ORIGINAL ARTICLE

Investigating the relationship between academic procrastination, internet addiction, and academic performance among Medical Sciences students, Birjand, Iran

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Background: The primary goal of universities is to educate and train students. However, one significant challenge students face today, which negatively impacts their learning and academic success, is academic procrastination and internet addiction. Therefore, this study was explored the relationship between academic procrastination, internet addiction, and academic performance among students at Birjand University of Medical Sciences.

Method: This correlational study included all students of Birjand University of Medical Sciences in the academic year 2024-2025. The sample size was estimated to be 305 people based on the Krejcie and Morgan table. Solomon's Academic Procrastination Scale (1984), Kimberly Young's Internet Addiction Scale (1988), and Dartaj's Academic Performance Scale (2004) were used to collect data. Data analysis was performed using SPSS 22 software and Pearson correlation coefficient, one-sample t-test, independent samples t-test, and analysis of variance (ANOVA) at a significance level of 0.05.

Results: There was a significant positive relationship between student academic procrastination and internet addiction (r=0.35, p<0.0001), and it can be said that 12% of students' academic procrastination can be predicted by internet addiction. Students' academic performance was negatively impacted by academic procrastination (r=-0.42, p<0.0001).

Conclusion: Internet addiction and academic procrastination are inversely related to academic performance. This suggests that managing both internet addiction and procrastination among students can lead to improved learning outcomes.

Keywords: Internet addiction, Academic procrastination, Academic performance, Medical student

دراسة العلاقة بين التسويف الأكاديمي وإدمان الإنترنت والأداء الأكاديمي بين طلاب العلوم الطبية في بيرجند، إيران

الخلفية: الهدف الأساسي للجامعات هو تثقيف الطلاب وتدريبهم. ومع ذلك، فإن أحد التحديات الرئيسية التي يواجهها الطلاب اليوم، والتي تؤثر سلبًا على تعلمهم ونجاحهم الأكاديمي، هو التسويف الأكاديمي وإدمان الإنترنت. لذلك، استكشفت هذه الدراسة العلاقة بين التسويف الأكاديمي وإدمان الإنترنت والأداء الأكاديمي لدى طلاب جامعة بيرجند للعلوم الطبية.

الطريقة: شملت هذه الدراسة الارتباطية جميع طلاب جامعة بيرجند للعلوم الطبية للعام الدراسي ٢٠٢٤-٢٠٢٥. قُدِّر حجم العينة بـ ٣٠٥ أشخاص بناءً على جدول كريجي ومورغان. استُخدمت لجمع البيانات مقياس سولومون للتسويف الأكاديمي (١٩٨٤)، ومقياس كيمبرلي يونغ لإدمان الإنترنت (١٩٨٨)، ومقياس دارتاج للأداء الأكاديمي (٢٠٠٤). أُجري تحليل البيانات باستخدام برنامج SPSS 22، ومعامل ارتباط بيرسون، واختبار t لعينة واحدة، واختبار t للعينات المستقلة، وتحليل التباين (ANOVA) عند مستوى دلالة ٠.٠٥.

النتائج: وُجدت علاقة إيجابية دالة إحصائيًا بين التسويف الأكاديمي لدى الطلاب وإدمان الإنترنت (r=0.35، p<٠.٠٠٠١)، ويمكن القول إن ١٢% من حالات التسويف الأكاديمي لدى الطلاب يمكن التنبؤ بها من خلال إدمان الإنترنت. وقد تأثر الأداء الأكاديمي للطلاب سلبًا بالتسويف الأكاديمي (r=-0.42، p<٠.٠٠٠١).

الاستنتاج: يرتبط إدمان الإنترنت والتسويف الأكاديمي عكسيًا بالأداء الأكاديمي. وهذا يشير إلى أن إدارة كلٍّ من إدمان الإنترنت والتسويف بين الطلاب يمكن أن تؤدي إلى تحسين نتائج التعلم.

الكلمات المفتاحية: إدمان الإنترنت، التسويف الأكاديمي، الأداء الأكاديمي، طالب الطب

بررسی ارتباط اهمال کاری تحصیلی و اعتیاد به اینترنت با عملکرد تحصیلی دانشجویان دانشگاه علوم پزشکی بیرجند

زمینه و هدف: تربیت و آموزش دانشجویان مهمترین رسالت دانشگاه ها می باشد و از چالش هایی که امروزه دانشجویان با آن مواجه هستند و تأثیر منفی بر یادگیری و موفقیت تحصیلی آنان می گذارد، اهمال کاری تحصیلی و اعتیاد به اینترنت است. پژوهش حاضر با هدف تعیین رابطه اهمال کاری تحصیلی و اعتیاد به اینترنت با عملکرد تحصیلی در دانشجویان دانشگاه علوم پزشکی بیرجند انجام شد.

