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The impact of an attendance policy on the academic performance of first year medical students taking the Fundamentals of Disease and Treatment course

Damian H. Cohall and Desiree Skeete

Faculty of Medical Sciences, The University of the West Indies, Cave Hill, Barbados

This study seeks to determine the significance of attendance in the improvement of academic performance of a first year course, Fundamentals of Disease and Treatment (FDT), in the medical programme at The University of the West Indies (UWI), Cave Hill, Barbados. The Fundamentals of Disease & Treatment course is an important introduction to the integrated approach that is used in the delivery of the medical programme. Medical students tend to have a poor attitude towards the course and this has negatively impacted upon their attendance at lectures, tutorials and reviews. This study investigates whether the enforcement of the Faculty of Medical Sciences' (FMS) attendance policy where "students must have an attendance rate of 80% of all timetabled sessions to sit final course exams" improves students' performance. The grades for in-course assessments and attendance for the FDT course were recorded and summarised systemically for the first year medical students during the academic year 2009-2010. The data were divided on a semester basis in order to reflect the period in which the attendance policy was not enforced (Semester 1) and when it was enforced (Semester 2). Paired students' T-tests and other descriptive statistical tools were used to analyse the attendance and academic performance over both periods. Results show that there was significant increase in attendance during Semester 2 of the academic year 2009-2010. This significant improvement in attendance was not reciprocated with an improvement in academic performance in course assessments when the two semesters were compared. The findings suggest that other factors are more critical to academic success. Some of these factors may be well indicated in the holistic approach which is regarded as the best approach to the learning process.

Key words: attendance, holistic approach, academic performance

Introduction

In curricula with predominantly didactic teaching, attendance at classes has traditionally been thought to be a prerequisite to good academic performance. Some studies (Oghuvybu, 2010; Hancock, 1994; Riggs & Blanco, 1994; Shimoff & Catania, 2001; Khan, Khattak, Mahsud, Munir, Ali & Khan, 2003) have shown that there is a positive correlation between attendance and academic performance. In addition, several sources show a relatively consistent relationship between attendance and grades, regardless of the course subject or level of student (Le Blanc, 2005; Kirby & McElroy, 2003; Ali, Jusoff, Ali, Mokhtar & Salamat, 2009). However, in some instances, the degree of change may be negligible (Crede, Roch

& Kieszczynka, 2010). These latter reports mention other confounding factors in the learning process, such as student motivation and levels of engagement, which may have a greater contribution to academic performance than attendance.

Studies have shown that learning and academic performance should be considered from a more holistic approach and the four main factors which are considered critical to learning are demography, active learning, students' attendance, and involvement in extracurricular activities (Ali *et al*, 2009). When top-performing medical students were questioned about the main factors for their success, some of the main factors highlighted were "attitude, beliefs and motivation" and "effort and perseverance" (The University of the West Indies [UWI], 2009). Attendance was not mentioned or attributed to their success (UWI, 2009) but one could argue that the highlighted factors are consistent with attributes of individuals with good attendance.

The Patel view of the holistic approach is that it can be applied in any discipline and develops students into critical, confident and independent thinkers (Cohall, 2009). Patel's study was based on his nine year teaching experience using Kelly's Personal Construct Theory (PCT). This approach resulted in sustained high levels of student attendance at lectures and seminars; improved progression, and appreciative and satisfied cohorts (Cohall, 2009). The consistent result of the holistic approach is that it enhances learning and is likely to increase academic performance. It also features attendance as being a contributing factor for such enhanced learning. One could argue that attendance increased as a result of more interesting class sessions or that the holistic approach requires active participation from the students hence attendance is crucial to the success of the learning and teaching style.

Nonetheless, despite conflicting reports about the degree of contribution of attendance to academic performance, in some training programmes, student attendance at classes serves other critical functions. For example, in physician training programmes attendance may be used as an indicator of professionalism at all levels of education. In the United States of America and Canada, the Liaison Committee on Medical Education, the accrediting body for medical schools, stipulates an attendance policy as one of the requirements for accreditation of medical undergraduate programmes (University of Minnesota, 2011). The University of the West Indies (UWI) has three main campuses. There are no mandatory attendance policies for preclinical training at the Mona and St. Augustine campuses. At the Cave Hill campus, with the 2008 expansion of medical undergraduate programme to include preclinical training, an attendance policy was introduced; however, it was not enforced until January 2010.

