



## Research article

# English training requirements and associated factors for non-native English-speaking nurses: A critical gap analysis based on the importance-performance method

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## ABSTRACT

**Aims and objectives:** To investigate the English training requirements, priorities, and related factors of non-native English-speaking nurses.

**Background:** Few studies have focused on the English training requirements of nurses in non-native English-speaking hospitals, and even fewer applied quantitative methods to analyze their English needs and related factors.

**Design:** A total of 397 clinical nurses from a hospital in Zhejiang Province, China, were invited to answer questions from the 17-item English Language Requirement Scale (ELRS-17) through an online questionnaire system from May 7–12, 2021.

**Methods:** The importance-performance analysis (IPA) method was used to identify the critical training requirement gaps in the English skills of non-native English-speaking nurses in the case hospital.

**Results:** The results of requirements showed that looking up foreign literature, writing medical/nursing academic articles and reports, and attending international medical/nursing academic conferences were the top three English learning purposes for nurses. Critical gap analysis with the IPA method revealed that medical dialogues (e.g., morning shift conversations), speeches (e.g., academic symposia), and everyday talk (e.g., telephoning and greetings) are very important yet inadequately trained skills for nurses at present, while nurses are adequately competent at the important tasks of understanding medical/nursing lectures and courses and oral international academic reports and reading academic articles and reports.

**Conclusion:** The results of this study indicate that English training requirements for non-native English-speaking nurses revolve around facilitating contribution to nursing research and

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conference attendance, while more focus on spoken English is needed. Hospital decision makers can better understand the requirements and current performance of English language training for non-native English-speaking nurses. Furthermore, a suitable training plan and corresponding content can be designed for nurses.

## 1. Introduction

COVID-19 was declared a major global infectious disease by the World Health Organization (WHO) on March 11, 2020 [1,2]. The increasing number of COVID-19 cases poses a major threat to international health and human well-being [3]. Therefore, scholars have published more than 20,000 papers, including famous journals and preprint services [4]. These COVID-19 studies focus on rapidly disseminating relevant knowledge and experience to help the world fight against the novel Coronavirus and reduce its harm. However, the details of disease control and treatment are still spreading slowly due to language barrier, which may lead to uncontrolled disease transmission and difficulty in sharing the experience of successful case treatment [5]. In addition, we lack sufficient knowledge about the treatment, control methods, and complete transmission routes of viruses. However, this knowledge can only be obtained from patients [5]. English is the most widely spoken language in the world. Therefore, it is very important for nurses to improve their English language which is the key to enhancing communication skills in non-native English countries. Thus, it can help nursing staff to effectively learn from nursing experiences from other countries or regions to better serve patients.

In daily life or health emergencies, nurses are at the front line of healthcare systems and are responsible for providing comprehensive care for all types of patients [6,7]. Taking the recent pandemic of COVID-19 as an example, the role of nurses in the treatment of COVID-19 patients includes patient triage, detecting suspected infections, coordinating with other medical personnel, and applying holistic nursing practices in the management of multiple infections [6,8,9]. These are but some examples of the way that nurses play a key role in the health care system [10,11].

Chinese is the official language used by healthcare professionals in hospitals in China. However, a small percentage of in-practice nurses may resort to communication in English. Thus, there is merit in increasing the quality and prevalence of English medical discourse and language applications among nurses. It is known that the English language has become the most popular language around the world. Its importance is evident in the fact that it frequently serves as a lingua franca between non-native English speakers and is frequently necessary for reports and patient care records. If the natural history of a disease is well identified, it is easier to initiate effective treatment; breaking the language barrier through a common non-native language such as English is often the best means to achieve accurate communication with patients and caregivers. Indeed, previous studies have detailed nurses' worries and fears as well as their inappropriate strategies to deal with language difficulties [12]. Thus, in the nursing profession, improvement of the English language is the key to enhancing communication skills.

