

Research Article

The correlation of preclinical GPA score in faculty of medicine of university of baiturrahmah with national board examination result

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Abstract:

Background: The National board of medical examination (“UKMPPD”) has been implemented since August 2014 and has emerged a new challenge for medicine faculty in Indonesia in which there are 2769 “UKMPPD CBT” retakers in November 2017. It is the same challenge for Faculty of medicine, university of baiturrahmah (FMUNBRAH) where there are 82 CBT retakers in February 2018. The “UKMPPD” as a determinant of graduation should represent the process of conducting competency-based curriculum during preclinical and clinical program. Thus the GPA as a measure of student performance in conducting the curriculum is expected to correlate in achieving the “UKMPPD CBT”.

Aims: To determine the correlation between preclinical GPA score of students with achieving the “UKMPPD CBT”.

Methods: It was cross sectional design consisting subject of 749 students who joined “UKMPPD CBT” as firsttaker since November 2014–February 2018. Data obtained were preclinical GPA and the results of “UKMPPD CBT”. GPA data was grouped into three categories with satisfying, very satisfying, and cum laude predicate. The results of “UKMPPD CBT” were grouped by achieving and not achieving. Furthermore, the data was analyzed using Sommers'd correlation test.

Results: The median value of preclinical GPA were 3.00 (2.35-3.76). There is a weak negative correlation between preclinical GPA with achieving of “UKMPPD CBT” ($p < 0.001$; value $r = -0.221$).

Conclusion: There is a weak negative correlation between GPA with the accomplishment of UKMPPD CBT. This result can provide feedback to institutional managers regarding the process of implementing the curriculum based competency.

Keywords: GPA, achieving of “UKMPPD CBT”

1. Introduction

The national board of medical examination (UKMPPD) is the licensing tool for general physician held by joint committee (PNUKMPPD) from the Indonesian doctors committee, the association of Indonesian medical education foundation, Indonesian family doctor association. The UKMPPD consists of computer based test (CBT) and objective structured clinical examination (OSCE). It aims to ensure the competency of fresh graduate doctor. It also serves as a feedback for the faculty of medicine in conducting curriculum based competency. Designed to assess knowledge of medical school curriculum, the CBT includes questions on basic science, clinical science, and patient management. Thus, the UKMPPD is expected to correlate with prior student academic performance reflected by grade point average (GPA).

Faculty of medicine, university of Baiturrahmah (FMUNBRAH) has implemented curriculum based competency since 2007 by using problem based learning as one of learning strategies to meet the requirement of seven core national competencies as issued by Indonesian medical council. The faculty curriculum is designed based on the Indonesian medical competency standard (SKDI, 2012) consisting of some modules in each semester. The curriculum is organized as 3.5 year preclinical program in the faculty and

2 year clinical clerkship in educational hospitals.

Student academic performance is determined by grade point average (GPA) for both preclinical and clinical program. The preclinical program consists of 154 credit hour points (SKS) and 44 credit hour points (SKS) for clinical program. At the end of the clinical clerkship, the students who are eligible should take the UKMPPD CBT and OSCE. Students are declared completing the examination when passing a predetermined passing rate. The CBT consists of 200 multiple choice questions aimed to test the cognitive aspect referring to SKDI. Those who do not pass at the first time are called retaker. More retakers are generated from CBT. Since 2014 until November 2017, there are 2769 CBT retakers in Indonesia.

The UKMPPD CBT has emerged new challenge for all medical faculties in Indonesia and also for FMUNBRAH. In February 2018, we have 82 CBT retakers. The average passing percentage for CBT in FMUNBRAH for first taker in 2017 is 56,45 % which is still lower from national average passing percentage (73,31 %). Since UKMPPD plays a role as a licensing tool for new graduate doctor to receive competency certificate endorsed by Indonesian Medical Council (KKI),¹ the dean can not give the medical doctor (MD) certificate for those who do not pass the UKMPPD. But, they are still given the opportunity to retake the exam. Furthermore, the retakers

as mandated in the government policy no. 30 in the year 2014 about Rules of Conducting national board examination for medical students must be facilitated by institution and supported with remediation so they can pass the UKMPPD.¹ For some institution, since they are still considered as students thought not against the policy, they still have the obligation to pay the tuition fee. But some institution especially private faculty like FMUNBRAH do not take tuition fee from CBT retakers.

As there are many CBT retakers in Indonesia, it poses a problematic dilemma for faculty of medicine in Indonesia and FMUNBRAH also. Several faculties has conducted some studies to analyze the problem. Several studies tried to correlate the GPA and the UKMPPD result. Various results from moderate-to-large correlation existed. Mardiasuti and Werdhani (2011) from University of Indonesia (FMUI) conducted research about correlation of GPA, progress test and try out's test as a predictor of performance prediction at the national board found that GPA was a good predictor.² Salvandega et al (2011) from University of Diponegoro found large correlation of preclinical GPA and results of national board examination.³ Irma Suswati and Rahayu (2017) from university Muhammadiyah Malang found also correlation of GPA and passing the UKMPPD.⁴ Winda et al (2017) from university of Sam Ratulangi also found large correlation of preclinical GPA and UKMPPD results. Some studies abroad also found correlation of GPA and the national board outcome (United states medical licensing examination-USMLE) like conducted by Zahn et al (2012).^{5,6}

Based on the above frameworks, the aim of this study was to determine the correlation between preclinical GPA score with achieving the "UKMPPD CBT". We highlighted CBT since it poses a problematic dilemma in FMUNBRAH both for faculty and students. Prior academic performances were reflected by GPA. Furthermore, the study result is expected to give constructive feedback for curriculum development in FMUNBRAH.