In addition to some studies showing that attendance and academic performance are directly correlated, some studies show a relatively consistent relationship between attendance and grades, regardless of the course subject or level of student (Le Blanc, 2005, Kirby & McElroy, 2003; Ali *et al*, 2009). In a meta-analysis reviewing the relationship of class attendance in college with grades and student characteristics, it was shown that attendance has strong correlations with

both class grades and Grade Point Average (GPA) (Crede, Roch & Kieszczynka, 2010). Even with such strong evidence regarding the two variables, this meta-analysis also showed that *mandatory* attendance polices appear to have a small positive impact on average grades (Crede, Roch & Kieszczynka, 2010). However, some institutions such as the University of Minnesota justify an attendance policy by indicating that medical education requires in-person, active engagement among students, patients and faculty (University of Minnesota, 2011). Indeed, such an attendance policy is in keeping with the requirements of the Liaison Committee on Medical Education.

The Faculty of Medical Sciences at UWI, Cave Hill, has an attendance policy which states that "students must have an attendance rate of 80% of all timetabled sessions to sit final course exams" (UWI, 2009). This policy has been mentioned to all first year medical students but has never been enforced due to difficulties encountered in undertaking attendance registers in the tertiary setting. The challenge of low attendance rates in the preclinical phase of the medical undergraduate Bachelor of Medicine and Bachelor of Surgery (MBBS) curriculum is not seen in the clinical phase of the MBBS programme at UWI, Cave Hill. In the clinical phase, attendance is part of student professionalism, one of the key domains assessed during clinical rotations. In addition, there is small group teaching, which makes it easier to identify student absenteeism.

In December 2009, as part of an internal faculty review, the decision was made to enforce the Faculty's attendance policy in the preclinical setting, starting from January 2010. This was communicated to students verbally and in written form. The rationale for the decision was that an anticipated increase in student attendance at lectures, should likely contribute to an improvement in the academic performance of preclinical students.

The Fundamentals of Disease & Treatment (FDT) course is an important introduction to the integrated approach that is used in the delivery of the system based courses in the preclinical phase of the MBBS programme at UWI, Cave Hill (Cohall, 2009). The FDT course is the largest course, in terms of teaching sessions, of the nine courses taught during the first year of the medical undergraduate curriculum. It spans both semesters. The course contributes six of the required 117 credits necessary for the attainment of the MBBS degree; and accounts for six of 29 credits available from first year courses. As a result of the significant content, FDT is frequently considered to be a major obstacle for students during their first year of medical undergraduate training at the UWI Cave Hill campus.

The FDT course provides an early introduction to basic disease processes such as infection, inflammation, genetic disorders, tumour pathology and disorders of growth. In addition, it provides an introduction to chemical structures and families of drugs that are used in the treatment of patients and how they work to modulate disease processes (Cohall, 2009). The course is delivered in a series of didactic lectures, tutorials and laboratory sessions, using an interdisciplinary approach. The members of the teaching staff are primarily from the disciplines of Pharmacology, Pathology, Physiology and Microbiology. Regardless of the

multidisciplinary approach, students tend to have a poor attitude towards the course. This poor attitude was noted in student-staff liaison meetings and student evaluations of the course. The poor attitude has negatively impacted student attendance at lectures, tutorials and reviews. Along with the relatively poor attendance rates, the academic performance in FDT has not ranked well when compared to the other courses in the first year of the MBBS programme.

Therefore, the aim of this research project was to determine the effect of enforcing an attendance policy on the academic performance of medical students taking the FDT course at UWI, Cave Hill during the academic year 2009-2010.

Methodology

Research question

Did the enforcement of the Faculty of Medical Sciences' attendance policy that "students must have an attendance rate of 80% of all timetabled sessions to sit final course exams" improve the students' performance in the Fundamentals of Disease and Treatment course?

Data collection

The grades for in-course assessments and attendance rates for the FDT course were recorded and summarised systemically for the first year medical students during the academic year 2009-2010. The data were divided on a semester basis which would reflect the period in which the attendance policy was not enforced (Semester 1) and the period when it was enforced (Semester 2).

Attendance at each teaching session in FDT was recorded through the use of sign-in sheets, one of which was circulated during each session. At the end of the session, the sheet with the students' signatures was given to the instructor who then signed and submitted it to the Faculty Office. The information on the sheets was then recorded electronically in a Microsoft Excel database by the Secretarial Office staff on a continual basis.

Interpretation of data

The data were evaluated for the whole class and paired students' T-tests used to determine any significant differences between the means of attendance and academic performance over the study period. Tests of normality including Quantile-Quantile (Q-Q) and residual plots were also performed; if the variables were normally distributed then parametric tests of correlation were used. If the data were not normally distributed, then a nonparametric test of correlation was used to determine if there were associations between the variables.

Results

Sixty three students were enrolled in the FDT course in the academic year 2009-2010. There were 13 males and 50 females. The mean class attendance for the

FDT course was 88.39 ± 11.34% in Semester 1 and 93.9 ± 6.50 in Semester 2. The mean class score in FDT course assessments was 56.41 ± 11.34% in Semester 1 and 55.85 ± 10.56% in Semester 2. The change in attendance between semesters was statistically significant (paired students' T-tests; $N = 63$; $p < 0.05$). There was no significant change in the mean score in FDT course assessments between Semester 1 and Semester 2 (paired students' T-tests; $N = 63$; $p > 0.05$). There was a positive association between attendance and overall course grade (Spearman's rho 0.762; $p< 0.01$).