Clinical nurses' contribution to medical teamwork is an essential part of patient care. Adequate English communication skills are very important for nurses, as they must communicate with English-speaking patients to know more about the condition of the patients' disease, allowing them to provide better quality of care. In addition to patients themselves, nurses must also communicate with other English-speaking healthcare stakeholders, ranging from doctors to support staff, including pharmacists and technicians, as well as patients' caregivers and support system [13]. After all, language allows one to show one's character and personality. Context-appropriate speaking and/or writing, in particular, helps building connections with and forms the feeling of membership in certain communities [14,15].

In non-native English countries, medical discussions in English are considered indispensable tools in both spoken and written discourse among healthcare professionals in clinical practice. However, the language disparity between medical discourse in English and the native language is a unique challenge for non-English speaking healthcare practitioners. When encountering medical terms, nurses and doctors in China find it difficult to promptly and flawlessly alternate between Chinese and English [12].

China is one of the largest non-native English countries and has the largest nursing workforce worldwide. With the new COVID-19 prevention and control policy, the healthcare system is expected to experience renewed strain by the increased number of cases. It is thus more important now than ever for nursing staff to stay up to date with the latest nursing publications regarding COVID-19, the vast majority of which is published in English. Thus, English training requirements are particularly important for Chinese nursing staff. Therefore, a study on English training requirements and associated factors for non-native English nurses are of great practical significance and can be used for reference by similar countries and regions.

There are few studies on the training needs of non-native English nurses. For example, Roh [16] adopted the application of exploratory factor analysis and importance-performance analysis to assess the training needs of nurses in Korean intensive care units. Ching et al. [17] applied a qualitative approach to explore the perceptions of non-English speaking urban university transfer nursing students' English language use. To sum up, only a few studies pay attention to the training requirements of non-native English nurses. Based on a questionnaire survey and importance-performance analysis, this study sought to determine English training requirements and associated factors among nurses in Taizhou, Zhejiang, China. As the Taizhou hospital that participated in this study is a typical tertiary A-level hospital, the results of this study are expected to be generalizable to other similar hospitals across China.

## 2. Methods

### 2.1. Research design and data collection

This study was conducted in a tertiary, A-class general hospital in Taizhou City, Zhejiang Province, China. From May 7 to 12, 2021, with the help of relevant management departments of the hospital, nurses were invited to fill out the 17-item English Language Requirement Scale (ELRS-17) through an online questionnaire system. A total of 414 responses were collected, of which 397 were valid, with an effective response rate of 95.9%. A flowchart of the study is shown in Fig. 1.

### 2.2. The 17-item English language requirement scale

The ELRS-17 is a self-administered questionnaire based on the study purpose was developed using the Delphi method by a panel of epidemiologists, nurses, management decision-making and public health specialists to assess learning purpose and English-related skills. This questionnaire includes two main items: learning purpose (five items) and English-related skills (listening-3 items, speaking-3 items, reading-3 items, and writing-3 items). In the ELRS-17, the response format is based on a 5-point Likert scale (1 = very unimportant/very unsatisfactory, 2 = unimportant/unsatisfactory, 3 = normal, 4 = important/satisfactory, and 5 = very important/very satisfactory). Baseline survey items that accompany the ELRS-17 include socio-demographic data of nurses, such as sex, education, age, department, professional title, positions, and years of service. In this study, the overall Cronbach's  $\alpha$  coefficient of the ELRS-17 scale was 0.974, and the Cronbach's  $\alpha$  coefficients of learning purpose and English-related skills were 0.935 and 0.969 respectively.

### 2.3. Statistical analysis

Descriptive statistics was performed for participants characteristics by frequency and percentage for categorical variables. For the importance-performance analysis (IPA), this was first proposed by Martilla and James which involves measuring customers' views on the performance and importance of a set of evaluation parameters and proposes a four-quadrant solution to guide management behaviors [18]. Because this method is easy to use and identifies the aspects of a product or service that require more resources or have received more attention than they require, it is now applied to many different topics, such as shared decision-making [19] and human resource [20]. For nurses' English language requirements, the significance and practice of the four quadrants that traditionally result from IPA are as follows: a visualization is also available in Fig. 1 [21,22].

