

The Correlation of Regional Stage Exam (UTB) and Progress Test (PT) to Grade Point Average (GPA) of Medical Students at Faculty of Medicine, Universitas Islam Indonesia

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ABSTRACT

Background

A regional stage exam, called Ujian Tahap Bersama (UTB) and Progress Test (PT) are formative assessments. UTB II is tested on 4th year medical students to measure their knowledge of pathomechanism to therapy. The PT has been implemented in Faculty of Medicine (FoM), Universitas Islam Indonesia (UII) since 2012. This study aims to determine correlations of UTB and PT to GPA of undergraduate medical students in the FoM UII.

Method

This study was an observational analytical research with a cross-sectional approach. An analysis of 324 students was conducted. A linear regression analysis was conducted on scores of UTB II (4th year students) and PT (4th year students) correlated to GPA scores of 176 students (student batch of 2015) and 159 students (student batch of 2016). Exclusion criteria of subjects of this study were students who did not follow either one or both of these formative assessments. There were 11 students excluded from the analysis of this study.

Result:

The data normality test showed a P value of 0.494. Value regression data of the UBT II to the GPA indicated a significant result with a P value of 0.000. Value regression data of the 4th PT to the GPA indicated a significant result with a P value of 0.000. An R square value was 0.464. These results found that the UTB II and 4th PT scores correlated with moderate correlation strength.

Conclusion:

The UTB II and 4th PT correlated with achievements of cognitive competencies of the medical students. A relationship test of UTB I, II, and III is required. A progress test of PT needs to be conducted annually.

Keywords: *regional stage exam, progress test, grade-point average, formative assessment, student assessment.*

1. INTRODUCTION

As a part of a learning process, an assessment is one of main components in the learning process. The assessment can be used to evaluate achievements of the learning process. In addition to unnoticed impacts of learning, the assessment can encourage students to learn, called "assessment drives learning". Today, the assessment not only is used to determine whether students will graduate or will not graduate, but also is aimed to learn, called "assessment for learning." Moreover, today the assessment is considered as a part of a learning process, called "assessment as learning".

None of assessment models are able to perfectly assess all students' abilities from cognitive, psychomotor or affective aspects. Therefore, applying various assessment methods is common in medical education [1].

An assessment is conducted to measure specifically each aspect and a combination of various aspects, but it still has to consider factors that affect purposes of the assessment, namely validity, reliability, learning impacts, feasibility and acceptance of the conducted assessment [2].

An assessment should also look at purposes of its implementation, either in a summative form or a formative form. In a learning model of problem-based learning (PBL), self-directed learning (SDL) is one of its main principles. A formative assessment is highly compatible with this principle. Students must consciously master their established competencies, so that feedback is required to determine whether their learning process has reached their expected competencies or not. Therefore, the formative assessment must provide at least four information i.e.: (1) detailed feedback on

obtained capabilities, (2) guidance for specific development, (3) a following-up actions based on evidence of student achievements, and (4) an ongoing cycle [3].

The regional stage exam, called Ujian Tahap Bersama (UTB) is a pilot project of competency assessment organized by a medical-teaching association, called Asosiasi Institusi Pendidikan Kedokteran Indonesia (AIPKI) region 4, to solve some recent problems in national board medical examination, called Uji Kompetensi Mahasiswa Pendidikan Profesi Dokter (UKMPPD). UTB is designed to be conducted as many as 3 stages, namely phase I and II at undergraduate level and phase III at the end of the profession education level. UTB II has an assessment blueprint that covers all cognitive competencies at undergraduate medical level consisting of 200 points of multiple-choice question (MCQ) by using computer-based test (CBT). As a pilot project which is formative assessment and has been implemented since 2018, it is necessary to observe if this assessment system can assess the competencies of medical students.

Faculty of Medicine (FoM) Universitas Islam Indonesia (UII) has since 2012 conducted a progress test (PT) for all undergraduate students, and since 2018 has conducted this test for all levels until profession education level. The Progress test (PT) at FoM UII is a modality of formative assessment of cognitive competencies. The PT has an assessment blueprint that covers all cognitive competencies of medical students at undergraduate level and consists of 200 MCQ questions by using computer-based test (CBT).

Although both assessment models assess cognitive competencies of the undergraduate level, these two types of assessments have different blueprint formats. Both have some challenges: both are formative which aims to provide feedback to both students and educational institutions [4], have no value impact on students, implement the assessments outside regular schedules of blocks and consist of tested materials which are related not only to the block materials, but also to all materials taught at undergraduate level. In addition, both assessment models also require some challenging efforts in preparation, implementation and feedback processes in forms of facilities, human resources and considerable costs. Based on similarities of these two assessment models and consideration whether the both assessment models can objectively assess the cognitive abilities of medical students, this study aims to determine if there is a correlation between these two assessment models (UTB II and the 4th PT) and the cognitive achievements of students reflected in the cumulative achievement index (GPA).

