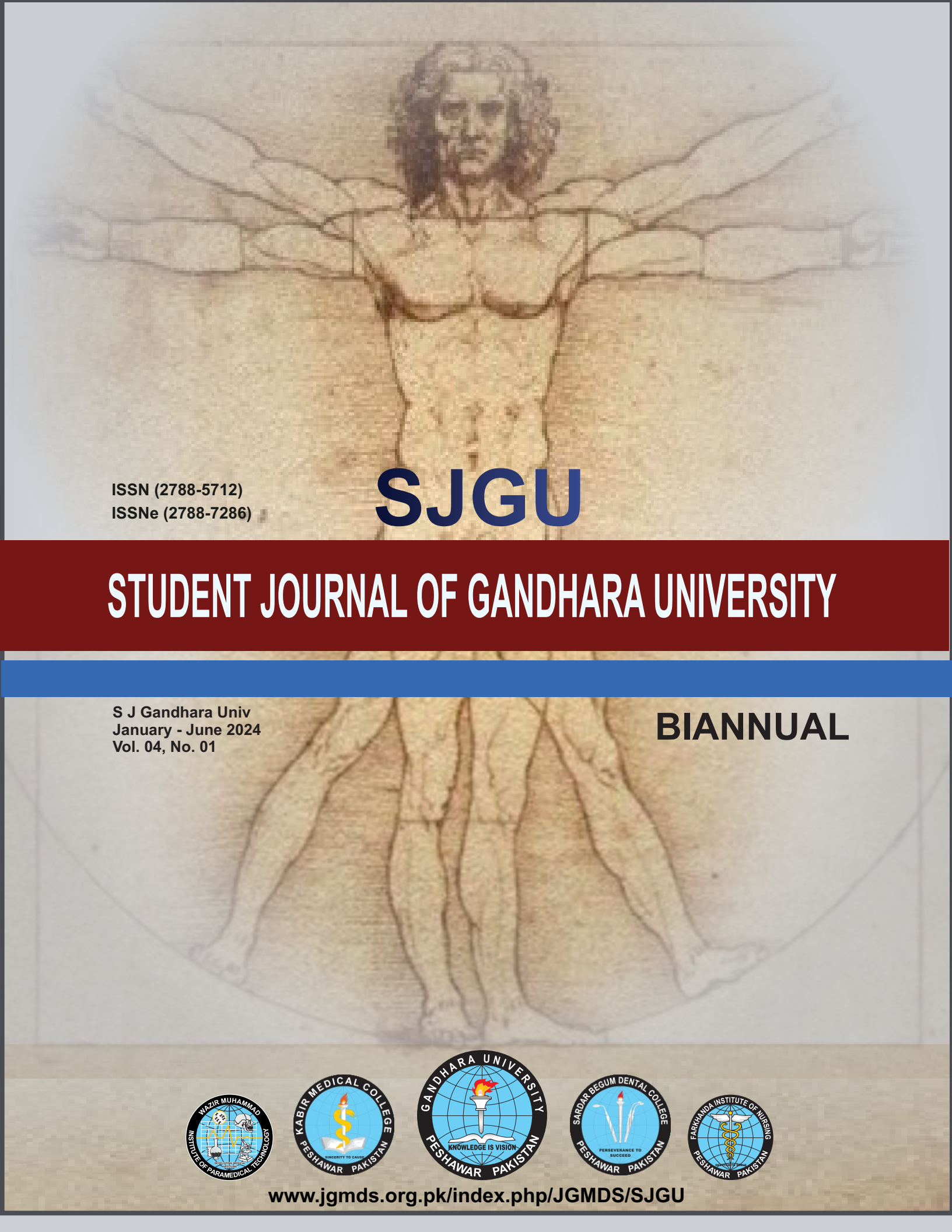

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EDITORIAL

ORIGINAL ARTICLES

BEYOND THE ALGORITHM: ADDRESSING THE ETHICAL CONCERNS IN AI-NAVIGATED MEDICINE

Muhammad Salman
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In the rapidly evolving world of technology, the application of artificial intelligence (AI) in medicine offers unparallel opportunities. AI is taking the place of doctors in tasks like diagnosing conditions, interpreting scans and X-rays. However, healthcare is a field in which the implementation of AI involves multiple ethical challenges.[1] One of the primary ethical concerns regarding use of AI in medicine is data privacy. AI systems rely heavily on datasets comprising sensitive patient information. A patient should be aware of potential for their data to be used and whether future legislative changes will make data vulnerable, especially if there is any risk that the data could be used against the patient's interest.[2] Cyberattacks are another method that patient data might be exploited. Since the data, which also contains sensitive information as well, is kept online, cyberattacks that are successful can access it. Thus, there are two primary steps to data protection. The first step involves encrypting which is converting data into codes that are difficult to decipher. Storing the data in a secure cloud storage system that is resistant to cyberattacks is the second stage in ensuring data security.[3]

While AI promises to revolutionize the way we live and work it also poses a threat to job displacement and replacing the human workers.[4] However, in the field of healthcare various researchers are optimistic and claims that rather than taking the role of doctors, AI will assist them in improving patient healthcare.[5,6] But patients still prefer doctors and are reluctant to trust AI since you can't trust something you don't understand.