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# The Role of Teaching Hospital Characteristic in Achievement of Doctor Competency in Universitas Muhammadiyah Yogyakarta

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**Abstract.** Clinical stage medical education requires a teaching hospital with a specific learning environment in order to be able to meet the competency achievement of students. This study aims to determine the role of hospitals in achieving competency. The cross-sectional study was carried out with the subjects of the medical clinical stage of Universitas Muhammadiyah Yogyakarta students. The characteristics of hospital were measured by DREEM questionnaire, while the achievement of competencies was based on the scores of OSCE national board. The Spearman correlation analysis was conducted to determine the correlation between the characteristics of the hospital and achievement of competency. The results showed the mean of DREEM of 137.41 and the OSCE of 79.76. The correlation analysis showed no correlation between the characteristics of hospitals and achievement of competence ( $p=0.96$ ). The score of the characteristic components of the hospital on the learning process was of 2.79 (a more positive perception), was of 2.72 (a more positive perception), on learning environment was of 2.67 (a more positive perception), on social environment was of 2.65 (very good socially) and on academic ability of the students was of 2.92 (feeling more on the positive side). The results of the study can be used by the faculty leader as a consideration to choose a hospital that is used as a place of education.

## 1. Introduction

Postgraduate medical education requires a teaching hospital (TH) as a place to study. The infrastructure and facilities contained in TH are needed by postgraduate medical students to achieve doctor competence, especially clinical competence. The components of the infrastructure and facilities can be in the form of patients, doctors, nurses, medical devices, the physical environment, human relations and the system found in TH.

Teaching hospitals can be owned by private or government parties. The difference in ownership of the hospital can lead to different policies and management of each hospital and can affect the learning environment in the hospital. The infrastructure and facilities provided by the government hospital are influenced by the ability of the regional government as the owner of the hospital, by the needs of the local community, as well as the environment of each region. This has an impact on the classification and level of hospital accreditation. The hospital that has collaboration with the Faculty of Medicine and Health Sciences (FMHS), University of Muhammadiyah Yogyakarta (UMY) is owned by the



government and the private sector.

Infrastructure, facilities and everything contained in a TH also become a learning environment. It is because the learning environment is an element of the curriculum and conceptualization of the environment, education and organization, which includes everything that happens in medical education<sup>1</sup>. Meanwhile postgraduate medical education is carried out a TH. According to the World Federation for Medical Education (WFME), to evaluate the success of medical education is done by evaluating the role of the learning environment in an institution.

Postgraduate medical education of FMHS UMY collaborates with several hospitals to educate students. This diverse places of education can lead to achievement of competencies that vary according to the availability of cases or doctors who work at the hospitals. Various studies show that the learning environment is related to learning outcomes. The Emilia study shows that the clinical learning environment in hospitals affects learning outcomes. Various characteristics in hospitals that affect student learning outcomes are learning conditions, activities and resources in the hospital, practice opportunities and student perceptions of assessment<sup>1</sup>. Wayne, et al., show that the learning environment is proven to influence student academic success, development of learner behaviour, and achievement of the purpose of an institution<sup>2</sup>. These can affect student achievement.

Achieving the competency of postgraduate medical students in Indonesia is carried out through postgraduate medical education student competency exams (UKMPPD). The competency exams is carried out by the medical faculty in collaboration with the Association of Medical Education Institutions and in coordination with the professional organization. There are 2 types of assessments, multiple-choice question (MCQ) test with 5 choices of answers with computerized based test (CBT) system and clinical skills tests with an objective structure clinical examination (OSCE) method<sup>3</sup>.

This study aims to determine the correlation between the learning environment as a characteristic of the TH and the achievement of competencies in the form of OSCE UKMPPD score. The results of this study as well as the evaluation of the implementation of the clinical stage education curriculum are valid for 5 years. It is because the results of this study indicate the achievement of competencies and their correlation with the characteristics of the TH environment as a place of learning. The result of this research is expected to support the evidence-based education process.

## 2. Methodology

This research was a quantitative research with cross sectional method to determine the correlation between various characteristics of teaching hospitals and achievement of competency. The research subjects were the students of clinical stage of FHMS UMY who took the UKMPPD exam in August 2018 and were willing to fill out the questionnaire. Of the 82 students who were willing to fill out the questionnaire, 68 (82%) filled out the questionnaire completely. The characteristics of the learning environment in the hospitals were measured using the Indonesian version of Dundee Ready Environment Educational Measurement (DREEM) questionnaire which consisted of 50 questions<sup>4</sup> and the achievement of physician competence seen from the score of the UKMPPD OSCE exam. The Indonesian version of the DREEM questionnaire had adequate reliability with the reliability (Alpha) coefficient of 0.883<sup>4</sup>. The correlation between the hospital learning environment and achievement of competencies was analyzed using the Spearman test.

