

# Quality improvement of the national examination for nurses and midwives in Lao People's Democratic Republic

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**Abstract:** The quality of national licensing examinations is critical to ensuring a competent health workforce. This communication analyzes the process of improving examination questions for nurses and midwives in the Lao People's Democratic Republic (Lao PDR). Following the Ministry of Health's 2014 amendment to the Law on Health Care and the 2015 approval of the Strategy on Healthcare Professional Licensing and Registration System, a national licensing examination was initiated. Supported by the Japan International Cooperation Agency, the Nursing and Midwifery Board has conducted the annual examination since 2019, with 2,000 candidates participating to date. A continuous quality improvement cycle involving statistical analysis, revision, and new question creation has been implemented. Results showed significant improvement in key indicators such as correct answer rates and point-biserial correlations. These efforts highlight the importance of continuous quality improvement and collaboration between educators and clinicians, providing a model for enhancing healthcare professional licensing examinations.

**Keywords:** national examination, license, regulation, nursing, midwifery

## Introduction

The performance of healthcare systems hinges on healthcare providers' knowledge, skills, and motivation. Recognizing this, the World Health Organization has advocated for competency-based national licensing and relicensing assessments for graduates from both public and private institutions (1). In addition, the Association of Southeast Asian Nations (ASEAN) Mutual Recognition Arrangement, signed in 2016, has catalyzed the development of registration, licensing, and continuing education systems for healthcare professionals in member states (2). In response, the Lao People's Democratic Republic (Lao PDR) Ministry of Health (MoH) amended the *Law on Health Care* in 2014 to mandate a national licensing examination for healthcare professionals (3). Following this, the MoH endorsed the *Strategy on Healthcare Professional Licensing and Registration System in Lao PDR 2016–2025* (Strategy) in 2015, including a national licensure examination for healthcare professionals as a core pillar (4). To implement the Strategy, the MoH sought technical

cooperation from the government of Japan, leading to the launch of the Project for Sustainable Development and Quality Assurance of Healthcare Professionals in Lao PDR by the Japan International Cooperation Agency (JICA) in 2018.

This paper aimed to analyze the process of improving the quality of examination questions for the national examination for nurses and midwives in Lao PDR, evaluate the effectiveness of these improvements, and discuss the implications for the future of healthcare professional licensing and regulation.

## National licensing examination implementation

The Nursing and Midwifery Board (Board), under the Healthcare Professional Council (HPC), is the regulatory body of the Strategy. At the national examination's launch, the Board discussed and approved the examination outline, including the organizer, frequency, and venue, and conducted a pilot examination in September 2019. Since the following year, the Board has conducted the national examination annually, with 2,000

graduates participating to date. The national examination, held simultaneously over two days at nine educational institutions nationwide, is a written test consisting of multiple-choice questions (MCQs).

### Nursing education and licensure in Lao PDR

Prior to the national examination, graduation from a nursing or midwifery educational institution was the sole requirement to practice as a nurse or midwife (5). Eligibility for the national examination requires completion of a higher diploma curriculum or above in nursing or midwifery. Nine public institutions offer these advanced diplomas, one offering a four-year bachelor's degree program and the others being three-year colleges or vocational schools (5). Despite a uniform syllabus and competency-based curriculum developed in 2015, teaching materials, including textbooks, were not standardized. Medical education, including nursing and midwifery, is conducted exclusively in Lao, the country's official language, reflecting its multi-ethnic makeup. Upgrading courses for nurses and midwives, although encouraged (6), are excluded from the national examination due to their clinical experience. Graduates from equivalent programs in neighboring countries are also eligible upon diploma submission. Application for the national examination coincides with the professional license application, and the certificate of passing the national examination serves as the license. Successful candidates generally undergo an eight-month professional internship program to cultivate practical skills.

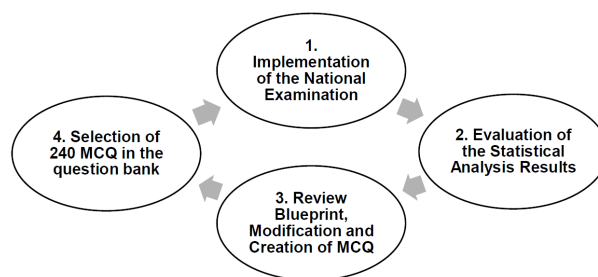
### Quality improvement cycle of national licensing examinations

#### *Introduction of quality improvement cycle*

Over the past three years of administering national examinations, a need to improve and ensure the quality of exam questions was recognized. Thus, we applied a continuous quality improvement cycle (Figure 1), applying quality improvement methods such as Plan-Do-Study-Act cycles (7), to enhance question quality. Post examination (Step 1), the Board evaluates the statistical analysis results of the questions (Step 2). A technical working group comprising faculty from educational institutions, clinical nurses, and midwives reviews and revises the examination blueprint and creates new questions (Step 3). The Board, with technical assistance from the Healthcare Professional Bureau, MoH, selects 240 questions each for nursing and midwifery, proofreading for consistency and readability (Step 4).