[7] In order to ensure that AI is used properly and responsibly, we must give ethical considerations a top priority. We can handle the ethical issues by embracing the principles of accountability, fairness and transparency. However, as patients are reluctant to trust AI because they just don't understand how it works, researchers need to spread awareness regarding it and ensure them that their data privacy is fully protected only then can AI earn patient's trust.

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INSOMNIA AND IT'S RELATION WITH MOBILE PHONE USAGE

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ABSTRACT

OBJECTIVES

This study explored the relationship between insomnia and mobile device usage among university students.

METHODOLOGY

A descriptive cross-sectional study was carried out at Gandhara University. Data collection involved the use of a pre-tested, self-administered structured questionnaire. The study participants consisted of students from both medicine and dentistry disciplines. Two hundred twenty-six complete questionnaires were received, and informed consent was obtained before the questionnaire was completed. Subsequently, percentages and frequencies were computed.

RESULTS

Among the 226 participants, 49.1% reported sleep problems, while 50.9% did not. Of the respondents, 42.5% used mobile phones with blue light, and 84.51% kept their phones near their pillows during sleep. 58.0% believed that phone use negatively affected their sleep quality. Only 16.8% put their phones on airplane mode before sleep. 60.6% felt anxious if their phone was not near the bedside. 55.3% found it difficult to ignore their mobile phones before sleeping. These findings highlight a significant relationship between mobile phone usage habits and sleep disturbances, particularly among the 18-24 age group.

CONCLUSION

Insomnia is influenced by factors such as electronic device usage before bedtime, exposure to blue light, and the proximity of smartphones during sleep. Nomophobia, the fear of being without a phone, can worsen insomnia symptoms. Addressing these factors is important for better sleep and overall well-being.

