

*Full Length Research Paper*

# Grade point average, progress test, and try out's test as tools for curriculum evaluation and graduates' performance prediction at the national board examination

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**Competency-based curriculum (CBC) has been introduced at the Faculty of Medicine, University of Indonesia (FMUI) since 2005. Afterwards, graduates should take National Board Examination (UKDI) to get the license as a general practitioner. In accordance to evaluate CBC and predict graduates' achievement in UKDI, we used scores of Grade Point Average (GPA), Progress Test (PT) and tryout test of UKDI (TO UKDI). GPA, PT, TO UKDI and UKDI data were collected and analyzed using SPSS version 11.5. The results showed no significant difference between CBC and non-CBC graduates in obtaining these scores, except for GPA's scores. All GPA, PT and try out test's scores in both CBC and non-CBC graduates were correlated with UKDI's scores. The UKDI's result can be predicted by the following equation:  $5.90 + (10.14 \times \text{GPA's score}) + (0.39 \times \text{try-out test's score}) + (0.18 \times \text{PT's score})$ . GPA's scores of CBC graduates were significantly higher compared to non-CBC graduates. This may be due to the assessment, focussed on the learning process. GPA, PT and TO UKDI scores are able to predict the performance of the graduates at the UKDI. GPA, PT and TO UKDI are good instruments for curriculum evaluation and graduates' achievement prediction at the National Board Examination.**

**Keywords:** Curriculum evaluation, grade point average, progress test, try-out test, national board examination.

## INTRODUCTION

Since 2006, the Indonesian Medical Council has established Medical Professional Education Standard that has to be implemented in all Indonesian medical education institutions. Medical education should produce graduates who have several competencies, especially in primary health care (Indonesian Medical Council, 2006)<sup>1</sup> Therefore, in developing medical education curriculum, the faculty has to consider all aspects concerning teaching and learning to achieve these competencies.

Faculty of Medicine, University of Indonesia (FMUI) has implemented competency-based curriculum (CBC) since 2005, a year before other Indonesian medical institutions started. We use problem-based learning

(PBL) as one of learning strategies to achieve 7 core national competencies, and 3 institutional competencies. The structure of the curriculum was designed according to the level of education, and consists of some modules (Faculty of Medicine, University of Indonesia, 2005).

There are 4 levels of ways to evaluate program. The process in evaluating program from one level to the next level is getting difficult and more time consuming. Although, the next level provides us more valuable information. Those four levels are (Kirkpatrick and Kirkpatrick, 2006):

Level 1 : Reaction → measure participants' satisfaction

Level 2 : Learning → the change of participants' attitude, knowledge and skill improvement

Level 3 : Behavior → the change of participants' behavior due to attending the program

Level 4 : Results → the final results due to atten-

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**Table 1.** The 6<sup>th</sup> Progress Test and UKDI's median scores of non-CBC and CBC graduates

	<b>N</b>	<b>Median</b>	<b>Min-Max</b>	<b>p value</b>
6 <sup>th</sup> PT				
Non-CBC	136	45.83	30.00-65.83	0.06
CBC	136	47.50	30.83-60.83	
UKDI				
Non-CBC	136	74.25	46.00-87.00	0.83
CBC	136	74.00	52.50-88.50	

ding the program

According to these levels, we evaluate the new curriculum in the 2<sup>nd</sup> level, which measures the attitude change, knowledge and skill improvement of students affected by the new curriculum.