## 3. Result

This study obtained 68 samples who were willing to fill out the questionnaire completely, ranging from 6 educational hospitals which became the places of PPPD education of FHMS UMY. The following table describes the distribution of samples along with the average score of DREEM and achievement of competencies.

Table 1. The DREEM score vs OSCE UKMPPD

No	Hospital	Freq	DREEM	OSCE
1.	RSUD Tjitrowardjojo, Purworejo	3	155 (3.11)	73.9
2.	RSU Kota Magelang	6	143 (2.87)	81.8
3.	RSU Kota Salatiga	14	136 (2.72)	78.6
4.	RS PKU Muhammadiyah Gamping	15	128 (2.57)	74.6
5.	RS Panembahan Senopati Bantul	28	133 (2.67)	82.7
6.	RS Setjonegoro, Wonosobo	3	122 (2.44)	76.6
		68	137.41 (2.75)	79.76

The score of DREEM between 122-155 (mean of 137.41) with the interpretation of the score of the hospital learning environment was quite satisfactory in Magelang Hospital, Salatiga Hospital, PKU Muhammadiyah Gamping Hospital, Bantul Hospital, and Wonosobo Hospital. Meanwhile, Purworejo Hospital was considered very satisfying. The highest mean of OSCE score was obtained by students from Bantul Hospital and the lowest one was Purworejo Hospital. The Spearman analysis showed no significant and negative correlation ( $R = -0.11$ ,  $p = 0.96$ ) between educational environment in TH and and score of OSCE.

Table 2. The result of DREEM questioner

No	Question Items	Score	Mean	Interpretation	R <sup>a</sup>
1.	Students' perceptions of learning	33	2.79	A more positive perception	-0.03
2.	Students' perceptions of teachers	30	2.72	A more positive perception	-0.05
3.	Students' perceptions of atmosphere	32	2.67	A more positive attitude	-0.17** <sup>b</sup>
4.	Students' social self-perceptions	18	2.65	Very good socially	0.05
5.	Students' academic self-perceptions	23	2.92	Feeling more on the positive side	-0.02

<sup>a</sup> Spearman correlation between the item and OSCE

<sup>b</sup> Significantly correlation with  $p < 0.01$

The lowest mean of DREEM score was social environment, namely understanding and assessment of the surrounding conditions caused by the interaction among humans (students and lecturers) which caused noise, crowds and could disrupt activities. Table 2 showed that SAP had a significant negative correlation with OSCE scores, while other components of the educational environment show no significant correlation.

Table 3. Score of DREEM in Hospital

No	Teaching Hospital	SPL <sup>a</sup>	SPT <sup>b</sup>	SPA <sup>c</sup>	SSS <sup>d</sup>	SAS <sup>e</sup>
1.	Purworejo Hospital	Teaching highly regarded	Teaching highly regarded	A more positive attitude	Very good socially	Feeling more on the positive side
2.	Magelang Hospital	Teaching highly regarded	A more positive perception	A more positive attitude	Not too bad	Feeling more on the positive side

3.	Salatiga Hospital	A more positive perception	A more positive perception	A more positive attitude	Not too bad	Feeling more on the positive side
4.	Muhammadiyah Gamping Hospital	A more positive perception	A more positive perception	A more positive attitude	Not too bad	Feeling more on the positive side
5.	Bantul Hospital	A more positive perception	A more positive perception	A more positive attitude	Not too bad	Feeling more on the positive side
6.	Wonosobo Hospital	A more positive perception	A more positive perception	A more positive attitude	Not too bad	Feeling more on the positive side

<sup>a</sup>SPL: students' perceptions of learning

<sup>b</sup>SPT: students' perceptions of teachers

<sup>c</sup>SAS: students' academic self-perceptions

<sup>d</sup>SPA: students' perceptions of atmosphere

<sup>e</sup>SSS: students' social self-perceptions.

Table 3 showed that the components of learning, lecturers and the social environment of Purworejo Hospital were better the other hospitals, so that the DREEM score for Purworejo Hospital is higher than the other hospitals.

#### 4. Analysis

Postgraduate medical education of FMHS UMY has used 8 hospitals as learning places spread across 8 cities in the Daerah Istimewa Yogyakarta and Jawa Tengah. To equalize the perceptions of learning and assessment, program managers conduct training and refreshments every year. This study discusses the role of 6 hospitals as a learning environment towards achieving competencies, especially clinical skills. The hospital environment in this study was measured using the DREEM questionnaire, while the achievement of competencies was seen from the OSCE UKMPPD score that measured the ability of the students' clinical skills.

