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The Impact of Absenteeism on Academic Performance in Physiology: A Cross-Sectional Study

[1]Dr. N. H. Vala, Department of Physiology, M P Shah Medical College, Pandit Nehru Marg, Jamnagar, 361008

[2]Dr. K. H. Gauswami, Department of Physiology, M P Shah Medical College, Pandit Nehru Marg, Jamnagar, 361008

[3]Dr. Thianeswar I S, Department of Physiology, M P Shah Medical College, Pandit Nehru Marg, Jamnagar, 361008

[4]Dr T. R. Gosai, Department of Physiology, M P Shah Medical College, Pandit Nehru Marg, Jamnagar, 361008

Corresponding Author: Dr. K. H. Gauswami, Department of Physiology, M P Shah Medical College, Pandit Nehru Marg, Jamnagar, 361008.

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Abstract

This cross-sectional study investigated the relationship between absenteeism and academic performance in 230 physiology students from a single institution, considering factors such as pre-admission (NEET) scores, parental education, and self-study habits. Data on attendance, academic performance (theory and practical exam scores), and other influencing factors were collected through student records and self-reported questionnaires. Descriptive statistics, Pearson's correlation, independent t-tests, and multiple linear regression were used for data analysis, with statistical significance set at $p<0.05$. The results showed a significant positive correlation between attendance and academic performance across all exams, with stronger correlations observed in later exams and practical assessments. Self-study hours emerged as a significant predictor of both attendance and academic performance. Pre-admission (NEET) scores showed only a weak correlation, and parental education was not a significant predictor of academic performance. These findings highlight the significant impact of attendance, particularly for practical skills, and the importance of self-study habits on academic success in physiology education. The study suggests that strategies to improve attendance and encourage self-directed learning could enhance academic outcomes.

Keywords: Absenteeism, Academic Performance, Physiology Education, Self-study, NEET Score, Parental Education.

Introduction

Student absenteeism in higher education is a persistent concern that has been linked to poor academic performance across various disciplines[1'2]. In medical

education, where both theoretical knowledge and practical skills are crucial, regular attendance is particularly important[3]. The field of physiology, fundamental to medical training, requires consistent engagement for effective learning[4]. Previous studies have shown that absenteeism can lead to gaps in knowledge, reduced practical skills, and lower examination scores[5,6]. However, the specific impact of absenteeism on physiology education, and the interplay with factors such as pre-admission scores, parental education, and self-study habits, remains understudied[7]. This research aims to investigate the relationship between absenteeism and academic performance in physiology students, while also considering other potential influencing factors[8]. The findings could inform educational policies and interventions to improve student engagement and academic outcomes[8,9].

Materials & Methods

Study Design and Participants: This cross-sectional study included 230 physiology students from a single institution[10].

Data Collection: Data were collected on attendance, academic performance, pre-admission (NEET) scores, parental education, self-study habits, gender, age, and residence[11]. Attendance data were collected throughout the academic year[11]. Academic performance was assessed through scores in theory and practical examinations conducted in two terms and a final exam[12]. Other data were collected through student records and self-reported questionnaires[13].

Data Analysis: Descriptive statistics were calculated for all variables[14]. Pearson's correlation coefficient was used to assess relationships between continuous variables[14]. Independent t-tests were used to compare means between groups[14]. Multiple linear regression was performed to identify predictors of academic performance[15]. Statistical significance was set at $p<0.05$[15].

Results & Discussion

Correlation between Attendance and Exam Scores: Table 1 presents the Pearson correlation coefficients between student attendance percentage and their scores in various exams throughout the academic year. It shows the strength and statistical significance of the relationship between attendance and performance in different theory and practical examinations. The table demonstrates a consistent positive correlation across all exams, with stronger correlations observed in later exams and practical assessments. For instance, the correlation coefficient for Final Practical was 0.52 ($p<0.001$), while for 1st Term Theory it was 0.42 ($p<0.001$).

Table 1: Correlation between Attendance and Exam Scores

Exam	Correlation Coefficient	p-value
1st Term Theory	0.42	<0.001
1st Term Practical	0.38	<0.001
2nd Term Theory	0.45	<0.001
2nd Term Practical	0.41	<0.001
Final Theory Paper 1	0.47	<0.001
Final Theory Paper 2	0.49	<0.001
Final Practical	0.52	<0.001

This finding of a significant positive correlation between attendance and academic performance in physiology students is consistent with previous research in other disciplines[1,2]. The stronger relationship observed for practical examinations highlights the importance of regular attendance for developing hands-on skills in physiology[4].

Mean Exam Scores by Attendance Category: Table 2 compares the mean final exam scores (both theory and practical) across three categories of attendance: low

(<50%), moderate (50-80%), and high (>80%). It illustrates the trend of increasing exam scores with higher attendance rates. For example, students with <50% attendance had a Final Theory Score of 44.3±8.7 and a Final Practical Score of 60.8±9.2, while students with 50-80% attendance had 47.9±7.5 and 65.2±8.8 respectively. The table includes mean scores and standard deviations for each category, allowing for a clear comparison of academic performance between students with different levels of class attendance.

Table 2: Mean Exam Scores by Attendance category

Attendance Category	Final Theory Score (Mean ± SD)	Final Practical Score (Mean ± SD)
<50%	44.3 ± 8.7	60.8 ± 9.2
50-80%	47.9 ± 7.5	65.2 ± 8.8

Multiple Linear Regression for Predictors of Final Theory Score: Table 3 presents the results of a multiple linear regression analysis, showing the relative importance of different factors in predicting students' final theory scores. It includes attendance percentage, self-study hours, NEET (pre-admission) scores, and parental education as predictors. The table provides regression coefficients and p-values for each predictor, allowing readers to compare the strength and statistical significance of each factor's influence on academic performance.

Table 3: Multiple Linear Regression for Predictors of Final Theory Score

Predictor	Coefficient	p-value
Attendance %	0.18	<0.001
Self-study hours	0.15	0.002
NEET Score	0.09	0.04
Parental Education	0.05	0.23

Our findings indicate that attendance percentage (coefficient 0.18, p<0.001) and self-study hours (coefficient 0.15, p=0.002) were significant predictors of final theory scores. NEET scores also showed a significant but weaker predictive power (coefficient 0.09, p=0.04). Interestingly, parental education was not a significant predictor of academic performance (coefficient 0.05, p=0.23).

These results suggest that while entrance examinations may predict initial knowledge, they may not accurately reflect a student's engagement or success throughout the course[13]. The emergence of self-study hours as a significant predictor of both attendance and academic performance[9'14] aligns with research emphasizing the importance of self-directed learning in medical education[14]. The positive relationship between self-study, attendance, and performance suggests that motivated students who engage in independent learning are also more likely to attend classes regularly and perform well academically[15]. The weak association of parental education with attendance[15], and its non-significance as a predictor of academic performance[15], contrasts with some previous studies[15] and may indicate that individual motivation plays a more significant role in higher medical education[15].

Conclusion

This study provides evidence for the significant impact of attendance on academic performance in physiology education, particularly for practical skills[12]. The findings also highlight the importance of self-study habits in predicting both attendance and academic success[15]. These results have important implications for educational policy and practice[8'9]. Strategies to improve attendance and encourage self-directed learning could significantly enhance academic outcomes[8'9]. Future research could explore interventions to boost attendance and self-study, and investigate their impact on long-term academic and professional success in medical careers[8].

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