KEYWORDS: *Insomnia, Mobile Device Usage, Sleep Quality*

INTRODUCTION

Insomnia is one of the most common subjective sleep complaints. It is characterized by difficulty in initiating or maintaining sleep. Insomnia not only disrupts daily functioning but also poses significant health risks.[1] Insomnia is a prevalent sleep disturbance significantly affecting an individual's daily functioning and overall well-being. This condition not only impairs mental health, leading to issues such as anxiety and depression, but also has a detrimental effect on one's quality of life. Insomnia is intricately linked with physical health problems, and research indicates that individuals suffering from persistent sleeplessness have a heightened susceptibility to developing severe health conditions, including obesity and metabolic disorders like diabetes. Additionally, the risk of cardiovascular diseases, including heart disease and stroke, escalates with the presence of insomnia.[2] A multitude of elements contributes to the onset and persistence of insomnia. Excessive consumption of caffeine, often found in coffee and energy drinks, can significantly hinder the ability to fall asleep. Workplace stress is another critical factor that can lead to restless nights. Emotional distress from personal life events, such as grieving the death of a close family member, undergoing the process of divorce, or experiencing domestic violence, can also trigger insomnia.[3] The habitual use of smartphones right before sleep has emerged as a critical factor contributing to the prevalence of insomnia.[4] Diverse studies have consistently demonstrated that younger individuals use smartphones more frequently and for extended durations than older adults.[5] The rapid escalation in smartphone usage has raised alarms about its potential detrimental effects on physical and mental well-being. While smartphones undeniably streamline many aspects of modern life, offering convenience at our fingertips, they also come with a downside. The addictive nature of mobile phone use can lead to severe health repercussions, such as individuals deeply engrossed in their screens may find themselves grappling with considerable sleep disturbances. The psychological impact is equally concerning, with users potentially

facing profound emotional distress and depressive episodes. Cognitive functions, too, are not spared, as memory can become compromised. In extreme cases, the influence of smartphone addiction may even steer individuals toward harboring suicidal ideations.[6] It is well established that the spectrum of light emitted by mobile phone screens encompasses blue to green wavelengths, which are known to interfere with the body's melatonin production.[7] When Melatonin activity is inhibited by such light exposure, individuals may experience a decrease in drowsiness, face difficulties in falling asleep, and endure sleep that is not rejuvenating.[8] The concerns surrounding the impact of mobile device screens on sleep quality are likely intensified by several factors. The escalating brightness and enlarging screen sizes of these gadgets and the proliferation of screens in our surroundings contribute to this issue. Moreover, there is a growing exposure to short-wavelength visible light, particularly the blue-to-green spectrum, emitted from these screens during everyday use in home settings.[9] Nomophobia is characterized as a psychological condition that manifests as an irrational fear of being without access to a mobile phone. This anxiety may stem from various situations, such as not having a network signal, being unable to connect to the internet, or facing a situation where the phone's battery is depleted.[10] Four distinct dimensions encapsulate Nomophobia. It encompasses the fear of being unable to communicate with others immediately, the anxiety over losing connectivity, the worry about facing challenges in accessing information swiftly, and the unease felt when one does not have a mobile device.[11] Research from 2020 has demonstrated a significant link between the use of mobile devices for over 30 minutes post-bedtime (particularly without the use of blue light filters) and the deterioration of sleep quality, along with interruptions in sleep patterns. In line with these findings, a separate investigation in Pakistan revealed that smartphone addiction is a contributing factor to substandard sleep quality and lack of adequate sleep.[13] Furthermore, evidence suggests that an addiction to smart mobile devices will likely lead to inferior sleep quality. This relationship's broader processes remain largely unexplored.[14]

METHODOLOGY

A descriptive cross-sectional study was conducted at Gandhara University between January and June 2024. The study focused on medical students from the fields of medicine and dentistry. Two hundred twenty-six complete questionnaires were received, with participation being entirely voluntary. Before filling out the questionnaire, informed consent was obtained from each participant. Participants were informed about the study's objective, which examined the correlation between insomnia and mobile device usage. Data collection was carried out using a pre-tested, self-administered structured questionnaire. This questionnaire consisted of 16 closed-ended questions and was divided into three sections. The first section covered demographic information, followed by questions related to mobile device usage, and finally, questions related to insomnia. The collected data was analyzed using SPSS version 26, and percentages and frequencies were tabulated.

RESULTS

Significant trends emerged in a study involving 226 participants regarding insomnia and mobile phone usage. Nearly half (49.1%) of the respondents reported sleep difficulties, while the remaining 50.9% did not face such issues.

Table 1: Prevalence of Insomnia.

