Association of academic performance and absenteeism among medical students

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ABSTRACT

Objective: To determine association between academic performance and absenteeism in classroom among first year medical students. **Methods:** A one-year prospective study was conducted on 196 first year medical students. Academic performance was measured by examination scores at four examinations. Absenteeism score was measured by the cumulative number of absence in an academic session of each student recorded by academic office at the end of the first year of medical training. The academic performance was categorized into pass and fail for analysis purpose. Data was analyzed by SPSS version 20. **Results:** The independent-t analysis showed that, in all examinations, students who passed the examinations had significantly lower absenteeism scores than those who failed ($p < 0.001$). **Conclusion:** This study found significant associations between academic performances and absenteeism scores among first year medical students. Medical schools should pay more attention on this matter since it may result in poor academic performances.

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Introduction

The ability of medical students to apply knowledge and skills learnt in real-context is clearly an important outcome of medical education. However, a common assumption in higher education is that absenteeism substantially contributed to low academic achievement [1], thus eventually will hamper the expected outcomes of medical education. If the absenteeism is an important issue, does it have an impact on academic achievement of medical students during medical training? In general, researchers have established students with low absenteeism achieve higher academic performance in both coursework and examinations than students with high absenteeism [2]. Likewise, the examination score was significantly affected by absenteeism [3, 4] and the class attendance is more important for enhancing grade rather than obtaining a pass mark [5]. A recent study among medical students reported that attendance policy associated with better academic performance; it postulated, reducing absenteeism may contribute to improvement of academic performance [2]. A recent meta-analysis reported that attendance in college has substantial relationships with the academic performance; these results suggest that the attendance in learning activities is a more

valid predictor of academic achievement than other predictors including scores on established entrance tests such as the scholastic aptitude test (SAT), grade point average (GPA), learning styles, and study skills [6].

The conditional relation between academic performance and absenteeism may be direct (i.e. attendance contribute some marks to the summative assessment) or indirect (i.e. assessment are depended on the content taught only in classes, so students who absent cannot do well) [1]. Interestingly, less effective teachers may experience more absenteeism but with less impact on students' academic performance [3, 7]. In addition to that, teacher effectiveness strongly determines student success, however persistent absenteeism diminishes even the most excellent teacher's capability to offer rooms for learning [8]. It is worthy to highlight that among the three common reasons reported by undergraduates for skipping classes were sleep deprivation, non-visible benefits of attending classes and self-preparation time for the next classes [9].

How absenteeism could contribute poor academic performance? Sufficient academic load is a crucial element for learning to occur effectively[10]. Malaysian Qualification Agency defined academic load as "a quantitative measure of all learning activities required to achieve a defined set of learning." [10] These activities include small group discussion, problem-based learning, clinical works, lecture, protected time to do assignment, and preparation time for an examination [10]. Therefore, when students choose to absent from any of the learning activities, they will suffer a loss of learning and instructional time leading to inadequate academic load; this may eventually lead to poor academic performance and other unwanted consequences such as student attrition [8, 11].

Based on a recent systematic review, several studies to determine association between absenteeism and academic performance had been conducted among economic, nursing, dental, business and psychological students, but none of the studies conducted among medical students

[7]. Therefore a study is needed to investigate association between absenteeism and academic performance among medical students. From that notion, this study aimed to investigate possible association between medical students' academic performance and absenteeism score. Based on the literature, the author hypothesized medical students who passed examinations would have less absenteeism score than those who failed.

Method

A one-year prospective study was carried out on 196 first year medical students in 2009/2010 academic session. A signed consent was obtained from each medical student before data collection begun.

Academic performance was measured by their examination scores at the end-of-block assessment 1, end-of-block assessment 2, end-of-block assessment 3, Professional 1 assessment and the Phase 1 (summative assessment). The Phase 1 summative assessment mark was contributed by 10% from each end-of-block assessment and 70% from the Professional 1 assessment, giving a total of 100%. In general, the pass-fail of all assessments were made based on the cut-off score of 50%. However, for the Phase 1 summative assessment additional criteria were used for borderline candidates (i.e. those students who obtained marks between 45 and 50). The final decision of pass-fail outcomes in the examinations was decided by the Phase 1 Examination Board.

Absenteeism score in learning session was measured by the cumulative number of absence in an academic session of each student recorded by academic office at the end of the first year of medical training.

Demographic profiles (i.e. sex and race) and previous academic achievement [i.e. entry qualification and cumulative grade point average (CGPA)] were retrieved from the students' profiles.

Ethical clearance was obtained from the School of Medical Sciences and Human Ethical

Committee, Universiti Sains Malaysia (USM) before this study starts. Participants' confidentiality and data were preserved and maintained through identity code.

The academic performance was categorized into pass and fail for analysis purpose.

Statistical analysis was performed by Statistical Package for Social Sciences (SPSS) version 20. The independent-t test was performed to test mean score different between two independent variables.

Result

A total of 196 medical students took part in this study. Majority of them were female, Malay, and from matriculation academic stream. The mean CGPA was 3.97. The participants' profiles were summarized in the table 1.

