

# Factors Associated with UKDI Score amongst Medical Student in Indonesia

Jacob Manuputty<sup>1,\*</sup>, Irawan Yusuf<sup>2</sup>, Suryani As'ad<sup>3</sup>, Mochammad Hatta<sup>4</sup>

<sup>1</sup>Faculty of Medicine, Pattimura University, Ambon, Indonesia

<sup>2</sup>Department of Physiology, Faculty of Medicine Hasanuddin University, Makassar Indonesia

<sup>3</sup>Department of Nutrition, Faculty of Medicine Hasanuddin University, Makassar Indonesia

<sup>4</sup>Department of Microbiology, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

\*Corresponding author: manuputty\_jacob@yahoo.com

**Abstract Objective:** The purpose of this study was to identify factors associated with UKDI score amongst medical students in Indonesia. This study also sought to determine which factor that has the strongest association with UKDI score. **Method:** This is an explanatory research method with retrospective approach, conducted based on past medical students' record. Samples were medical student who commenced study on year 2006 / 2007 / 2008 when KBK was implemented and they must have had passed one-time UKDI. Data collection was done on medical schools who agreed to provide the record of their medical students. Association between variables was analyzed using Chi-square test and Multiple Logistic Regression analysis. **Result:** Factors significantly associated with UKDI score were pre-clinical year GPA score category 3.51 – 4.00 (OR = 3.46, CI = 2.06 – 5.81; P < 0.001) and category 3.01 - 3.50 (OR = 4.14, CI = 2.63 – 6.53; P < 0.001), clinical year GPA score category 3.76 - 4.00 (OR = 6.46, CI = 2.91 – 14.34; P < 0.001), and category 3.51 – 3.75 (OR = 4.68, CI = 2.84 – 7.73; P < 0.001). We found no evidence of significant association between gender and UKDI score, and neither between accreditation ranking and UKDI score. **Conclusion:** Factors significantly associated with UKDI score were GPA. Factor that has the strongest association with UKDI score was clinical year GPA. Medical knowledge obtained when studying cases during clinical year in medical school can be strengthened by the guidance of mentor and clinical supervisors in order to achieve better UKDI results.

**Keywords:** UKDI, GPA, accreditation

**Cite This Article:** Jacob Manuputty, Irawan Yusuf, Suryani As'ad, and Mochammad Hatta, "Factors Associated with UKDI Score amongst Medical Student in Indonesia." *American Journal of Educational Research*, vol. 4, no. 19 (2016): 1307-1310. doi: 10.12691/education-4-19-5.

## 1. Background

Indonesian Medical Doctor Competency Examination (UKDI) is an examination that medical students in Indonesia must succeed. UKDI in Indonesia consists of two tests i.e. Computer Based Test (CBT) with emphasis on knowledge test and Observed Structured Clinical Examination (OSCE) on skill test [7]. Both tests cover the assessment of attitude, knowledge, and skill. However, the proportion of attitude assessment is not as much compared to others. Passing this national competency test is a requirement for medical graduates in Indonesia to be a doctor [6].

In reality, medical students may fail the examination and have to do it several times. Each student must pass through the limit of UKDI. However, the limit can be changing from time to time depending on the current educational policy. Students should be able to encourage themselves to achieve beyond the current limit to pass in UKDI. Therefore, a study is necessary to assess factors associated with students' ability in achieving higher score of UKDI.

Based on the recent study by authors, UKDI score was correlated with pre-clinical and clinical year GPA score, and the correlation was significant and consistent through four medical schools being assessed [10]. The study however has been limited in the analysis. It did not anticipate the possibility of confounding factors such as gender and accreditation ranking of the medical schools. This present study analyzed further to identify factors associated with UKDI score amongst medical students in Indonesia. Furthermore, this study sought to determine factor strongly associated with UKDI. It gave emphasis to CBT-UKDI only because when the data collection was conducted on April 2013 to November 2014, OSCE was not included in the decision of study completion.