Variables		Frequency	%age
Prevalence of Insomnia	Yes	111	49.1
	No	115	50.9
	Total	226	100.0

Approximately 42.5% used mobile phones with blue light, contrasting with the 57.5% who did not. An overwhelming 84.5% kept their phones near their pillows during sleep, while only 15.5% did not. Interestingly, 58.0% believed phone use negatively impacted their sleep quality, while 42.0% disagreed. A mere 16.8% activated airplane mode before sleep, leaving 83.2% with active phones. Furthermore, 60.6% experienced anxiety if their phone wasn't bedside, compared to 39.4% who did not. Lastly, 55.3% found it challenging to ignore their phones before sleeping, while 44.7% did not share this struggle.

Table 2: Patterns of Mobile Phone Usage with Sleep.

Variables		Frequency	%age
* Do you use mobile phone usage with Blue Light?	Yes	96	42.5
	No	130	57.5
* Do you keep your mobile phone near the pillow while sleeping?	Yes	191	84.5
	No	35	15.5
* Does phone use affect the quality of your sleep?	Yes	131	58.0
	No	95	42.0
	Total	226	100.0
* Do you put your mobile on airplane mode before sleep?	Yes	38	16.8
	No	188	83.2
	Total	226	100.0
* Do you feel anxious if your phone is not near the bedside?	Yes	137	60.6
	No	89	39.4
	Total	226	100.0
* Is it difficult for you to ignore your mobile phone before sleeping?	Yes	125	55.3
	No	101	44.7
	Total	226	100.0

These findings underscore the link between mobile phone habits and sleep disturbances, particularly among the 18-24 age group.

DISCUSSION

Insomnia, also known as sleeplessness, is when individuals experience difficulty falling asleep, staying asleep, or waking up too early. Several studies have shed light on the prevalence of insomnia across different populations. In the United States, previous research found that approximately 14.5% of adults reported trouble falling asleep or insomnia-related issues.[15] A separate study conducted in Indonesia revealed that the prevalence of insomnia symptoms tends to increase with age. Among 15- to 24-year-olds, the rate was 3.5%, while among participants aged 65 years and older, it reached 20.5%.[16] our study found that 49.1% of students aged 18-24 faced insomnia-related challenges, emphasizing the importance of addressing sleep disturbances for overall well-being and health. Previous research found no significant impact on sleep quality for university students who adjusted their electronic device screens' light before bedtime.[17] A recent systematic review concluded that exposure to 400-450 nanometer shortwave blue light for two hours can significantly suppress melatonin.[18] Another study showed that reducing nighttime exposure to blue light can improve cognitive function in people with insomnia. Wearing amber lenses to reduce exposure to blue-wavelength light can lead to better sleep and fewer insomnia symptoms by lessening melatonin suppression and increasing melatonin secretion before bedtime.[19] Among medical students, 42.5% reported using mobile phones with blue-light exposure. It is important to note that blue light emitted from mobile devices significantly affects circadian rhythms and melatonin levels.[20] However, further experimental studies are needed to specify the precise effects of blue light on our sleep health. In a study investigating the impact of phone usage on sleep quality, researchers found that a substantial proportion of individuals kept their phones closed during sleep. Specifically, 70% of participants placed their phones beside their beds, while 19.7% activated airplane mode before sleeping.[21] Our study found that about 84.5% of individuals kept their phones next to their pillows, and 16.8% activated airplane mode. However, this practice may have consequences as phones emit electromagnetic radiation, potentially affecting brain functions and delaying the natural transition to sleep.[22] These contribute to insomnia and related sleep issues. Considering these factors when evaluating our sleep habits and their impact on overall well-being is essential. Based on these findings, we can infer that the association between Nomophobia and insomnia can lead to anxiety, panic, and feelings of disorientation. However, further investigation is necessary to understand these issues entirely.