Table 1: Participants' profiles

Variable		N = 196
Sex, n (%)	Male	68 (34.7)
	Female	128 (65.3)
Qualification, n (%)	Matriculation	174 (88.8)
	High School Certificate (HSC)	13 (6.6)
	A-Level	9 (4.6)
Race, n (%)	Malay	105 (53.6)
	Chinese	61 (31.1)
	Indian	22 (11.2)
	Others	8 (3.6)
CGPA result, mean (minimum, maximum)		3.97 (3.88, 4.00)

Table 2: Association between academic performance and absenteeism score (N = 196).

Variable	Absenteeism score, mean	Mean difference (CI 95%; lower, upper)	t-statistics (df)	p-value
End-of-block assessment 1				
Passed (n=157)	0.69	4.28 (2.60, 5.96)	5.02 (194)	< 0.001
Failed (n=39)	4.97			
End-of-block assessment 2				
Passed (n=132)	0.05	4.59 (3.22, 5.97)	6.59 (194)	< 0.001
Failed (n=64)	4.64			
End-of-block assessment 3				
Passed (n=177)	0.78	7.90 (5.77, 10.04)	7.30 (194)	< 0.001
Failed (n=19)	8.68			
Professional 1 assessment				
Passed (n=146)	0.00	6.06 (4.67, 7.45)	8.58 (194)	< 0.001
Failed (n=50)	6.06			
Phase 1 summative assessment				
Passed (n=163)	0.04	8.96 (7.54, 10.39)	12.42 (194)	< 0.001
Failed (n=33)	9.00			

The independent-t test was applied to compare mean different between two independent variables (passed and failed). P-value less than 0.05 were considered as significant.

The independent-t analysis shows, in all examinations, students who passed the examinations had significantly lower absenteeism scores than those who failed (Table 2). It suggested a significant association exists between academic performance and absenteeism in classroom.

Discussion

Our results showed significant associations between examination performances and absenteeism scores among medical students during first year medical training. This finding is in line with that reported by previous studies in

non-medical context [1, 3, 6, 8]. One lesson learnt is that medical schools should reinforce the attendance policy as an effort to improve their students' academic performances [2]. Other than that, perhaps creating awareness (i.e. during an orientation week) among medical students about implications of absenteeism on their academic performances may prevent them from skipping classes. Medical schools also should pay more attention and take immediate measures on those who starting to absent from classes because they might need support from them. Early detection and prevention might prevent unwanted consequences of absenteeism on medical students' academic performance [2, 5, 6, 8].

One of pertinent questions is that why absenteeism would influence academic performance? Absenteeism will only allow students not to obtain appropriate information and contact with relevant material (lectures, practical session, clinical skills, etc) that is required for effective learning to occur. In addition, regular attendance in learning activities corresponds to a distributed practice system (i.e. the students allocate learning effort throughout a course over multiple and short duration of learning sessions) that is effective to increase the retention of knowledge [6]. Class absenteeism was associated with lower academic achievement and poorer retention of knowledge [6, 12]. In contrast, students who engaged in a distributed practice system performed better than those who engaged in massed practice (i.e. the students allocate learning effort throughout a course over a few and long duration of learning sessions) [13]. From that notion, when considering that in the context of absenteeism, students who constantly skipping classes (i.e. high absenteeism) are expected to engage with a massed practice (e.g., last minute study for exams) to compensate the skipped classes [6]. Even though the argument on the comparative benefits of different instructional designs (e.g., small group discussion, problem based learning, lectures, tutorials, practical demonstrations, and bed side clinical teaching) continues [6], skipping class is expected to be unbeneficial for learning even the best and most sophisticated

instructional designs used by educators. Even lecture-based teaching seems to provide substantial benefits for learning to take place despite its didactic in nature [14], poor feedback, and inability to engage in authentic practice [6]. Indeed, the lecture-based teachings are capable to enhance skills related to cognitive, affective and psychomotor [15]. Students who choose to skip lecture-based teachings and rely solely on other modes of learning with the class subject are less likely to retain relevant knowledge related to the subject as compared to those who attend the class; subsequently those who absent perform poorly on the examinations [6].

This study has several limitations that need to be considered for interpretation and future research. First, this study only confined to a cohort of medical students at one medical school, thus the results may not be generalised to other medical schools and phases of medical training. Second, this study only narrowed its scopes on association of academic achievement and absenteeism which might not be true reflection of association due to other potentials cofounding variables were not controlled such personality traits, previous academic achievement, psychological health status and IQ that might influence the absenteeism. Perhaps, future research should include these cofounding variables to verify results obtained in this study. Third, absenteeism score was solely depending on the record at the academic office which might not fully immune from missing record. Therefore future research should provide a standardised form to record absenteeism so that data will be gathered at the highest quality and accuracy. Eventually this will be a better reflection of association between academic performance and absenteeism. Lastly, this study employed non-probability sampling method which might introduce sampling bias thus limited generalisability of the results obtained. Nevertheless, this study has provided additional information to the body of literature in medical context

Conclusion

In summary, this study found significant associations between academic performances and absenteeism scores among first year medical students. Medical schools should pay more attention on this matter since it may result in poor academic performances.

Acknowledgement

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