At the end of each semester the students get their GPA that reflect their performance/achievement. To monitor student's learning progress through semester, progress test is conducted at the end of every semester too. This test consists of basic and clinical sciences (examine knowledge only), based on blue print that designed beforehand. In addition, case illustrations were inserted in most of the questions collected. The questions were constructed according to the UKDI format. Since 1977, the progress test had been conducted by the Maastricht medical school in the Netherlands to evaluate student achievement in the cognitive domain. The test was a comprehensive exam with 3 options: true or false, or I don't know options (Van der et al., 1996). Progress test was also conducted by other medical education institutions, such as McMaster University in Canada (Blake et al., 1996). All students having the same set of items, and doing the test in the same time. The questions can be multiple choice questions, true-false or short answer questions (Van der et al., 1996; Blake et al., 1996). Blue print was prepared for each test and consists of the number of questions allocated for each module, basic and clinical sciences. Usually students received their feedback on their performance after taking the test, compare to their class and also other classes. The expectation is that students will show progress in their study along the courses and can improve their achievement by knowing students' deficiencies (Schwartz, 2010).

Time needed to complete study in medical education in FMUI is 5 years. After graduation, every graduates should take a National Board Examination (UKDI) to obtain license for practicing as a general practitioner. In addition, graduates have to do their internship that organized by the Indonesian Medical Council.

The aim of this study is to evaluate the competency-based curriculum and predict the UKDI's result by comparing CBC and non-CBC student's scores on their Grade Point Average (GPA), Progress Test (PT) and

tryout test of UKDI (TO UKDI). It is also aimed to correlate all variables to the UKDI's result.

## MATERIAL AND METHODS

This research is a cross sectional studies. Population is all (1<sup>st</sup>-5<sup>th</sup> grade) regular students of Faculty of Medicine, University of Indonesia. Total samples of two hundreds and seventy two CBC and non-CBC students who have complete data (scores) of GPA, 6<sup>th</sup> Progress Test (PT), tryout test of UKDI (TO UKDI) and UKDI were chosen randomly. All of these data were collected and analyzed using SPSS version 11.5. Level of significant used was  $p < 0.05$ .

## RESULTS AND DISCUSION

The number of CBC students who have complete scores of GPA, PT, TO UKDI and UKDI was 136 and so do the number of non-CBC students. UKDI's median score of non-CBC graduates was slightly higher than CBC graduates 74.25 (46.0-87.0) and 74.0 (52.50-88.50), respectively. The UKDI's median score obtained by both groups was almost the same, but the minimum and maximum scores of CBC graduates were higher compare to non-CBC graduates. The median score of 6<sup>th</sup> progress test obtained by non-CBC was 45.83 (30.00-65.83) and CBC graduates was 47.5 (30.83-60.83). Eventhough we had tried to fulfill the blueprint before the progress test and the exam questions were chosen from the item bank, the result was still low. The low achievement of progress test by both groups may be due to the low knowledge's retention. Other possibility was because of the student's low interest in doing the progress test, since this test was formative test and did not influence their GPA. Table 1 shows 6<sup>th</sup> PT and UKDI median scores of non-CBC and CBC graduates. There was no statistically significant different between CBC and non-CBC graduates in obtaining scores of 6<sup>th</sup> progress test and UKDI.

Furthermore, GPA's mean score of CBC graduates was significantly higher than those of the non-CBC graduates,  $3.54 \pm 0.25$  and  $3.37 \pm 0.20$  respectively, with

**Table 2.** The GPA and TO UKDI mean scores of non-CBC and CBC graduates

	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>p</b>
GPA				
Non-CBC	136	3.37	0.20	<0.001
CBC	136	3.54	0.25	
TO UKDI				
Non-CBC	136	62.55	7.45	0.659
CBC	136	62.91	6.07	

**Table 3.** Correlation between GPA, 6<sup>th</sup> PT and TO UKDI with UKDI's score obtained by either CBC or non-CBC graduates

	<b>Non-CBC</b>			<b>CBC</b>		
	UKDI	p	R square	UKDI	p	R square
TO	0.681	<0.001	0.452	0.584	<0.001	0.357
6 <sup>th</sup> PT	0.497	<0.001	0.293	0.576	<0.001	0.325
GPA	0.562	<0.001	0.356	0.739	<0.001	0.551