روش: روش پژوهش حاضر، از نوع همبستگی می باشد. جامعه آماری پژوهش کلیه دانشجویان دانشگاه علوم پزشکی بیرجند در سال تحصیلی ۱۴۰۲-۱۴۰۳ بودند. حجم نمونه بر اساس جدول گرجسی و مورگان ۳۰۵ نفر برآورد و به صورت دردسترس انتخاب شدند. برای جمع آوری داده ها از مقیاس اهمال‌کاری تحصیلی سولومون (۱۹۸۴) و مقیاس اعتیاد به اینترنت کیمبرلی یانگ (۱۹۸۸) و مقیاس عملکرد تحصیلی درتاج (۱۳۸۳) استفاده شد. تجزیه و تحلیل داده ها با نرم افزار SPSS 22 و ضریب همبستگی پیرسون، آزمون t تک نمونه ای، آزمون t نمونه های مستقل و آنالیز واریانس (ANOVA) در سطح معنی داری ۰/۰۵ انجام شد.

یافته ها: بین نمره اهمال کاری تحصیلی و اعتیاد به اینترنت رابطه مثبت معنی داری وجود دارد (r=0.35, p<0.0001) و ۱۲ درصد از اهمال کاری تحصیلی دانشجویان را می توان با اعتیاد به اینترنت پیش بینی کرد. بین اهمال کاری تحصیلی با عملکرد تحصیلی رابطه منفی معناداری وجود دارد (r=-0.42, p<0.0001).

نتیجه‌گیری: اعتیاد به اینترنت و اهمال کاری تحصیلی به طور معکوس پیش بینی کننده های خوبی برای عملکرد تحصیلی بوده و با مدیریت اعتیاد به اینترنت و اهمال کاری تحصیلی در دانشجویان می توان ارتقای یادگیری را بهبود بخشید.

واژه های کلیدی: اهمال کاری تحصیلی، اعتیاد به اینترنت، عملکرد تحصیلی،دانشجوی پزشکی

علمی تاخیر، انٹرنیٹ کی لت، اور میڈیکل سائنسز کے طلباء میں تعلیمی کارکردگی کے درمیان تعلق کی تحقیقات، برجند، ایران

پس منظر: یونیورسٹیوں کا بنیادی مقصد طلباء کو تعلیم اور تربیت دینا ہے۔ تاہم، آج طلبا کو ایک اہم چیلنج درپیش ہے، جو ان کے سیکھنے اور تعلیمی کامیابی پر منفی اثر ڈالتا ہے، وہ بے تعلیمی تاخیر اور انٹرنیٹ کی لت ہے۔ لہٰذا، اس مطالعے میں برجند یونیورسٹی آف میڈیکل سائنسز کے طلباء کے درمیان تعلیمی تاخیر، انٹرنیٹ کی لت، اور تعلیمی کارکردگی کے درمیان تعلق کو تلاش کیا گیا۔

طریق: اس ارتباطی مطالعہ میں ۲۰۲۴-۲۰۲۵ تعلیمی سال میں برجند یونیورسٹی آف میڈیکل سائنسز کے تمام طلباء شامل تھے۔ کریجی اور مورگن ٹیبل کی بنیاد پر نمونے کے سائز کا تخمینہ ۳۰۵ افراد لگایا گیا تھا۔ ڈیٹا اکٹھا کرنے کے لیے سلیمان کا اکیڈمک پروکرسٹینیشن اسکیل (۱۹۸۴)، کمبرلی ینگ کا انٹرنیٹ ایڈکشن اسکیل (۱۹۸۸)، اور دارتاج کا اکیڈمک پرفارمنس اسکیل (۲۰۰۴) استعمال کیا گیا۔ ڈیٹا کا تجزیہ SPSS 22 سافٹ ویئر اور پیئرسن باہمی ربط کا گتانک، ون سیمپل ٹی ٹیسٹ، آزاد نمونے t-ٹیسٹ، اور ۰.۰۵ کی اہمیت کی سطح پر تغیر (ANOVA) کا تجزیہ استعمال کرتے ہوئے کیا گیا۔