2. Methods

2.1 Study participants

It was cross sectional study design consisting subject of 749 students who joined "UKMPPD CBT". It was limited to first-time CBT takers since November 2014-February 2018 who had participated in the curriculum based competency. They were students from class of 2007, 2008, 2009, 2010, and 2011.

2.2 Study variables and statistical analysis

Data obtained were preclinical GPA and the results of "UKMPPD CBT". Faculty medicine of baiturrahmah university records grades for preclinical students on a 5-point scale: A (80-100), B (65-79), C (55-64), D (40-54), E (0-39). Students must receive a C or better to pass a module. Grade point average is calculated by dividing the total grade points earned by the total number of credit hours attempted for which a permanent grade has been assigned. The GPA score in this study reflected the overall GPA at the end of seventh semester in preclinical program. GPA data was grouped into three categories with satisfying (2.00-2.75), very satisfying (2.76-

3.5), and cum laude (>3.5) predicate. The results of "UKMPPD CBT" were grouped by achieving (score ≥ 66) and not achieving (score <66). Furthermore, the data was analyzed using Sommers'd correlation test.

3. Results and Discussion

Students who pass at the first time taking UKMPPD CBT, generally have a good prior academic achievement as reflected by the GPA and length of study. The GPA reflects the achievement of students in completing the curriculum based competency. The students with the higher GPA is expected to have higher academic qualification too. Thus, they can pass the UKMPPD in one shoot. Some studies have shown the positive correlation of GPA and UKMPPD results.

In our study, data from 749 students who took the UMPPD CBT from November 2014-February 2018 as first taker were included. The descriptive statistics for the subjects were listed in table 1.

Table 1. Preclinical GPA and CBT score of FMUNBRAH students taking UKMPPD CBT from November 2014-February 2018

Variable	N	Median (Minimum Maximum)
Preclinical GPA	749	3.0 (2.35-3.76)
CBT score	749	67.5 (22.5-87.5)

The median value of preclinical GPA were 3.00 (2.35-3.76). The median value for CBT score was 67.5 with the minimum score 22.5 and maximum score 87.5.

Table 2 showed the correlation between preclinical GPA and CBT results. There was a weak negative correlation between preclinical GPA with achieving of "UKMPPD CBT" ($p < 0.001$; value $r = -0.221$). It was quite surprising result since the assumed hypothesis above that GPA is correlated with UKMPPD result. Although the correlation was weak but significant statistically.

Table 2. Reported correlation between preclinical GPA and CBT score

	CBT results		Total	r	p
	Achieving	Not achieving			
Preclinical GPA	2.01 - 2.75	8	67	-0.221	0.000
	2.76 - 3.50	385	268		
	3.51+	21	0		
Total		414	335	749	

This result may give constructive feedback in developing curriculum based competency. The FMUNBRAH has been accredited with mark "B" (good qualified) valid from 2015-2020. Since 2007, we used curriculum based competency (CBC) by using problem based learning as one of learning

strategies to meet the requirement of seven core national competencies as issued by Indonesian medical council. Although all the medical faculty curricula is certainly tailored to the national curriculum based on SKDI, but we can't deny that there are differences between medicine faculties in curriculum planning and its implementation. Thus, medicine faculties in Indonesia have large range of accreditation degree from A to C.

In competency-based curriculum design, decisions are based on the knowledge, skills, and attitudes (KSAs) needed to be competent in the profession upon graduation. At its core is the definition of "competence" in the target discipline or profession. Professional competence is typically structured in terms of multiple component dimensions or "competencies". Defining these competencies for a given discipline is a complex process that requires the judgments of practitioners of the discipline.⁶

The goal of competency based curriculum design is ensuring that the curriculum is preparing students to be practitioners. In CBC, student readiness is assessed by clear performance outcomes that directly relate to and measure student competence. Competency based design is learner-centred and used to prepare students for near and far future work by creating curriculum designed to help students develop those skills and assessing their success in the program by how well they perform on assessment designed to assess their competence on each competency.⁶

The process of competency based curriculum design typically follows a similar process:⁶

- a. Development or identification of competencies
- b. Organizing competencies into themes
- c. Organizing themes into course
- d. Organizing courses into a curriculum
- e. Curriculum review/evaluation
- f. Ongoing program evaluation

The FMUNBRAH curriculum has been designed based on the Indonesian medical competency standard (SKDI, 2012) consisting of some modules in each semester. The curriculum is organized as 3.5 year preclinical program in the faculty and 2 year clinical clerkship in educational hospitals. As mentioned above, we have been through the steps how to design CBC. But probably, we must admit that continuous evaluation and ongoing program evaluation has not been conducted. Furthermore, perhaps, there are some differences of our curriculum than others. Our curriculum provides an opportunity for students who do not pass the module examination through remedial program. First year students can retake modules in the first semester, second year students can retake modules in semesters 1,2, and 3. Third year students can retake modules in semester 1, 2, 3, 4, 5. The total credit hours limitation was 20 credit hour points during 1.5 months program. The students are also allowed to retake the module without limitation. Looking at the results of this analysis, remedial programs need to be evaluated, so the GPA might be a good predictor of passing UKMPPD CBT. We must develop

assessment evaluation and conduct continuous evaluation.