Based on the analysis of DREEM measurement results, it shows that 6 teaching hospitals used by the FMHS UMY have different learning environments. Purworejo Hospital has a learning environment that is considered very satisfying for the learning process by 3 students, while the other 5 hospitals are considered to be quite satisfactory with the lowest score from the Wonosobo Hospital. The results of this study with a mean score of 137.41/200 are similar to the results of a study in Sudan 122/200<sup>5</sup>, Oman 130.75/200<sup>6</sup>, Nigeria 119/200<sup>17</sup>, Chile 120.9/200<sup>8</sup>, Thailand 131.1<sup>9</sup>, and is higher than the research result in Korea 94.65<sup>10</sup>.

The difference in DREEM score occurs mainly on learning, lecturers, and social environment scores. This is perceived by students in Purworejo Hospital. Students' perceptions of learning are intended to find out methods, learning media and curriculum. Learning methods and curricula among the hospitals have been equated through meetings held every year. Meanwhile, learning media at the professional stage of the doctor, can be influenced by the availability and variety of cases of patients visiting the hospital, tools or facilities provided by hospitals and educational institutions. Purworejo Hospital as one of the referral hospitals in the southern part of Central Java, has 27 specialists in various fields. This is probably what causes patient visits become various. Meanwhile, other education hospitals do not have that many doctors, except for Bantul Hospital, that has 28 specialists.

The results showed that the mean of DREEM and OSCE scores differed significantly among hospitals. The mean of DREEM and OSCE scores for Jogja Hospital, Magelang Hospital, Salatiga Hospital, Muhammadiyah Gamping Hospital and Wonosobo Hospital showed that the higher the DREEM score the greater the OSCE score or the achievement of its competence. This exception occurred in Bantul Hospital and Purworejo Hospital. Bantul Hospital had a mean of DREEM score of 133 with the highest OSCE score of 82. Meanwhile, the mean of DREEM score of Purworejo Hospital was of 155 with the lowest OSCE score of 74. This was related to the quality of student input. The average cumulative achievement index of Bantul Hospital students is higher than that of Purworejo Hospital.

Statistical analysis of this study shows there is no correlation between the learning environment and achievement of competencies. The learning environment is an element of the curriculum and conceptualization of the environment, education and organization, which includes everything that happens in medical education. According to WFME, to evaluate the success of medical education is done by evaluating the role of the learning environment. Besides, the learning environment is proven to influence the academic success of students, the development of learner behavior, and the achievement of the goals of an institution. The Emilia study shows that the aspects of autonomy, practice opportunities, and clarity of roles in the clinical learning environment are positively related to the deep learning approach, and deep learning is positively related to learning achievement in medical professional education<sup>1</sup>. Meanwhile, aspects of practice opportunity and clarity of roles in the clinical learning environment are also positively related to learning achievement<sup>11</sup>.

The absence of a correlation between the learning environment and the achievement of competence in this study, shows that the achievement of competencies especially clinical skill is not only influenced by the educational environment. However, it is also influenced by other factors, such as the availability of time, the number and variety of cases, the input quality of student or equipment in TH. The study in Thailand showed that the large hospitals have significantly higher DREEM than small hospitals, because the large hospitals have equipment with highly sophisticated medical technology<sup>12</sup>. The Thailand study also showed the students' perception of atmosphere has the highest average score.

The result of study showed that the lower SPA item was significantly higher than achievement of competencies even though this correlation was low ( $r= 0.17$ ). It means that the increasingly stressful learning environment in TH will be responded to encourage learning motivation. It might be related to the measurement of students' academic self-perception which shows the highest compared to the other item in DREEM questions. This shows that the role of students in achieving competence in professional education has the greatest role compared to learning factors, lecturers, atmosphere and the social environment of the hospital. This result can be used by program managers to improve the learning component, lecturers, atmosphere and social environment of the hospital and better assist or to encourage students to be more confident, so that the achievement of competency in medical professional education can be optimal. The results of the study can be used by the faculty leader as a consideration to choose a hospital that is used as a place of education.

The weakness of this research is at the data collection stage. This study uses Google Form to fill out the questionnaire, but it turns out that not all subjects are willing to complete the questionnaire, so the number of subjects is not in line with expectations. Therefore, it is necessary to conduct such research with better planning and implementation, as well as a larger number of samples, so that the results of the study are more valid.

## 5. Conclusion & Recommendation

This study shows the learning environment in 6 hospitals that were used as a place to for the students of medical profession of FHMS UMY is quite satisfying. However, the learning environment is not related to the achievement of competencies obtained by students. The perception score about academic ability has the highest score of 2.92.

The results of this study can be utilized by managers of study programs to improve the learning component, lecturers, atmosphere and social environment of the hospital and better assist or to encourage students to be more confident, so that the achievement of competency in medical professional education can be optimal. The results of the study can be used by the faculty leader as a consideration to choose the hospital that is used as a place of education.

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