Assessment of a Bilingual Course on Epidemiology

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INTRODUCTION

Bilingual pedagogy involves teaching academic content in a native and secondary language where the goal is to deliver knowledge while enhancing the terminology learning of certain subject as well as improving the English communication skills among the students. In China, most bilingual courses are taught in English and Chinese. Epidemiology is a core course not only for students in schools of public health but also for those from medical schools. For undergraduate students on medical campus, better understanding of terminology in English will improve their abilities for future study on epidemiology. However, there are few bilingual courses on epidemiology targeting on undergraduate medical students in China. Therefore, we designed a 9-week bilingual elective course introducing fundamental epidemiology knowledge to undergraduate students in Peking University Health Science Center. In this study, we summarized the data collected during 2011 to 2014 to evaluate the effect of bilingual teaching among the students.

OBJECTIVE

This study aimed to evaluate the effect of bilingual teaching of the *Fundamental Epidemiology* course.

METHODS

Subjects

All the undergraduate students who took the course were enrolled in our study.

Design

A self-control quasi-experimental study was adopted. The intervention was a 9-week/18-hour course of basic epidemiological knowledge. Lecturers gave the lectures mainly in English in class while Chinese would be used in case of explaining some confusing concepts.

A baseline test was conducted at the beginning of the course in which the students were required to finish a quiz in English including 15 questions corresponding to the knowledge going to be taught in the following classes. The concepts tested in the quiz included prevalence, incidence, causality, bias, calculation of OR, migrant epidemiology, epidemiological study design and so on. One question on migrant epidemiology in the quiz will be learned by students themselves through reading materials and group discussion. At the end of the course, the students were asked to do the same quiz as an outcome evaluation. There were totally 15 questions and students could get a maximum score of 15 points (one point per question). A course evaluation form was also distributed to collect information on suggestion to the course design.

Statistical analysis

Epidata (v3.1) was used to enter data. Statistical Analysis System (SAS, v9.3) was applied to perform the analysis. McNemar's test or adjusted McNemar's test was used to examine the difference between two performances of each question. And Wilcoxon signed-ranked test was performed to examine the significance between two total score of the 15 questions.

RESULTS

A total of 94 students from different majors were included in analysis (table 1).

Among 15 questions, the students performed better significantly on 13 questions compared outcome and baseline quiz ($p<0.05$), which included the question of migrant epidemiology learned by students themselves. Regarding to the two questions without statistical difference, one question which 67 out of 94 students done right twice was to examine the understanding of an epidemiological study result and causality, the other question was to test the concepts of exposure and outcome.

The mean total score of the second quiz (10.74 ± 3.39) was significantly higher than the first attempt (5.93 ± 2.61, $p<0.05$).

82 valid evaluation forms were retrieved from students. 87.4 percent of students agreed with that the teaching materials in both English and Chinese will help them learn and 88.6 percent of students would like to recommend this course to others.

Table 1 the Specialty Characteristics of the Subjects

Major	Frequency	Percentage
Clinical medicine	38	40.4
Preventive medicine	23	24.5
Medical technology	16	17.0
Other*	17	18.1
Total	94	100

*Other: include pharmacy, nursing, basic medicine and medical English

DISCUSSION

This study shows that the bilingual course has positive effect in terms of delivering knowledge of epidemiology. However, evaluation process using a randomize control experiment design including control group where teaching language is Chinese is needed to strengthen the finding of the current study.

In addition, the students performed well while learning a concept through self-reading, group discussion and group presentation which implies more interactive teaching method might be preferable. As a result of their easiness, the two questions which have no statistical difference between outcome and baseline quiz might not be very sensitive to evaluate students' improvement. Moreover, based on students evaluation, whether the goal of bilingual teaching can be achieved depends on several factors, such as teachers' English level, students' English listening and speaking skills, difficulty of teaching materials.

CONCLUTION

Our study showed the bilingual course *Fundamental Epidemiology* was effective among undergraduate medical students. A controlled trial including students from the traditional class as control will strengthen the finding of the current study. In addition, more interactive pedagogy is needed in future course design.