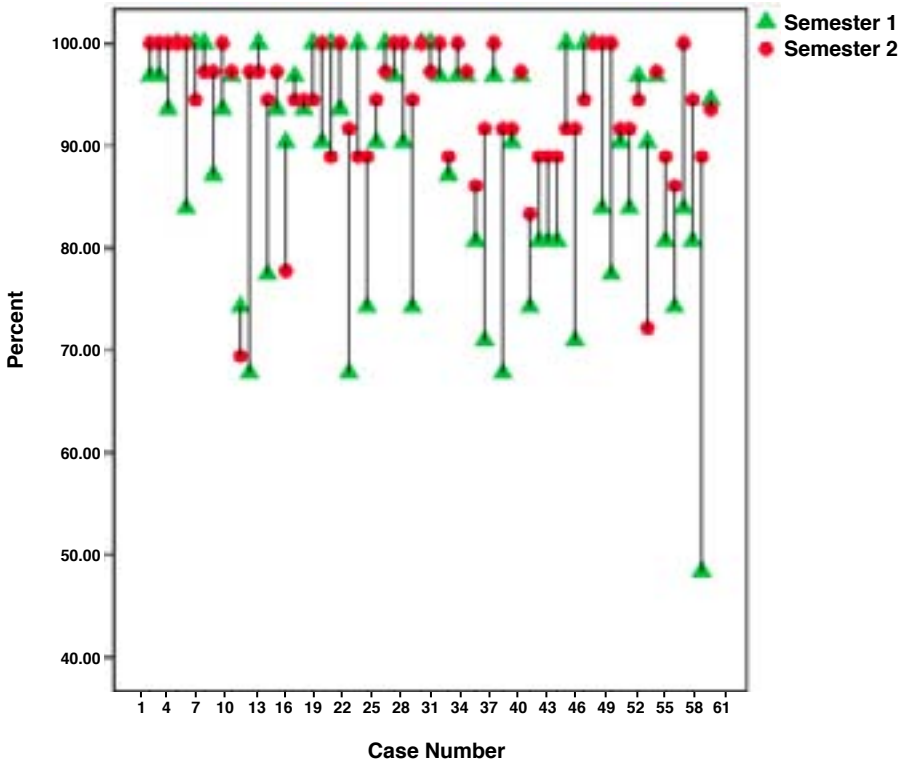

Figure 1. Line graph illustrating each student's FDT attendance (%) by semester

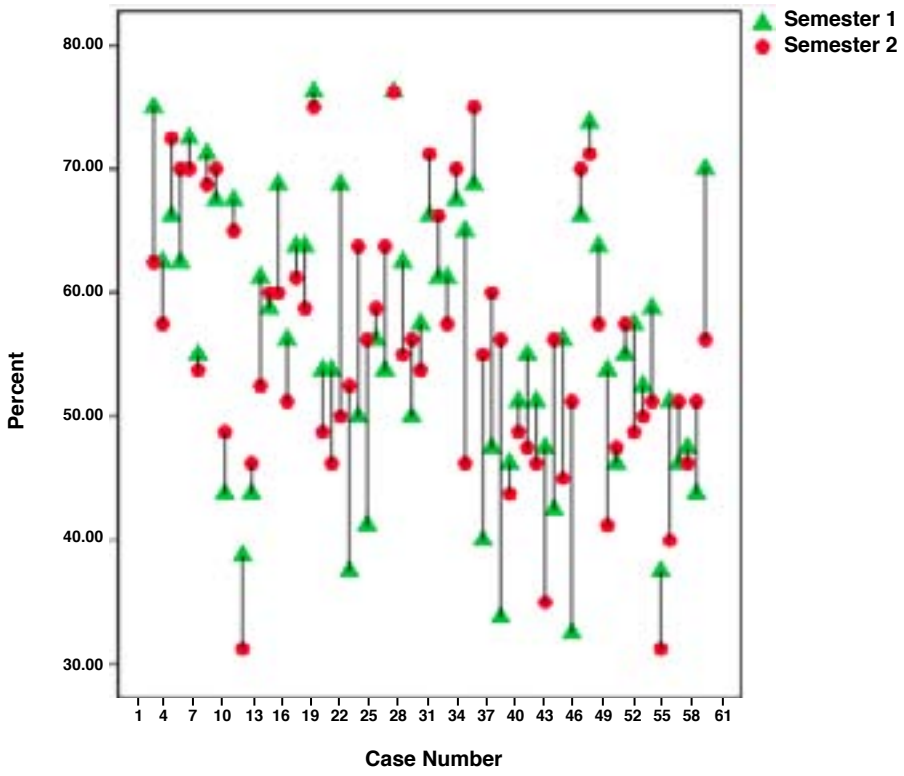

Figure 2. Line graph illustrating students' FDT in-course test performance (%) by semester

Discussion

Overall, the results from the study of the first year students who completed the FDT course in the academic year 2009-2010 showed that after the FMS' policy on attendance was enforced there was a significant improvement in attendance. This finding is consistent with the results of a previous study (Shimoff & Catania, 2001) which looked at the effect of recording attendance on academic performance in an introductory psychology course at the University of Maryland.

