BBRC
Bioscience Biotechnology
Research Communications

Correlation of English Language proficiency with Multidisciplinary Examination Score Achieved by Indonesian First Grade Medical Students

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ABSTRACT

Problem-based learning (PBL) has been implemented to replace classical teaching method with college system in Undergraduate Program of Medical Faculty, Padjadjaran University, Indonesia. In PBL, students are encouraged to be independent to find answers for the problems they faced during discussions based on references that are mostly in English. Since adequate English ability is believed to play pivotal role in helping the students during the learning process, we investigated whether the English proficiency is correlated with academic achievement. A cross-sectional analytical research was conducted to analyze the correlation between Test of English as a Foreign Language TOEFL score and the multidisciplinary examination (MDE) score of the 1st Reproductive System among 194 first grade medical students of Padjadjaran University. Pearson correlation test revealed a significant correlation between TOEFL score and MDE score (r=0.49, IK 95% (0.37; 0.59), p < 0.001). This study revealed that English proficiency is correlated with the student academic achievement.Subjects: Medical education, English proficiency, Problem-based learning, higher education

KEY WORDS: TOEFL SCORE; ENGLISH PROFICIENCY; PBL; ACADEMIC ACHIEVEMENT; INDONESIA

INTRODUCTION

English is recognized as an international language and also dominantly used in various fields, such as science, medicine, international business, technology, and education. International educational field also used English as the main language, including in medical education (Boulet *et al.*, 2001). Problem-based learning (PBL) is a learning method that encourages the students to learn actively through problems embedded in cases (Barrows, 1996). In PBL implementation, medical students discuss the trigger cases in small groups. Through that process, medical students are expected to be able to understand the learning objectives based on the problems presented in the cases. Problem-based learning has been applied as the main learning method in Undergraduate Program of Medicine, Faculty of Medicine, Universitas Padjadjaran, in 2001, in which English was used as the delivery language. Even though English is not used as daily language in Indonesia, most of learning materials, such as study guide, course materials, laboratory modules, and clinical skill modules, are written in English. Moreover, all student evaluation methods, including multiple-choice questions (MCQ) in the form of multidisciplinary examination (MDE), are also written in English, (Srikrai *et al.*, 2016 Clyne and Sharifian, 2008; McKay, 2018).

Test of English as a Foreign Language (TOEFL) is one of the measurement tools to assess English ability for people who are not using English as the main or mother language (Alderson and Hamp-Lyons, 1996). It tests listening, reading, writing, and speaking ability (Alderson, 2009). There are three types of TOEFL: paper-based TOEFL (PBT), computer-based TOEFL (CBT), an Internet-based TOEFL (IBT). In order to assess the English ability of the students, Faculty of Medicine, Universitas Padjadjaran, hold the TOEFL-ITP (Institutional Testing Program) at the first grade with passing grade score of 550 for promotion to second grade. The TOEFL ITP series was the TOEFL PBT implemented by universities to their students to assess english-language skill with a convenient, affordable and reliable assessment.Since study elaborating the correlation between academic achievement of Medical students and their English ability in Indonesia is still scarce, this study aims to investigate the correlation between TOEFL-ITP score of first grade Medical students of Padjadjaran University and their MDE results.

MATERIAL AND METHODS

Ethical statement: This study was approved by Ethical Committee of Universitas Padjadjaran No. 6482/UN6. C1/DL/2017.Study design: This study is a cross-sectional analytical research using secondary data. The data used were institutional TOEFL PBT score of first grade stu-dents and MDE results of Reproductive System I, one of learning modules delivered in first grade in the academic year 2015/2016. The TOEFL ITP was held by Language center, Faculty of Literacy, Universitas Padjadjaran.

Materials and/or Subjects: The population of this research was the first grade students of Undergraduate Program of Medicine, Faculty of Medicine, Universitas Padjadjaran, academic year 2015/2016.

The variables were analyzed in this study were the TOEFL ITP score and MDE score of the 1st Reproductive System of first grade medical students. The data were obtained from Academic Assessment Unit, Faculty of Medicine, Padjadjaran University.

Statistics: This study used total sampling technique. The size of the minimum sample was estimated using the sample size formula for the correlation test. Statistical analysis was performed using Pearson correlation testing, and processed using Graphpad Prism software version 7.