Quadrant 1: Keep up the good work; these aspects of English language requirements are important and nurses' performance is good. Decision makers should continuously invest training resources to maintain the performance of these projects.

Quadrant 2: Possible overkill; these aspects of English language competency are not that important; however, the performance in this area is good. Decision-makers can temporarily reduce the training resources for these projects in the setting of limited resources.

Quadrant 3: Low priority; these aspects of English language competency are not important, and the performance in this area is not good. Decision makers can ignore these projects for the time being.

Quadrant 4: Concentrate here; these items are classified as important; however, the performance in this area is lacking. As a result, English language requirements that fall in this quadrant can be considered most at need of increased effort and resources. Decision-makers should actively invest resources and design training content to improve the performance of these projects.

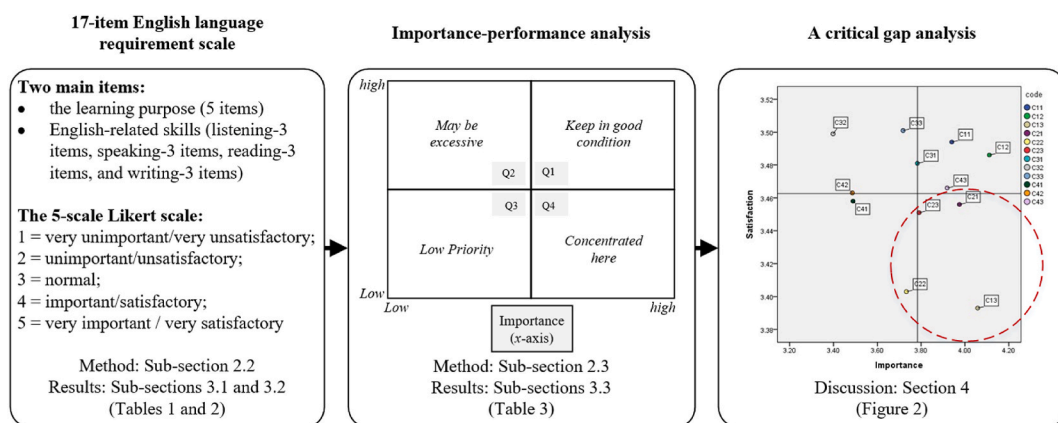


Fig. 1. The flow chart of this study.

## 2.4. Ethical considerations

The main purpose of this study is to improve the requirements for English language training for nurses in the case hospital and to target and customize training support in their learning plans. This research was approved by the Human Research Ethics Committee of Taizhou University (Grant Number: TZXY2021-RT1).

## 3. Results

### 3.1. Background and demographic characteristics of respondents

Of the 414 nurses who participated in this study, 17 were excluded from the data analysis because of incomplete or missing data. The remaining 397 (95.9%) surveys contained ELRS-17 questions, as well as data regarding nurses' personal background and relevant information. The respondents were mostly female (98%), with undergraduate education (80%), 30–39 years of age (52%), and clinical nurses with work experience of 10–15 years (61%). The information of the survey data is shown in [Table 1](#).

### 3.2. Analysis of English language training requirements

[Table 2](#) shows the purpose of the respondents' English language training requirements according to their nursing status. More than 80% of the nurses think that "looking up foreign literature" is an important or very important reason to learn English, while 79% of the nurses think that "writing medical/nursing academic articles and reports" is an important or very important motivation. Moreover, 79% of the nurses think that "attending international medical/nursing academic conferences" are important or very important, while 72% of the nurses think that "better professional prospects (e.g., studying abroad)" is important or very important. Finally, more than 60% of the nurses think that "better professional prospects (e.g., studying abroad)" are important or very important. That said, it was the learning purpose least likely to be classified as important or very important among the five motivations behind learning English.