نتائج: طلباء کی تعلیمی تاخیر اور انٹرنیٹ کی لت (r = 0.35, p < ۰.۰۰۰۱) کے درمیان ایک اہم مثبت تعلق تھا، اور یہ کہا جا سکتا ہے کہ ۱۲٪ طلباء کی تعلیمی تاخیر کی پیش گوئی انٹرنیٹ کی لت سے کی جا سکتی ہے۔ طلباء کی تعلیمی کارکردگی تعلیمی تاخیر (r=-0.42، p < ۰.۰۰۰۱) سے منفی طور پر متاثر ہوئی۔

نتیجہ: انٹرنیٹ کی لت اور تعلیمی تاخیر کا الٹا تعلق تعلیمی کارکردگی سے ہے۔ اس سے پتہ چلتا ہے کہ طلباء میں انٹرنیٹ کی لت اور تاخیر دونوں کا انتظام سیکھنے کے بہتر نتائج کا باعث بن سکتا ہے۔

مطلوبہ الفاظ: انٹرنیٹ کی لت، تعلیمی تاخیر، تعلیمی کارکردگی، طبی طالب علم

INTRODUCTION

Students in all countries are considered to be the intellectual and spiritual capital of their nations. Addressing the specific needs of students—such as achieving academic success and ensuring their physical and mental health—is one of the primary goals of educational planners within governments (1). One key objective of universities is to enhance the quality of education and improve students' academic performance (2). Ineffective learning and poor academic outcomes can lead to economic losses, as well as issues like frustration, reduced self-confidence, feelings of inferiority, depression, and ultimately, the failure to fully develop the talents and abilities of students who struggle in their education (3).

One of the key concerns of professors, university education officials, and families is student's academic performance. The goal of student education is to enhance this performance (4). Academic achievement is important not only to parents and higher education officials but also to everyone invested in societal development (5). Several factors contribute to students' academic performance, including individual, social, family, economic, and college-related influences. Identifying these factors can help prepare learners for university, improve their performance, and address the declining number of graduates. This understanding can also help reduce failure rates and minimize course repetition among students. Additionally, it provides educational planners with insights to enhance positive influences while mitigating negative ones (6).

One of the challenges that many students encounter during their studies is academic procrastination, which refers to delays in completing tasks. This behavior can negatively impact on various aspects of students' personal and social lives, making it important to identify the factors contributing to procrastination to take steps to reduce or eliminate it (7). Research indicates that academic procrastination can hinder the level of learning and affect both current and future success. When students postpone starting and finishing their homework, they miss valuable learning opportunities. Often, they end up cramming their studies into a limited timeframe, which disrupts the learning process and can lead to decreased accuracy, increased stress, and a higher number of mistakes in completing assignments (8). Additionally, procrastination, compounded by a lack of exam preparation, can result in anxiety and stress. As the exam deadline approaches, students may resort to ineffective coping methods to relieve the pressure caused by the volume of material they need to cover. In its most severe form, procrastination can lead to incomplete education, dropout, and reduced personal and organizational productivity (9).

Today, the Internet stands as one of mankind's most significant achievements, consisting of an extensive and interconnected network of links. The numerous applications and attractions of the Internet have given rise to a phenomenon known as Internet addiction. Over recent decades, Internet usage has surged, leading to an increasing number of users worldwide, making the Internet a crucial aspect of daily life (10). In the past decade, the role of mobile phones has transformed dramatically due to advancements in information technology and portable communication (11). Furthermore, addictive and habitual behaviors have contributed to the widespread use of smartphones (12). While the Internet serves as an invaluable resource across various fields such as science, business, education, culture, and politics, excessive use can lead to Internet addiction (13). Moreover, excessive smartphone usage can disrupt concentration at school or work, resulting in physical issues such as neck stiffness, blurred vision, wrist and back pain, and sleep disturbances. It can also diminish social interactions and hinder academic performance (14).

Procrastination is a common issue among students. It leads to significant problems such as stress, anxiety, and ultimately academic failure or dropout. Over the long term, it can also have negative impacts on their educational and research outcomes. Therefore, it is crucial to identify the factors contributing to academic procrastination among students. One of the key factors identified is the excessive use of mobile phones and reliance on the Internet. With the widespread use of the Internet and the multifunctionality of mobile devices, these tools significantly influence students' academic activities. Research has shown a significant relationship between the excessive use of mobile phone and academic procrastination among students (15). Moreover, students in medical universities require good behavioral health to achieve the academic performance necessary for their future careers in public health. Given these considerations, identifying the causes that impact students' academic performance is vital and highlights the need for further research in this area. While previous studies have examined the relationship between Internet addiction and procrastination, no research specifically focused on academic procrastination and internet addiction among medical students. This gap emphasized the need for the current study, which aimed to determine the relationship between academic procrastination, internet addiction, and academic performance among Birjand University of Medical Sciences students.