#### *Quality improvement approach*

Key approaches during the evaluation (Step 2),



**Figure 1. Quality Improvement Cycle of the National Examination in Lao People's Democratic Republic**

modification, and creation (Step 3) include: 1. key validation, 2. question revision based on item analysis, and 3. new question creation based on lessons learned. Evaluation indices for MCQs include correct answer rate and point-biserial correlation. A low correct answer rate indicates difficulty beyond qualifying exam standards, while a negative point-biserial correlation suggests that low-performing students answered better than high-performing ones, impacting reliability (8). The analysis was performed using *Remark Office OMR Software* (Gravic, Inc., Pennsylvania, US).

#### *Implementation of continuous quality improvement*

Key validation of the exam questions occurs immediately post-examination and prior to scoring. Questions with significantly low correct answer rates or point-biserial correlations undergo qualitative review by the Board to determine exclusion, acceptance of multiple correct answers, or retention. Questions are modified based on the item analysis results during preparation for the subsequent national examination. Criteria include correct answer rate and point-biserial correlation, and questions with non-selected options are also revised. Distribution data of the examinees' responses guide modifications. Technical working group members perform comprehensive assessments for revision, ensuring plausible alternatives and sufficient information. New questions are created based on the lessons learned. Members modifying questions based on various data understand inappropriate questions and how to develop good questions. New questions require evidence-based development, improving quality and stability.

#### *Achievements through quality improvement*

The recent national examination showed significant improvements in the correct answer rate and point-biserial correlation (Table 1). The mean correct answer rate increased by approximately 10 points, and the mean point-biserial correlation increased by approximately 0.15. Notably, as defined by these criteria, the number of good questions doubled. These improvements correlated

**Table 1. Changes in difficulty and quality of examination questions from the first to third national examination**

Items	First National Examination (2020)	Second National Examination (2021)	Third National Examination (2022)
Means of Correct Answer Rate			
Nursing	49.03	46.59	60.17
Midwifery	55.61	55.06	65.00
Means of Point-Biserial Correlation			
Nursing	0.28	0.32	0.46
Midwifery	0.26	0.32	0.41
Number of Good Questions			
Nursing	91/240 (38%)	114/237 (48%)	178/238 (75%)
Midwifery	64/240 (27%)	111/235 (47%)	159/236 (67%)
Means of Examinees' Total Score			
Nursing	121.7/240 (51%)	117.4/237 (50%)	154.9/238 (65%)
Midwifery	134.4/240 (56%)	134.3/235 (57%)	168.6/236 (71%)

with the higher examinee performance, with the mean total scores increasing by over 30 points. Although passing criteria are undisclosed, improved question quality has enabled more reasonable passing criteria.

#### *Behind the quality pursuit*

Ensuring examination quality is crucial for state-administered credential qualifications. Continuous quality improvement in Lao PDR has enhanced examination question quality. Objective analytical data facilitated critical assessments and motivated those involved in examination administration. A continuous quality improvement cycle allows for responsive blueprint reviews, aligning with the population's health needs and healthcare policies (9).

The involvement of nursing and midwifery faculty in technical working groups ensured alignment with actual teaching content. The Board emphasized the examination aim of testing minimum knowledge and competence standards. Intensive meetings fostered communication and mutual learning among faculty members. Clinical nurses and midwives' participation incorporated practical clinical perspectives.

#### **Keys for further improvement**

Incorporating external professional organization perspectives could further improve examination quality. For example, the Japan Society of Midwifery Education qualitatively reviews exam questions post-examination, submitting reports to a regulatory body in Japan (10). Although releasing questions is restricted in Lao PDR, external review could address inappropriate questions. Continuing capacity-building efforts within the HPC is essential for effectively regulating healthcare professionals (9). Sustained governmental commitment is crucial for maintaining high standards in healthcare professional regulation post-project completion.

In conclusion, this paper highlights the success of a continuous quality improvement cycle in enhancing the national examination for nurses and midwives in Lao

PDR. Significant improvements in question quality and examinee performance were achieved through rigorous evaluation, modification, and creation of exam content, with valuable contributions from nursing and midwifery faculty and clinicians. These advancements not only raise examination standards but also align closely with current educational and clinical practices. This approach serves as a model for improving healthcare professional licensing and regulation, emphasizing the importance of ongoing quality improvement in healthcare education. The sustained commitment of the regulatory body to these improvements is crucial for maintaining high standards in healthcare professional regulation.

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