## 2. Method

This is an explanatory research method with retrospective approach on cross-sectional design. Medical schools and students were selected through purposive sampling. Sampling of Medical Schools was based on the representation of accreditation ranking and ownership status (Public / Private). Student sampling was based on criteria: 1). Medical student

who commenced study on year 2006 / 2007 / 2008 when Competency-Based Curriculum (KBK) was implemented, 2) Passed one-time UKDI, 3) Had completed student administration, and 4). The medical school had given permission for using the student data.

Data collected for this study included variables such as gender, pre-clinical and clinical year GPA score, and medical school accreditation rankings. In addition, UKDI scores were collected from the medical schools. If UKDI scores could not be retrieved from the school, then the data would be collected from UKDI committee. As originally numerical variables, GPA and UKDI score were grouped into several categories. Hence, all variables of this study were categorical. Categories of each variable in this study can be viewed on Table 1.

## 2.1. Statistical Analysis

Data were analyzed in two stages: univariate and multivariate analysis. We used Chi-Square test for univariate analysis, with 95% Confidence Interval (CI). Any variable having a significant univariate test at  $p$ -value cut-off point of 0.25 is selected as a candidate for the multivariate analysis [8]. We used Multiple Logistic Regression in the multivariate analysis to analyze all variable simultaneously and to assess the strength of association between each independent variable and dependent variable. Data management and analysis used SPSS version 22 [5].

## 2.2. Ethics Approval

Hasanuddin University Health Research Ethics Committees approved this study. Confidentiality was maintained by de-identifying data prior to analysis.

## 3. Result

First stage of sampling resulted in nine medical schools were selected. They were Brawijaya University, Andalas University, Sriwijaya University, Hasanuddin University, Yarsi University, Mulawarman University, Wijayakusuma

University, University of Indonesian Muslim Makassar, and University of Muhammadiyah Surakarta. From the nine medical schools, 568 medical students met study criteria and thus were eligible for inclusion. Of these 568 medical students, 277 students had UKDI score higher than 75 (48.8%).

The results of univariate analysis are shown in Table 2. The proportion of medical students who had UKDI score higher than 75 was slightly higher amongst female (51.5%) compared to male students (43.7%). Compared to those from medical school with accreditation ranking B, the proportion of students from medical school with accreditation ranking A who had UKDI score higher than 75 was moderately higher (53.2% vs. 40.2%). The proportion of students having UKDI score higher than 75 is higher amongst students with pre-clinical year GPA score on categories 3.51 - 4.00 (57.3%) and 3.01 - 3.50 (57.0%) compared to those who had GPA score under 3.01 (32.3%). Furthermore, the proportion of students having UKDI score higher than 75 is higher amongst students with clinical year GPA score on categories 3.76 - 4.00 (75.0%) and 3.51 - 3.75 (70.0%) compared to those who had GPA score under 3.51 (41.6%).

All independent variables in Table 2 had  $p < 0.25$ . They met the requirement to be analyzed further on to the multiple logistic regressions. This analysis is essential to determine the significance of association between an independent variable and a dependent variable after adjusting with other variables in order to control the possible confounding effect.

Table 1. Variables and categories

Variable	Categories
Gender	1. Female 2. Male
Accreditation ranking	1. A 2. B
Pre-clinical year GPA score	1. 3.51-4.00 2. 3.01-3.50 3. $\leq 3.00$
Clinical year GPA score	1. 3.76-4.00 2. 3.51-3.75 3. $\leq 3.50$
UKDI score	1. $>75$ 2. $\leq 75$

Table 2. Results of Univariate Analysis

		UKDI Score				$p^\dagger$
		$>75$		$\leq 75$		
		n	%	n	%	
Gender	1. Female	191	51.5	180	48.5	0.091
	2. Male	86	43.7	111	56.3	
Accreditation ranking	1. A	199	53.2	175	46.8	0.004
	2. B	78	40.2	116	59.8	
Pre-clinical year GPA score	1. 3.51 - 4.00	71	57.3	53	42.7	$< 0.001$
	2. 3.01 - 3.50	146	57.0	110	43.0	
	3. $\leq 3.00$	60	32.3	126	67.7	
Clinical year GPA score	1. 3.76 - 4.00	30	75.0	10	25.0	$< 0.001$
	2. 3.51 - 3.75	77	70.0	33	30.0	
	3. $\leq 3.50$	170	41.6	239	58.4	