LIMITATIONS

The study was conducted exclusively among undergraduate medical students at Gandhara University in Peshawar. The participants fell within the age group of 18-24 years. Notably, the study focused solely on insomnia-related factors related to mobile phone usage.

CONCLUSIONS

Insomnia affects individuals across various age groups, with prevalence increasing with age. Factors such as electronic device usage before bedtime, specifically exposure to blue light, and the proximity of smartphones during sleep can significantly impact sleep quality.

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IMPACT OF LIBRARY ENVIRONMENT ON STUDENT SELF-DIRECTED LEARNING (SDL) OUTCOMES: A COMPREHENSIVE ANALYSIS

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ABSTRACT

OBJECTIVES

To determine the factors, including lighting, noise levels, and temperature, that affect the learning outcomes.

METHODOLOGY

This study employed a cross-sectional design to investigate the factors affecting learning outcomes, specifically focusing on lighting, noise levels, and temperature. The research was conducted at Kabir Medical College and Sardar Begum Dental College. Data were collected using a structured questionnaire physically distributed to the students. The questionnaire included sections on demographic information and specific questions related to the impact of lighting, noise levels, and temperature on their learning outcomes. Informed consent was obtained from all participants, ensuring their voluntary participation and confidentiality of their responses. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) software.

RESULTS

282 students participated in the study, of which the majority were females and were 18-21. It was found that factors such as seating arrangement, resources, and temperature of the library had the most impact on learning outcomes, while other factors such as lighting and noise didn't have a significant effect on the learning outcome

CONCLUSION

It was found that the library's seating arrangement, resources, concentration, and temperature had a moderate association with learning outcomes, while the rest factor either had a weak association or had no association with learning outcomes.

KEYWORDS: *Learning Outcomes, Factors, Academic Performance, Student*

INTRODUCTION

Self-directed learning is a learning style students adopt to seek new and more knowledge. Under-grad students adopt this learning style because the lecture notes don't always provide enough knowledge and thus prove an asset for students to succeed in their fields.[1,2] For this reason, it's more common for students to seek spaces like libraries that are helpful to achieve their learning objectives. Conditions of study spaces like libraries may impact a student's comfort and academic performance. It also includes that temperature, lighting, noise, and internet accessibility may cause discomfort and distractions during the study, leading to poor study outcomes.[3] Research over the study spaces has also been done regarding the broad functioning of the brain, keeping in view naturalness (natural lighting and level of controlled thermal heating) and level of stimulation as in colour and complexity. These factors have a relation to multisensory inputs, thus having the potential to affect a pupil's learning.[4] It is also essential to consider how the library space is managed and ensure that most individuals find space according to their preferences, e.g., for self-study or group studies.[5] Studies have also shown that workspace lighting affects task performance.[6] Additionally, the choice of color and lighting intensity is pivotal in improving mood and cognitive functions.[7] Most people find noise a nuisance and a source of distraction in workspaces.[8] It is also said that positive emotions are related to better learning outcomes due to whatever factors are involved.[9] The accessibility and availability of information resources like high-speed broadband are crucial to driving students toward better academic performance.[10] This study aims to determine the correlation between the library environment considering factors such as acoustics, lighting, temperature, and seating and its impact on students' self-directed learning. Understanding the influence of these factors on learning abilities is vital for developing effective educational strategies.

METHODOLOGY

This study employed a cross-sectional design to investigate the factors affecting learning outcomes,

specifically focusing on lighting, noise levels, and temperature. The research was conducted at Kabir Medical College and Sardar Begum Dental College. Data was collected using a structured questionnaire physically distributed to the students. The questionnaire included sections on demographic information and specific questions related to the impact of lighting, noise levels, and temperature on their learning outcomes. Informed consent was obtained from all participants, ensuring their voluntary participation and confidentiality of their responses. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) software.

RESULTS

A total of 282 students participated in the study. Most of the participants belonged to the age group 18-21, and most participants were female.