Assessment of learning outcomes according to Indonesian Doctor Professional Standard (SPPDI, 2012) should be based on the achievement of competencies in accordance with SKDI 2012. The process of assessing learning outcomes starts from the formulation of observable and measurable learning objectives through the instruments that have been prepared. Assessment results can be used to make decisions about the status of a learner, graduated or not. Assessment results can also be used to improve the next learning process.^{7,8}

Although passing the UKMPPD is not the primary focus of basic science (preclinical) and clinical education in medical school, it is an important curricular outcome.⁵ We assumed that the UKMPPD CBT is likely relevant to the preclinical GPA. Since the CBT consists of 200 multiple choice questions which are likely similar to the module examination. The mainly subject focus is cognitive aspects.

Our study result were contradictory than other studies who conducted the same study. Febrianti et al (2017) from Sam Ratulangi university found large correlation of preclinical GPA with CBT results ($r=0.770$) which means that the preclinical GPA can be a predictor of passing UKMPPD CBT. It was because the assesment method used in their faculty were also similar to UKMPPD CBT which mostly measure cognitive aspect. Their subjects were 110 subjects compared to our study involving 749 subjects. We have the same in common of lower average passing percentage for CBT which is still less than 50 %. We also sought correlation of preclinical GPA based on three groups with the satisfying, very satisfying, and cum laude predicate. Meanwhile, Febrianti et al sought correlation of preclinical GPA without grouping the subjects. They themselves declared their study limitation.⁹

Other study were also quite contradictory to study conducted by Suswati et al (Malang Muhammadiyah University) in 2017. Their study tried to measure predictive value of GPA and other factors such as national try out mark, comprehensive examination held by the faculty, remediation program marks in passing UKMPPD CBT. They found that GPA is the most predictive in passing UKMPPD both CBT and OSCE. But, for UKMPPD CBT alone, GPA can not measure the predictive value in passing UKMPPD CBT. Furthermore, it was stated although not directly stated in their study method, they used clinical GPA not preclinical GPA. While our study used preclinical GPA in correlation with the UKMPPD CBT result.⁴

Other study abroad conducted by Zahn et al (2012), tried to correlate national board of medical examiners scores with United States Medical Licensing Examination (USMLE) Step 1 and Step 2 scores. Their examinations were different from conducted in our country but can be used as reference. We need to define first so we can come to a reasonable conclusion. The national board of medical examiners (NBME) is one component of final clerkship examination. In our country, there is no national clerkship examination yet. But medicine faculties have their own autonomy in conducting

similar examination such as comprehensive examination before giving a chance to be included in UKMPPD. While the USMLE is quite the same with UKMPPD in Indonesia. The difference is that the USMLE consists of three steps (step 1 and step 2, and step 3). Step 1 tested the basic science, step 2 consist of clinical skills and clinical knowledge test. Step 1 is conducted at 4th year of study, step 2 is conducted at 5th year of study. Step 3 is conducted after getting MD certificate and passing the step 1 and step 2. The UKMPPD CBT quite resembles the step 1 and step 2 clinical knowledge test. While the UKMPPD OSCE quite resembles the step 2 clinical skill. Zahn et al tested the GPA, scores of NBME and correlated to step 1 and step 2 result. Their subjects were 507 students. The mean cumulative GPA was 3.05 while our study also found quite similar median (3.00). They found large correlation of GPA to step 1 and step 2 score ($r=0.74$ and $r=0.68$). It meant that GPA had larger correlation to step 1 rather than step 2 examination. The GPA is reflective of predominantly basic science curriculum.⁵

Based on the results of other studies showing large correlation of preclinical GPA to UKMPPD CBT results, we realize that we need to evaluate and develop our curricula. The remedial program for students to upgrade marks without limitation probably is not smart solution. That's why, the preclinical GPA in our study has negative correlation to UKMPPD CBT result. We assume that it is probably better for the students to retake modules so they can take advantage of the learning process given in the modules. In this case, it is better for the students take longer time in preclinical than to be failed at the end in the UKMPPD. Besides evaluating the implementation of curriculum, we need also develop assessment regulation in our faculty in order for the assessment results can be used to make decisions about the status of a learner, graduated or not. Assessment results can also be used to improve the next learning process.^{7,8}

Conclusion

There is a weak negative correlation between GPA with the accomplishment of UKMPPD CBT.

4. References

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