METHODS

This cross-sectional descriptive-correlational study included all students from Birjand University of Medical Sciences during the academic year 2024-2025. Based on the Krejcie and Morgan table, the estimated sample size was 305 participants, selected through convenience sampling. Students were included in the study if they provided informed consent and expressed interest in participating. Incomplete questionnaires were excluded from the analysis. Three standard questionnaires were used to collect data:

A) Solomon Academic Procrastination Questionnaire

This questionnaire was developed by Solomon and Roth-Bloom in 1984 and is known as the Academic Procrastination Scale. It consists of 27 items evaluating three components of academic procrastination: preparing for exams (8 questions), preparing for homework (11 questions), and preparing for term papers (8 questions). Respondents indicate their level of agreement with each statement by selecting one of the following options: "never," "rarely," "occasionally," "most of

the time," and "always." Each response is scored from 0 to 4. It is important to note that items 4, 6, 11, 15, 16, 21, 23, and 25 are scored in reverse. The reliability of this questionnaire was reported as 0.85 in the study conducted by Khosravi et al (16). Additionally, the authors of this questionnaire found a reliability of 0.83 using the Cronbach's alpha method.

B) Internet Addiction Questionnaire:

The Internet Addiction Questionnaire, developed by Dr. Kimberly Young in 1988, is one of the most validated tools for measuring Internet Addiction. This questionnaire consists of 20 questions designed to assess the level of Internet Addiction in various individuals. Respondents rate each question using a five-point Likert scale, ranging from "very high" to "very low," with scores assigned between 1 and 5. To calculate the overall score, the individual scores for each question are summed. The total score can range from 20 to 100. Asghari confirmed a reliability coefficient of 0.84 for the questionnaire using Cronbach's alpha (17), while the authors obtained a reliability coefficient of 0.85.

C) Academic Performance Questionnaire:

The Academic Performance Questionnaire was designed and validated by Dartaj (2004). This questionnaire consists of 48 questions; some questions assess only one factor, while others evaluate multiple factors. It measures dimensions such as perceived self-efficacy, emotional effects, planning, lack of outcome control, and motivation. The questionnaire uses a 5-point Likert scale for scoring, ranging from "completely agree" to "completely disagree," with each question scored between 1 and 5. In a study conducted by Ghasem Tabar et al. (18), the reliability coefficient of the questionnaire was found to be 0.76, determined using Cronbach's alpha. Additionally, the authors reported a reliability coefficient of 0.79 using the same method.

The face validity of all questionnaires was validated by ten experts in curriculum planning and medical education.

Data analysis was performed by SPSS 22, descriptive statistics (frequency and percentage), Pearson correlation test, one-sample t-test, independent samples t-test, and analysis of variance (ANOVA) at a significance level of 0.05.

RESULTS

From 305 participants who completed questionnaires, 178 were female (58.3%) and 127 (41.7%) were male. Among these participants, 120 (39.4%) had bachelor's degrees, 33 (10.8%) had master's degrees, 142 (46.6%) had general doctorates, and 10 (3.2%) had specialized doctorates. The average age of the participants in this study was 21.35 ± 0.74. The Pearson correlation coefficient showed that there is a significant positive relationship between the score of students' academic procrastination and Internet addiction ($r = 0.358$, $p = 0.001$), in the way that 12% of students' academic procrastination can be predicted by Internet addiction. There is also a significant negative relationship between academic procrastination and students' academic performance ($r = -0.428$, $p = 0.0001$) (Table 1).

The one-sample t-test revealed that Birjand medical students have a high academic performance and low academic procrastination and Internet addiction (Table 2).

The results of the independent T-test showed that there was no difference between the level of academic procrastination ($p = 0.192$) and academic performance ($p = 0.613$) of students based on gender ($p > 0.05$). However, there was a difference between students' Internet addiction and gender ($P < 0.0001$) and male students had significantly higher scores. (Table 3)

The results of the One-way ANOVA test showed that there was no significant difference in the student's academic procrastination score ($p = 0.089$.) and academic performance score ($p = 0.987$) between students of different educational stages. However, internet addiction was significantly different ($p < 0.0001$) between students of different educational stages. (Table 4).

DISCUSSION

The success or failure of students in their education is a primary concern for any educational system, as their academic achievements reflect how well the system meets its goals and addresses the individual needs of students. An educational system can be deemed successful when its students perform at high levels academically across all

Table 1. Correlation results between academic procrastination, Internet addiction, and academic performance.