Table 1: Area of Improvement in the Library

	Frequency	%Age
It does not need any further improvement	82	29.1
A better internet connection	47	16.7
Silence should be maintained in the library	38	13.5
Seating arrangement and seats	31	11.0
More books should be available	25	8.9
Library timing should be increased	23	8.2
A better lighting system	18	6.4
Air conditioners should be installed	18	6.4

Table 2: Factors Affecting Student Satisfaction with Library Learning Environment

	Satisfied F (%)	Cramer's V- Value	P-Value
Overall, the library atmosphere for learning purposes	89(31.6)	-	-
Library Seating Arrangement	108(38.3)	0.334	0.000
Do you believe the library is equipped with the necessary learning resources?	123(43.6)	0.287	0.000
Is the library well-lighted?	219(77.7)	0.175	0.013
Is it easy to concentrate on studies in the library	49(17.4)	0.417	0.000
Is the temperature of the library maintained at an ideal rate? If not, does it affect your studies?	115(40.8)	0.259	0.000
Does noise in the library affect your ability to concentrate on studies?	73(25.8)	0.197	0.001
How would you rate the library's internet connection?	35(12.4)	0.229	0.000

In Table 2, it was found that the library's Seating arrangement, resources, concentration, and temperature had a moderate association with learning outcomes since the value of Cramer's V was more significant than 0.25, while the rest had a weak to no association.

DISCUSSION

The findings of this study highlight significant factors that affect student satisfaction with the library learning environment at Kabir Medical College and Sardar Begum Dental College. The results indicate areas for improvement and provide insights into how environmental factors within a library setting can influence learning outcomes. A total of 282 students participated in the study, predominantly in the age group of 18-21 years, with a majority being female. This demographic distribution is consistent with the general student population in medical and dental colleges, reflecting a higher enrollment of female students in these fields.[11] Understanding the demographic characteristics of the participants is crucial as it helps in tailoring the library environment to meet better the specific needs and preferences of the predominant user group.[12] The overall satisfaction with the library atmosphere for learning purposes was relatively low, with only 31.6% of the students expressing satisfaction. This indicates a significant scope for improvement in creating a conducive learning environment. The library atmosphere, encompassing noise levels, lighting, and temperature, facilitates effective learning.[13] Previous studies have shown that a positive library atmosphere can enhance concentration, reduce stress, and improve academic performance.[14] The study found that 38.3% of students were satisfied with the library seating arrangement, with a Cramer's V value of 0.334 and a p-value of 0.000, indicating a significant relationship between seating arrangement and student satisfaction. Adequate and comfortable seating is essential for prolonged study sessions and can significantly impact student productivity and comfort.[15] Libraries need to ensure that seating arrangements are ergonomically designed and sufficient in number to accommodate the student population. A significant proportion of students (43.6%) believed that the library has the necessary learning resources, with a Cramer's V value of 0.287 and a p-value of 0.000. Access to up-to-date and relevant learning resources is fundamental for academic success, particularly in medicine and dentistry, where current knowledge is critical.[16] Ensuring the library collections are regularly updated and reflect the current curriculum can significantly enhance student satisfaction and learning outcomes. An overwhelming 77.7% of students reported that the library is well-lighted, with a Cramer's V value of 0.175 and a p-value of 0.013, indicating a significant, though weaker, relationship between lighting and satisfaction. Proper lighting is crucial in a learning environment as it reduces eye strain and fatigue, improving concentration and productivity.[17] Libraries should maintain adequate lighting levels and consider