**Table 4.** Correlation of GPA, 6<sup>th</sup> PT and TO UKDI with UKDI scores of CBC and non-CBC graduates

	<b>UKDI</b>	<b>p</b>	<b>R square</b>	<b>Rsquare (overall)</b>
GPA	0.616	<0.001	0.40	0.40
6 <sup>th</sup> PT	0.531	<0.001	0.31	
TO UKDI	0.637	<0.001	0.41	

**Table 5.** Regression analysis for UKDI by TO, 6<sup>th</sup> PT and GPA

	<b>β</b>	<b>p</b>
(constant)	5.90	
GPA	10.14	<0.001
TO UKDI	0.39	<0.001
6 <sup>th</sup> PT	0.18	<0.001

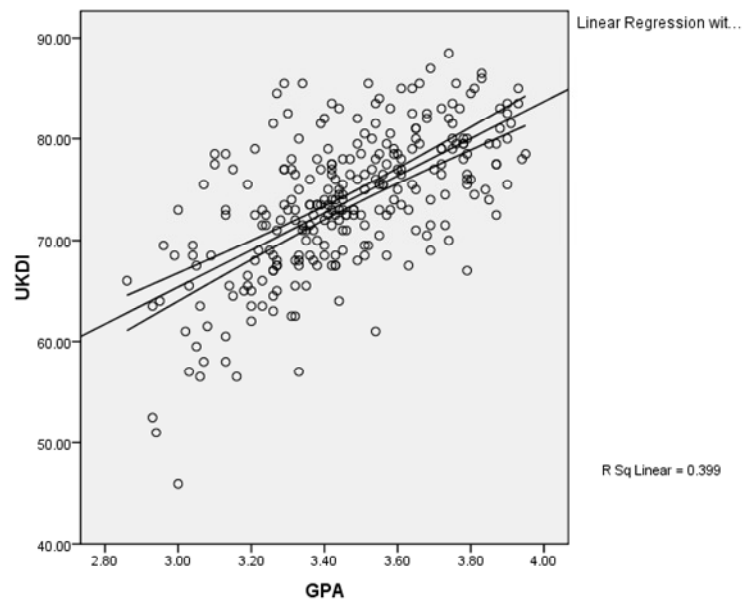
$p < 0.001$ . It may be due to different learning strategies applied as well as the assessment method which particularly focuses on process rather than knowledge. In addition, the mean score of TO UKDI obtained by CBC graduates was  $62.91 \pm 6.07$ , while the mean score of non-CBC graduates was  $62.55 \pm 7.45$  (Table 2). TO UKDI's results were not significantly different between CBC and non-CBC graduates.

We observed a moderate correlation between scores of GPA, 6<sup>th</sup> PT and TO UKDI with UKDI's score obtained by either CBC or non-CBC graduates. The correlation between those scores with UKDI's score was described

in table 3. Furthermore, if we correlate GPA, 6<sup>th</sup> PT and TO UKDI scores with UKDI scores of CBC and non-CBC graduates, the  $r$  square was 0.399 (0.40). It means that 40 percents variation of UKDI's score was determined by the variation of GPA, 6<sup>th</sup> PT and TO UKDI (see figure 1).

From regression analysis for predicting UKDI scores by GPA, 6<sup>th</sup> PT and TO UKDI scores, we can conclude that UKDI score can be predicted by this following equation:

$$\text{UKDI score} = 5.90 + (10.19 \times \text{GPA}) + 0.39 (\text{TO UKDI}) + 0.18 (6^{\text{th}} \text{PT})$$



**Figure 1.** Correlation of GPA, 6th PT and TO UKDI scores in CBC and non-CBC graduates

## CONCLUSIONS

GPA's scores of CBC graduates were significantly higher compared to non-CBC graduates. This may be due to the assessment, focussed on the learning process. GPA, PT and TO UKDI scores are able to predict the performance of the graduates at the UKDI's score.

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