On comparison of the two semesters for the academic year 2009-2010, the significant improvement in attendance was not reciprocated with an improvement in academic performance. This differs from the evidence reviewed prior to this study, which indicated the importance of attendance at teaching sessions in the learning process (Oghuvybu, 2010; Hancock, 1994; Riggs & Blanco, 1994; Shimoff & Catania, 2001; Khan *et al*, 2003; Gal, Busturia & Garrido, 2011; Hammen & Kelland, 1994). However the finding was consistent with a meta-analysis which indicated that mandatory attendance policies had no significant effect on academic

performance. A previous study which investigated a similar introductory course, Human Physiology, at another medical teaching institution (Hammen & Kelland, 1994) had shown a statistically significant correlation between attendance and academic performance. However, the effect was of such a small magnitude, that the authors concluded that the effect of attendance on academic performance was helpful statistically, but attendance was not a decisive factor in the learning process for the physiology course. The main difference in this comparative study was that there was no enforced mandatory attendance policy.

In this study, an improvement of the academic performance in the second exam by similar margins was consistent in each semester. This further emphasises the consistency of the students' performance during the two semesters. It also attests to the assessment strategy and standardising process of assessments in both semesters. The lack of a significant improvement in the academic performance of medical students on comparison of the two semesters supports the holistic approach to learning and teaching in which attendance is a contributor to, but not the main determinant of the learning process (Patel, 2003).

The results from the overall data analysis indicate that attendance, even though critical to the learning process, is not the single most important factor in the learning process and suggest that other factors are critical to academic success. Besides student-related factors, the effect of other factors, particularly classroom and teaching-related ones should be considered in the analysis of student attendance and academic performance. Some of these factors may be well indicated in the holistic approach which is regarded as the best approach to the learning process.

While the results can be explained, there could be some limitations. The possible limitations are:

1. The in-course exams could have been testing different content material at varying levels of complexity.
2. The attendance in Semester 1 was 88% so there may have been a threshold for improvement on academic performance even with a significant increase in attendance after the enforcement of the policy.
3. Varying teaching styles from instructors may have been incorporated which would not allow one factor such as attendance to be the critical or limiting factor in leading academic improvement.
4. The use of sign-in sheets may not be the best method to record attendance during classes.

The first and third limitations may stand some merit. The point is well supported that different subject material may have varying degrees of difficulty. This course has five modules of different disciplines and three of the five were tested in Semester 1 and the other two were tested in Semester 2. Despite this, the number of contact hours per semester was the same. Even though this was considered, efforts

to make our assessments valid and reliable by standard setting question papers and equating tables of specifications for in-course assessments would have nullified some of the varying disparities which would have arisen from this limitation. The third limitation regards the fact that the course is multidisciplinary and has different people teaching different subject areas. While it is reasonable to appreciate that different individuals may have different teaching styles, the course was delivered by didactic lectures, practical sessions, tutorials and reviews consistently across the two semesters.

The results of this study not only indicate that attendance is not the sole and most important factor in improving academic performance, but also may inadvertently show that the emphasis on attendance should be considered from the teaching end of the classroom. This is the view supported by the holistic approach which results in sustained high levels of student attendance at lectures and seminars, improved progression, appreciative and satisfied cohorts (Amini, Dehghami, Kojuri, Mahbudi, Bazrafkan, Saber, Karimian & Ardekain, 2008) where it is not the attendance which drives academic performance but teaching that is heavily focussed on active learning, which leads to improved class sizes and better learners.

Further research questions from this study are:

1. If the holistic approach to learning and teaching is utilised more by instructors of the course, will there be an improvement in academic performance and attendance as primary outcomes?
2. Would there be better academic performance from the students if it was the responsibility of the various instructors to maintain the attendance rate in the classes based on the effectiveness their teaching styles?
3. Are there any differences in attendance by student gender? What is the impact of the age and previous academic experience (secondary vs. postgraduate) on student attendance and academic performance in the MBBS programme?
4. What are students' perceptions and attitudes towards the mandatory attendance policy in the Faculty of Medical Sciences, UWI, Cave Hill?

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