$^\dagger$  Chi-Square test

**Table 3. Results of Multivariate Analysis using Multiple Logistic Regression**

		OR <sup>‡</sup>		95% C.I		<i>p</i>
Gender	1. Female	1.30	0.89	-	1.89	0.180
	2. Male					
Accreditation ranking	1. A	1.07	0.71	-	1.60	0.747
	2. B					
Pre-clinical year GPA score	1. 3.51 - 4.00	3.46	2.06	-	5.81	<0.001*
	2. 3.01 - 3.50	4.14	2.63	-	6.53	
	3. ≤ 3.00					
Clinical year GPA score	1. 3.76 - 4.00	6.46	2.91	-	14.34	<0.001*
	2. 3.51 - 3.75	4.68	2.84	-	7.73	
	3. ≤ 3.50					

<sup>‡</sup>UKDI Score higher than 75, \* Likelihood-Ratio test significance.

Table 3 shows significant association between pre-clinical year GPA score and UKDI score. Medical students with pre-clinical year GPA score on categories 3.51 - 4.00 and 3.01 - 3.50 have chance three times and four times (respectively) as likely to achieve UKDI score higher than 75 compared to medical students with pre-clinical year GPA score under 3.01.

Clinical year GPA score was associated significantly with UKDI score. Medical students with clinical year GPA score on categories 3.76 - 4.00 and 3.51 - 3.75 have chance six times and four times as likely (respectively) to achieve UKDI score higher than 75 compared to medical students with pre-clinical year GPA score under 3.51.

## 4. Discussion

According to this present study, the majority of female students had better UKDI score than male students. Numerous studies demonstrated better academic score and clinical skills in female students than in male students [1,3,4]. Haist SA, et al [4] in their study showed that female medical students have better academic score compared to male medical, particularly in the Internal Medicine, Obstetric and Gynecology, Pediatrics, and Psychiatry [4]. Moreover, female medical students have better clinical skills in decision-making, communication with patient, patient consultation and education than male students [3,9] In spite of that, this present study found no evidence of significant association between gender and UKDI score.

A well-accredited educational institution demonstrates acknowledgement by government for the quality of education of the institution. There are seven standards in the assessment of medical school quality in Indonesia [2]. They consist of 1) Vision, mission, goals, objectives and the strategy to achieve; 2) Leadership, management systems and quality assurance; 3) Students and graduates; 4) Human Resources; 5) The curriculum, learning and academic atmosphere; 6) Finance, infrastructure, and information systems; 7) Research, service/community service and cooperation. Assessment scoring based on the seven standards results in a medical school obtaining either accreditation ranking A (excellent), B (good), C (fair) or failing to achieve the standards. However, this accreditation ranking does not define what the medical schools graduates can do in the future.

This present study also addressed the association between the medical schools' accreditation ranking and

students' ability in UKDI. The higher rank of accreditation of a medical school shows the better quality of its students and graduates. This study's findings suggest that UKDI results were better amongst students from medical school with accreditation ranking A than students from medical school with accreditation ranking B. After the modeling in the multivariate analysis, this variable was not significantly associated with UKDI score.

GPA score has been consistently the factor significantly associated with UKDI score. This finding confirms analysis from the previous study where GPA score was significantly correlated with UKDI score [10]. Earlier studies have shown association between GPA score and medical students' competency [11,12,13], yet the results were from different method of analysis and did not anticipate other factors which may confounded the analysis. After adjusting with other variables (gender and accreditation ranking) in the Multiple Logistic Regression, GPA score remained the factor significantly associated with UKDI score.

This present study found that clinical year GPA score has greater strength of association with higher UKDI score compared with pre-clinical year GPA score. This is likely because medical students have the opportunity to study comprehensive medical science during the clinical year of medical school. They can improve the knowledge they have gained in the pre-clinical year and subsequently achieve higher clinical year GPA score. As a result, they are better prepared for dealing with UKDI questions.