RESULTS AND DISCUSSION

The number of students who met inclusion criteria and were included in this study was 194 subjects (Suplementary data 1). The average TOEFL score for those students was 517.1 ± 66.7. Seventy-two subjects (37.1%) passed the cut-off TOEFL score for promotion to second grade (TOEFL PBT score 550), with the average score was 584 ± 29. The average MDE score of the 1st Reproductive System among subjects was 64.6 ± 9.2. Of all subjects, 160 students (85.2%) passed the minimum MDE passing grade score of 56.Correlation analysis using Pearson test showed positive correlation between TOEFL score and MDE score of Reproductive System I (r=0.49, IK 95% (0.37; 0.59), p<0.001) (Figure 1). These data also revealed that the higher the TOEFL score, the higher the MDE

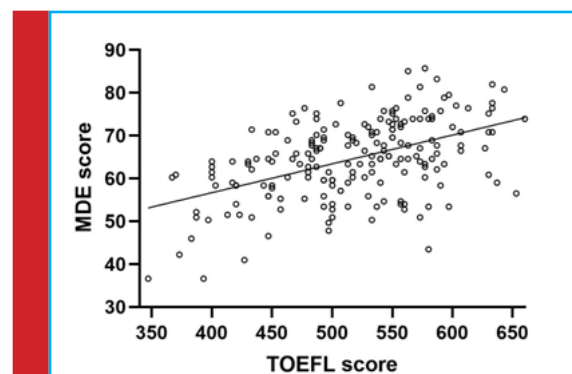
FIGURE 1. Correlation between TOEFL score and the 1st Reproductive System MDE score. Data were analyzed using Pearson correlation test (r=0.49, IK 95% (0.37; 0.59), p<0.001).

score of the 1st Reproductive System could be achieved by the students.

Our study showed significantly positive correlation between TOEFL score and MDE results of the 1st Reproductive System. It implied that English ability, which can be measured by TOEFL, is one of the factors that could influence students' academic performance (Johnson, 1988). Our findings is consistent with the study conducted in 2016 that revealed the ability to understand English-based text can influence the academic performance of the students who do not use English as the main language, but currently were educated with the learning materials written and delivered in English (Srikrai *et al.*, 2016). That study also identified two challenges that might be faced by the students in that situation; difficulty in understanding the meaning of the English-written text and understanding the learning material itself. Therefore, low English ability might result in low academic performance.

A study conducted in 2011 suggested that the students who undergo education in English but do not use English as the main language, will have a complex cognitive process on understanding the learning materials. Conceptual cognitive process is influenced by the students' skills to understand English in the learning materials. The better student's English proficiency, the better the understanding of learning materials (Bernardo, Jennifer and Gaerlan, 2012) more non-native speakers of English are learning English so that they can learn in English. In this paper, we review studies (mostly involving Filipino-English bilinguals. For the learning materials that involves memory, language consistency used during learning process and examination is one of the important factors that influence the academic result. Furthermore, high English language skill for the students who do not use English as the main language becomes an advantage during the learning process as there could be more variation in learning materials available.The results of our study is in line with a research conducted by Martirosyan *et al.* in 2015 which showed a positive correlation between TOEFL score and academic performance of foreign students who undergo education in the English-using university level. This study found that students with TOEFL score of 500 or more had higher Cumulative GPA as compared with students with TOEFL score less than 500 (Martirosyan, Hwang and Wanjohi, 2015).

In addition, that study also proposed several factors other than English ability that could affect academic performance, such as confidence, motivation, and positive attitude in the education using foreign language (Martirosyan, Hwang and Wanjohi, 2015). This phenomenon might also apply in our current study as several students with TOEFL score higher than 550 (the passing grade score for TOEFL) could not pass the minimum passing grade score for the 1st Reproductive System MDE (56). Reversely, several students with TOEFL score less than 550 could achieve MDE score higher than 56. In addition to the factors already mentioned, the students' ability to understand the English-written questions during MDE could also affect the students' academic performance (Srikrai *et al.*, 2016).

CONCLUSION

In this study, we showed positive correlation between TOEFL score and the results of multidisciplinary examination. One of the main influencing factors which might influence students' academic achievement is the students' ability to understand the learning materials written in English. The result of this research could be used as a reference by Faculty of Medicine to improve their students' English skill starting from the first grade to help them understand medical sciences through enjoyable learning process.

Supplementary data

Supplement 1. Data files are available from: Open data repository address https://osf.io/yxwf3/.

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