**Table 1**  
Demographic and academic characteristics of nurses (n = 397).

Variables	n (%)
Gender	
Male	6 (2%)
Female	391 (98%)
Education	
Technical secondary school graduate	8 (2%)
Junior college graduate	66 (17%)
Undergraduate	319 (80%)
Postgraduate	4 (1%)
Age	
Under 30	102 (26%)
30–39	208 (52%)
40–49	74 (19%)
50 and above	13 (3%)
Department	
Nursing department	12 (3%)
Department of Internal Medicine	173 (44%)
Department of surgery	171 (43%)
Special department	28 (7%)
Other	13 (3%)
Professional title	
Nurse	56 (14%)
Nurse practitioner	128 (32%)
Nurse-in-charge	158 (40%)
Associate professor of nursing	41 (10%)
Professor of nursing	14 (4%)
Position	
Clinical nurse	339 (85%)
Head nurse	43 (11%)
Other	15 (4%)
Years of service	
Under 10 years	0 (0%)
10–15	244 (61%)
15–20	85 (21%)
20 and above	68 (17%)

**Table 2**  
Statistics for English language learning purposes.

Items	Very unimportant	Unimportant	Normal	Important	Very important
1. Better profession prospects (e.g., studying abroad)	4 (1%)	19 (5%)	86 (22%)	176 (44%)	112 (28%)
2. Looking up foreign literature	3 (1%)	13 (3%)	64 (16%)	174 (44%)	143 (36%)
3. Writing medical/nursing academic articles and reports	5 (1%)	9 (2%)	69 (17%)	189 (48%)	125 (31%)
4. Attending international medical/nursing academic conferences	8 (2%)	17 (4%)	75 (19%)	174 (44%)	123 (31%)
5. Taking foreign language certification tests (e.g., IELTS, and so on)	11 (3%)	21 (5%)	124 (31%)	148 (37%)	93 (23%)

### 3.3. Importance-performance analysis for English language training requirements

Table 3 and Fig. 2 show the results of the importance-performance analysis of nurses' requirements for English language training. The first quadrant (keep up the good work) included medical/nursing lectures and courses ( $C_{11}$ ), oral international academic reports ( $C_{12}$ ), reading medical/nursing academic articles and reports ( $C_{31}$ ), and taking notes from other sources ( $C_{43}$ ). These items are important and perform well for non-native English-speaking nurses. According to IPA principles, decision makers can maintain or even increase resources to maintain nurses' performance on these items.

The second quadrant (possible overkill) included reading foreign language books, manuals, and so on ( $C_{32}$ ); reading state-of-the-art international nursing information, such as news, We-Media, and so on ( $C_{33}$ ); and writing nursing academic articles and reports ( $C_{42}$ ). Compared with other items, these items are relatively unimportant, but perform well. In the short term, based on limited training resources, decision makers can temporarily reduce the training resources of these projects and transfer them to other items.

The third quadrant (low priority) includes discussions on medical issues, such as morning shift conversations ( $C_{22}$ ), and writing nursing project proposals ( $C_{41}$ ). For the training needs of nurses, these items are not important for the time being and do not perform well. In the short term, decision-makers can temporarily ignore these items and continuously pay attention to them.

The fourth quadrant (concentrate here) includes medical dialogues (e.g., morning shift conversations) ( $C_{13}$ ), speeches (e.g., academic symposia) ( $C_{21}$ ), and everyday conversations (e.g., telephoning, greeting, etc.) ( $C_{23}$ ). These items are the main weaknesses and needs of the nurses. At the same time, this part also constitutes the key gap analysis in this study. Therefore, decision makers should actively invest resources and design training content to improve the performance of these projects.

## 4. Discussion

The purpose of this study was to quantitatively investigate the English language training purposes of non-native English-speaking nurses, as well as identify specific aspects of English language learning requirements that need additional focus and training resources. Put shortly, we found that "looking up foreign literature" and "writing medical/nursing academic articles and reports" were the main English language training purposes in our sample of clinical nurses. Additionally, we performed IPA on the English language training requirements and found that more focus should be allocated to spoken English, whether it be part of everyday conversations, morning shift conversations, or oral presentations at academic symposia.