2. METHODS

2.1 Study Design

This study was an observational analytical research with a cross sectional approach. This study included students who participated in the UTB II and the 4th PT. The subjects of this study were 335 students. Those subjects consisted of 176 students (student batch of 2015) and 159 students (student batch of 2016) of FoM UII. Inclusion criteria of this study were students of either 2015 or 2016 who are active. There were 11 students who did not take part in any of the formative assessment models (UTB II and 4th PT), so they were excluded. A data analysis was finally conducted on 324 students.

Scores of UTB II and 4th PT had a range of 0-100 scores (of 200 questions), which were also equally conducted in the 4th year. Meanwhile, the GPA was cumulative scores of all components of the summative scores of undergraduate students with a range of grades 0-4.

2.2 Statistical Analysis

After obtaining score data of UTB II, 4th PT and GPA of each student, a data distribution test was conducted. Then a linear regression test of UTB II data to GPA and of 4th PT data to GPA was performed by using a multiple linear regression analysis to determine relationships and similarities of their regression.

3. RESULTS

Based on the results of data distribution analysis, the obtained data distribution was normal (table 1), so a multiple linear regression analysis could be conducted. A t-test value (table 2) for the relationship of UTB II scores to GPA obtained a significance value of 0.000 ($p < 0.05$) meaning the UTB II partially affected the GPA. The t-test value for the relationship of the 4th PT to the GPA obtained a significance value of 0.000 ($p < 0.05$) meaning the 4th PT partially affected the GPA. Meanwhile, a F-test value (table 3) obtained a significance result of 0.000 ($p < 0.05$) meaning that the scores of UTB II and 4th PT simultaneously influenced the GPA. An obtained constant value was 1,794 and a R square value was 0.464 meaning it had a moderate relationship level [5], representing that the UTB II and the 4th PT had an effect of 46.6% on the achievements of the GPA. Based on this result, the regression equation was $Y = 1,794 + 0.018 \text{ UTB II} + 0.013 \text{ 4}^{\text{th}} \text{ PT}$.

A. FIGURES AND TABLES

Table 1. Distribution Data

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		324
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.26512564
Most Extreme Differences	Absolute	.046
	Positive	.046
	Negative	-.032
Kolmogorov-Smirnov Z		.831
Asymp. Sig. (2-tailed)		.494
a. Test distribution is Normal.		

4. DISCUSSION

This study showed that scores of the UTB II and 4th PT partially and simultaneously correlated with the cognitive achievements of GPA of the undergraduate medical students. This is in line with a study conducted by Mc Laughin & Yan reporting that an online formative assessment could improve students' learning and cognitive attainment [6].

The UTB II and 4th PT are formative cognitive assessments, and there are concerns that students will take them not seriously. However, the results of this study show that generally the medical students continue to participate those assessments earnestly with the best abilities they have, so those can represent real cognitive abilities of the students. This can be because the students need these formative assessments to get feedback or to evaluate their cognitive abilities [7].

The UTB II and 4th PT in this study were conducted in a relatively close time, and both were conducted in the 4th year of study. This may have an effect on a level of seriousness of the students in working on the formative assessments. This can happen because the students at this level already have had good insights and responsibilities to their learning needs [8]. Therefore, further studies are needed to evaluate those assessments conducted in the early years, such as UTB I (2nd year) and PT (1st to 3rd year) to measure whether these assessments are able to predict students' cognitive abilities either at the end of the undergraduate learning process or at the clinical rotation level.

Based on the limitations of this study, it is necessary to conduct further studies whether the results of UTB I can predict the results of UTB II and the results of national competency tests; consequently, it can be seen whether the cognitive achievements of basic medical sciences can contribute to the cognitive achievements of

clinical medical sciences and whether cognitive achievements at the undergraduate level can contribute to the achievements of competencies assessed by national competency tests. Similarly, PT held annually is to measure whether it sustainably can predict cognitive achievements in higher years and competency achievements assessed by national competency tests.

5. CONCLUSION

In conclusions, this study indicated that either the UTB II or 4th PT statistically correlated to the GPA. Then this also showed that the UTB II and 4th PT simultaneously correlated to the GPA with a moderate relationship level.

ETHICAL APPROVAL

The research ethics of this study was submitted and approved by Ethics Committee of Faculty Medicine, Universitas Islam Indonesia, with No. 33/Ka.Kom.Et/70/KE/XI/2020.

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