.
6. Kim YK, Kim KH, Kim MH, Kim SH, Kim YH, Shin S, An SH, Oh SE, Lee KM. The study to improve Korean nursing licensing examination systems for practice based assessment [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2018 [cited 2022 May 30]. Available from: https://rnd.kuksiwon.or.kr/last/lastList.do?MENU_ID = C-01-01.
7. Park H, Han JJ, Kim JH, Park WB. The study of developing for the Korean Medical Licensing Examination clinical skills assessment [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2012 [cited 2022 May 30]. Available from: https://rnd.kuksiwon.or.kr/last/selectFileDown.do?attach_id = 2015030900002.
8. Korea Health Personnel Licensing Examination Institute. The objectives of the Korean Medical Licensing Examination [Internet]. Seoul: Korea Health Personnel Licensing Examination Institute; 2020 [cited 2022 May 30]. Available from: https://www.kuksiwon.or.kr/contentDownload.do?file = c_3_02.pdf.
9. Lynn MR. Determination and quantification of content validity. Nurs Res 1986;35:382-385. https://doi.org/10.1097/00006199-198611000-00017
10. Waltz CF, Strickland OL, Lenz ER. Measurement in nursing research. 2nd ed. Philadelphia (PA): F.A. Davis Company; 1991.
11. Lee EH. Psychometric property of an instrument 1: content validity. Korean J Women Health Nurs 2021;27:10-13. https://doi.org/10.4069/kjwhn.2021.01.31
12. Herdman TH, Kamitsuru S, Takao Lopes C. Nursing diagnoses: definitions and classification 2021-2023. 12th ed. New York (NY): Thieme; 2021.
13. Yim MK, Shin S. Using the Angoff method to set a standard on mock exams for the Korean Nursing Licensing Examination. J Educ Eval Health Prof 2020;17:14. https:// doi.org/10.3352/jeehp.2020.17.14