Current nursing education is beginning to increase to reflect the research base, and some academic nurses have built their careers around it [23]. Clinical nursing performance and scientific research are the main drivers of nursing performance appraisal and professional title promotion. For the purposes of English language learning, it is thus not surprising that "looking up foreign literature" and "writing medical/nursing academic articles and reports" were the main purposes of learning English. With the recent trend of globalization, Chinese hospitals are actively encouraging nurses to write English articles and contribute to journals on the Science Citation and Social Sciences Citation Indices. In addition to daily clinical nursing work, research is also an important objective for nurses.

**Table 3**  
Importance-performance analysis for English language training requirements.

Items	Importance	Performance	Quadrant
Foreign language listening skills ( $C_1$ )			
Medical/nursing lectures and courses ( $C_{11}$ )	3.940	3.494	I
Oral international academic reports ( $C_{12}$ )	4.111	3.486	I
Medical dialogues (e.g., morning shift conversations) ( $C_{13}$ )	4.058	3.393	IV
Foreign language speaking skills ( $C_2$ )			
Speeches (e.g., academic symposia) ( $C_{21}$ )	3.975	3.456	IV
Discussions over medical issues (e.g., morning shift conversations, and so on) ( $C_{22}$ )	3.733	3.403	III
Everyday talks (e.g., telephoning, greeting, and so on) ( $C_{23}$ )	3.791	3.451	IV
Foreign language reading skills ( $C_3$ )			
Reading medical/nursing academic articles and reports ( $C_{31}$ )	3.783	3.481	I
Reading foreign language books, manuals, and so on ( $C_{32}$ )	3.398	3.499	II
Reading state-of-art international nursing information (e.g., news, We-Media, and so on) ( $C_{33}$ )	3.718	3.501	II
Foreign language writing skills ( $C_4$ )			
Writing nursing project proposals ( $C_{41}$ )	3.489	3.458	III
Writing nursing academic articles and reports ( $C_{42}$ )	3.486	3.463	II
Taking notes from other sources ( $C_{43}$ )	3.919	3.466	I

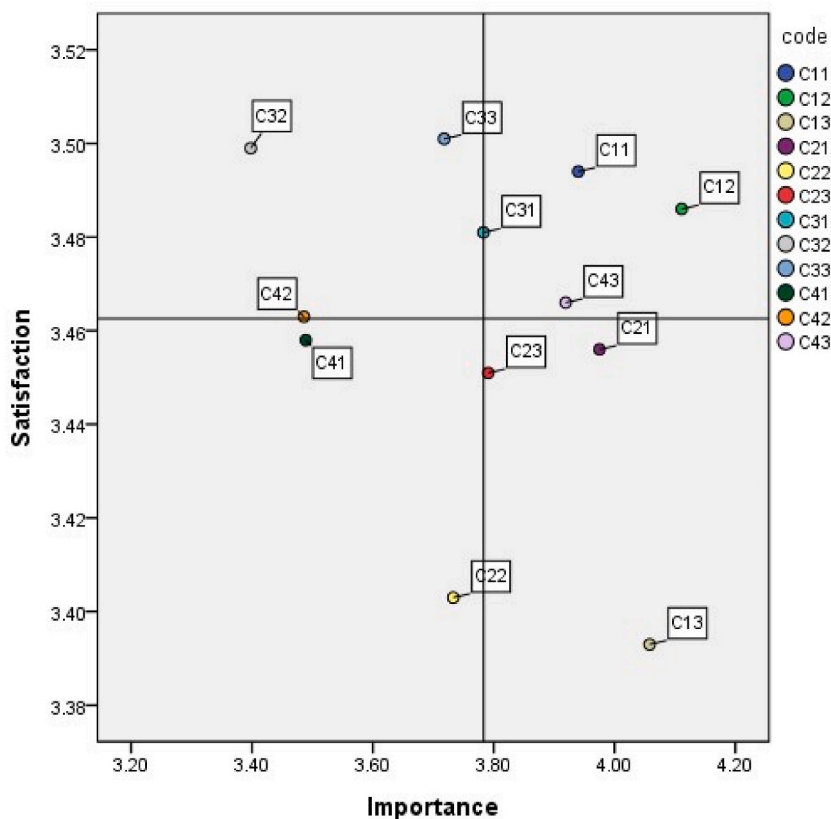


Fig. 2. The quadrant diagram of IPA for English language training requirements.