Variable	Statistics	Internet addiction	Academic performance
Academic procrastination	r	0.358	-0.428
	p-value	< 0.0001	< 0.0001

Table 2. Status of academic procrastination scores, internet addiction, and students' academic performance

Variable	Mean ± SD	p-value
Academic procrastination	78.19 ± 9.54	< 0.0001
Internet addiction	44.79 ± 14.06	< 0.0001
Academic performance	146.99 ± 1762	< 0.0001

Table 3. Comparison of the status of academic procrastination, internet addiction, and academic performance of students based on gender

Variable	Gender	Mean ± SD	p-value
Academic procrastination	Male	77.12 ± 8.35	0.192
	Female	79.26 ± 9.25	
Internet addiction	Male	47.86 ± 15.41	< 0.0001
	Female	41.72 ± 13.24	
Academic performance	Male	146.13 ± 16.47	0.613
	Female	147.85 ± 17.85	

Table 4. Comparison of the status of academic procrastination, internet addiction, and academic performance of students based on educational stage

Variable	F*	p-value
Academic procrastination	2.196	0.089
Internet addiction	7.621	< 0.0001
Academic performance	0.046	0.987

* One-way ANOVA

education levels. This study aimed to investigate the relationship between academic procrastination and Internet addiction and their effects on the academic performance of students at Birjand University of Medical Sciences during the academic year 2024-2025. The findings indicated that students at Birjand University of Medical Sciences exhibited low levels of academic procrastination and Internet addiction, while demonstrating high academic performance. The correlation analysis between various variables revealed a significant negative relationship between academic procrastination, Internet addiction, and students' academic performance. Specifically, as levels of academic procrastination and Internet addiction increased among students, their academic performance tended to decline. Consequently, both academic procrastination and Internet addiction were identified as predictors of academic performance in students. Research findings from Hamidi et al. (19) and Sharifirahnmo et al. (20) support these results. The negative impact of academic procrastination and Internet addiction on students' academic performance can be explained in several ways. Internet addiction often leads to procrastination, which can negatively affect many areas of a student's life, resulting in decreased activity and, subsequently, lower academic performance. A decline in academic performance due to academic procrastination can lead to a lower GPA, as well as feelings of dissatisfaction and academic burnout. This, in turn, contributes to further declines in academic achievement and overall satisfaction with education (21). Additionally, excessive time spent on the Internet can cause physical and mental fatigue, reducing the time students allocate to their studies, and thereby increasing the risk of academic failure. This creates a vicious cycle as poor academic results leading to decreased performance, which can further perpetuate dissatisfaction. Thus, academic procrastination resulting

from Internet addiction ultimately contributes to a decline in academic performance.

The results indicated that both academic procrastination and Internet addiction levels among students at Birjand University of Medical Sciences are low, while their academic performance levels are high. This finding aligns with the research conducted by Roshanzadeh et al. (22). It can be concluded that Internet addiction and academic procrastination are inversely related to academic performance. By managing Internet addiction and academic procrastination, students can potentially improve their academic achievements. Specifically, it appears that Internet addiction significantly contributes to academic procrastination, while time management plays an even greater role in predicting procrastination. This suggests that students who struggle with time management due to Internet Addiction are likely to experience higher levels of academic procrastination. Consequently, students with poor time management skills and a lack of punctuality tend to procrastinate more in their academic endeavors.

The results indicated that there was no significant difference in the average scores of academic procrastination and academic performance among students when considering gender and level of education. However, the average score for Internet addiction varied based on both gender and educational stage. This finding aligns with the results reported by Chehrzad et al. (23). In various studies, a low to moderate range of Internet addiction and academic procrastination has been suggested. In this study, the levels of procrastination and Internet addiction among the students were found to be low.

CONCLUSION

Given the impact of Internet addiction on students' academic performance, it can be concluded that while the Internet offers various educational and training benefits, excessive use can be detrimental. This misuse may lead to academic procrastination, which in turn negatively affects students' performance. Therefore, conducting regular screenings for academic procrastination and Internet addiction, as well as investigating their underlying causes could be beneficial. Such measures would help in the implementation of effective strategies to mitigate these issues among students.

LIMITATIONS

The present study has limitations, including the use of a non-

random sampling method. Given the significance of academic procrastination and the factors influencing it, it is recommended that future research investigate additional factors affecting academic procrastination through structural equation modeling studies.

Ethical Considerations:

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