This study has several limitations. Firstly, assessment of temporal association between UKDI score and explanatory variables were not seen due to the cross-sectional study design. Secondly, it has lack of control over data retrieval due to secondary data analysis. Third, this study was not able to include medical schools that have accreditation ranking C in the analysis because UKDI scores from the selected medical schools with this ranking could not be obtained. Lastly, these findings may not be generalizable to all universities in Indonesia, as the study sample was not randomly selected.

## 5. Conclusion

In summary, this study found that factors significantly associated with UKDI score were pre-clinical and clinical year GPA score. Medical students with GPA score higher than 3.00 were more likely to achieve UKDI score higher than 75 compared to other students. Furthermore, factor

that has the strongest association with UKDI score amongst all is clinical year GPA score. These findings suggest that the guidance of mentor and clinical supervisors is important to strengthen the medical knowledge during clinical stage in medical school if a medical student aims at achieving better UKDI results.

## Acknowledgements

We thank nine medical schools in Indonesia for the participation in this study and the approval to share their students' data. We also express our sincere gratitude to DIKTI and Government of Maluku for the support.

## References

- [1] Al-Mously, N., Salem, R. & Al-Hamdan, N. 2013. The impact of gender and English language on the academic performance of students: An experience from new Saudi medical school. *J Contemp Med Edu*, 1, 170-176.
- [2] BAN-PT 2014. *Accreditation of Medical Education Study Program*, Jakarta, National Accreditation Board of Higher Education (BAN-PT).
- [3] Dixon, D. 2007. Gender Differences in Academic Qualifications and Medical School Performance of Osteopathic Medical Students. *Medical Science Educator*, 17.
- [4] Haist, S. A., Witzke, D. B., Quinlivan, S., Murphy-Spencer, A. & Wilson, J. F. 2003. Clinical skills as demonstrated by a comprehensive clinical performance examination: who performs better - men or women? *Adv Health Sci Educ Theory Pract*, 8, 189-99.
- [5] IBM CORP. 2013. IBM SPSS Statistics Version 22.
- [6] Indonesia Ministry Of Law And Human Rights. 2013. Law of the Republic of Indonesia Number 20 of the Year 2013 on Medical Education. In: PRESIDENTIAL, I. (ed.). Jakarta: Indonesia Ministry of Law and Human Rights.
- [7] Indonesian Ministry Of Education And Culture. 2014. Indonesian Ministry of Education and Culture Regulation No. 30 of The Year 2014 on Implementation Procedures of Student Competency Test for professional Program of Doctor or Dentist. In: CULTURE, I. M. O. E. A. (ed.). Jakarta.
- [8] Kleinbaum, D. G. & Klein, M. 2010. *Logistic regression: a self-learning text. 3rd ed. Statistics in the health sciences*, New York, Springer.
- [9] Klemenc-Ketis, Z. & Kersnik, J. 2014. Deficiency areas in decision making in undergraduate medical students. *Advances in Medical Education and Practice*, 5, 223-227.
- [10] Manuputty, J., Yusuf, I., Patellongi, I., As'ad, S. & Budu, B. 2015. Correlations between Medical Students National Admission Test Score, Preclinical and Clinical Year Mean Cumulative GPA and UKDI Score. *American Journal of Educational Research*, 3, 697-701.
- [11] Pramana, S. W., Priharsanti, C. N. & Kristina, T. N. 2011. *Association Between Total Grade Point Average And UKDI's Scores Of Medical Education Programme : A Case Study On Medical Faculty of Diponegoro University.*, Medical Faculty of Diponegoro University.
- [12] Syafruddin, A., Rahayu, G. R. & Prabandari, Y. S. 2013. The correlation between score of cognitive in undergraduate and clinical rotation and score of Indonesian Medical Doctor Competency Examination (UKDI). *Faculty of medicine and health journal of Universitas Muhammadiyah Jakarta*.
- [13] Wilkinson, D., Zhang, J., Byrne, G. J., Luke, H., Ozolins, I. Z., Parker, M. H. & Peterson, R. F. 2008. Medical school selection criteria and the prediction of academic performance: Evidence leading to change in policy and practice at the University of Queensland. *Medical Journal of Australia*, 188, 349-354.