Therefore, publishing articles in international journals and attending conferences, all of which are conducted in English [24]. Lack of English proficiency is considered as the main obstacle to the development of nursing career [25].

Furthermore, in the critical gap analysis (Fig. 2), medical dialogues (e.g., morning shift conversations) ( $C_{13}$ ), speeches (e.g., academic symposia) ( $C_{21}$ ), and everyday talk (e.g., telephoning, greeting, etc.) ( $C_{23}$ ) appear to be skills that nurses currently need to improve. The possible reason for the need for improvement poorly-performed skills is that the study hospital was a local community hospital, and Chinese medical records are dominant in China. Nurses rarely need to use English for professional communications. However, as a product of globalization, hospital nurses have gradually started to come into contact with patients and medical teams abroad; therefore, they need to have good English language skills to communicate with foreign colleagues. Meanwhile, COVID-19 is still of concern for healthcare systems around the world, and it is important for nursing staff to effectively learn from nursing experiences from other countries in order to better serve patients. This analysis reveals an existing gap in English proficiency.

Nurses who are in continuous communication with patients and other professional members of the medical care team play an essential role in keeping a record of recent information and techniques associated with patient care, interpreting patient results, and preventing irreversible mistakes [26]. In clinical settings, nursing staff offer diversity in experience, culture, and educational backgrounds. In order to foster medical teamwork, professional skillfulness and in-service training are becoming increasingly important [27]. In order to increase the participation of clinical nurses in training courses and improve the courses' impact on nursing quality, training needs should be defined, and the very first step of designing a training program should be a detailed mapping of the topics of training [28]. From a policy and professional perspective, nurses should maintain acceptable English language capabilities to develop a strong research base for increasing patient care. Nurses have highlighted the significance of nursing education and have verified that it is linked to professional expansion and promotion of clinical nursing care. All healthcare stakeholders are encouraged to combine training requirements with a holistic educational approach in order to promote standardization and consistency in the quality of nursing. International collaboration and the development of training networks are also key approaches to improving participation and improving overall nursing standard of care.

## 5. Limitations

Several limitations of this study should be considered when interpreting its findings. First, the study sample was selected on a voluntary basis; selection bias and the Hawthorne effect cannot be conclusively ruled out. Second, we evaluated only one teaching hospital, which may limit the generalizability of our findings. Third, we conducted measurements at a single point in time, which may

not reflect long-term exposure to factors related to English training requirements. Finally, the findings of this study cannot be safely extrapolated to hospitals in other regions of China. Future studies using random sampling of hospitals over a wider range of regions would make this research more reliable.

## 6. Conclusion

This study showed the purpose, demands and priorities of nurses regarding English language training. Publishing in international academic journals has been cited as the main purpose of their English language training to meet the performance requirements and promotion standards of hospitals. There is a substantial gap between the level of current English language skills and the required level of English communication in the clinical environment. Policymakers can extract significant insights from this study to better understand the requirements and priorities of English language training for nurses. We found that “looking up foreign literature” and “writing medical/nursing academic articles and reports” were the main English language training purposes, and “everyday conversations, morning shift conversations, or oral presentations at academic symposia” should more focus on oral English. Therefore, suitable training plans and corresponding content should be designed with a nurse-first approach.

## Author contribution statement

Liwei Lu: Wrote the paper; materials, analysis tools or data.

Yanjun Jin: Materials, analysis tools or data; Analyzed and interpreted the data.

Rui Liao: Analyzed and interpreted the data.

Yen-Ching Chuang: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Tao-Hsin Tung: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

## Data availability statement

The authors do not have permission to share data.

## Additional information

Supplementary content related to this article has been published online at [URL].

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.heliyon.2023.e16481>.

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