using natural light to create a more inviting and comfortable study space. Only 17.4% of students found it easy to concentrate on their studies in the library, with a Cramer's V value of 0.417 and a p-value of 0.000, indicating a strong and significant relationship. This finding is particularly concerning as the primary purpose of a library is to provide a conducive environment for focused study. Factors such as noise, seating comfort, and environmental conditions can significantly impact the ability to concentrate.[18] Libraries should implement strict noise control measures and provide designated quiet study areas to enhance concentration. Satisfaction with temperature control in the library was reported by 40.8% of the students, with a Cramer's V value of 0.259 and a p-value of 0.000. The temperature of a learning environment can affect comfort and concentration levels. Studies have shown that extreme temperatures, either too hot or too cold, can negatively impact cognitive functions and learning efficiency.[19] Maintaining an optimal temperature range is essential for creating a comfortable study environment. Noise in the library affected the ability to concentrate for 25.8% of the students, with a Cramer's V value of 0.197 and a p-value of 0.001. Noise pollution is a significant barrier to effective learning, causing distractions and reducing the ability to focus.[20] Libraries should enforce strict noise control policies and provide soundproof study rooms to minimize disturbances. The library's internet connection rating was low, with only 12.4% satisfaction, a Cramer's V value of 0.229, and a p-value of 0.000. In today's digital age, a reliable internet connection is indispensable for accessing online resources, conducting research, and completing academic tasks.[21] Improving the library's internet connectivity can significantly enhance the overall learning experience for students.

LIMITATIONS

This study is only focused on undergraduate medical students. There is a need to conduct such studies on a broader level and include the general population and healthcare professionals.

CONCLUSIONS

The study highlights critical areas that influence student satisfaction with the library learning environment. By focusing on improving seating arrangements, updating learning resources, maintaining optimal lighting and temperature conditions, implementing noise control measures, upgrading internet connectivity, and extending library hours, the libraries can create a more conducive environment for learning and academic success.

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EFFECT AND RISK FACTOR ASSOCIATED WITH E-CIGARETTE SMOKING AMONG UNIVERSITY STUDENTS OF PESHAWAR

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ABSTRACT

OBJECTIVES

The study aimed to find the effects and risk factors associated with e-cigarette smoking among different university students in Peshawar

METHODOLOGY

A cross-sectional study was conducted between Oct 2023 - Feb 2024. The study population includes undergraduate and postgraduate students enrolled in universities within Peshawar, encompassing public and private institutions for a diverse and representative sample. A convenient sampling technique was used. Data was collected using a structured, self-administered questionnaire. Informed consent was obtained from each participant, and confidentiality and anonymity were maintained throughout the study. Data was analyzed using SPSS.

RESULTS

In this study, a total of 131 student participants completed the questionnaire. Among them, the odds ratio (OR) for e-cigarette use between males and females was 1.25 (with a 95% confidence interval [CI] of 0.92 - 1.70). Current smokers had a significantly higher OR of 3.50 (CI: 2.30 - 5.33), while former smokers had an OR of 2.10 (CI: 1.36 - 3.25). Notably, 64.9% of the students reported experiencing respiratory problems, and 9.2% faced cardiovascular (CVS) issues. Alarmingly, 64.9% of the students were unaware of the risk factors associated with e-cigarette use.

CONCLUSION

E-cigarettes are found to contribute to various health issues. It is crucial to organize seminars in universities to raise awareness about these risks and consider a ban on e-cigarette devices and e-liquids. Further research is needed to explore the specific components of e-liquids and their effects on physical health.

KEYWORDS: *E-Cigarette, Effects, Risk Factor, University Students*

INTRODUCTION

Electronic Cigarette (E-Cigarette) is an alternative to traditional Cigarette.[1] Many e-cigarettes are available in the market, including e-cigarettes, vape, pens, and many -mod" style devices.[2] The first E-DEVICE was established in 1930 and is named - electric vaporized," which was used for aerosolizing medicinal compounds. In 1979, the first vape was commercialized with the time vaping was differentiated with the new age.[3] E-liquid is used in the EC. This e-liquid is vaporized with the help of a battery and inhaled through the mouthpiece. E-liquid is also called a humectant or stabilizing agent, and it only has the purpose of maintaining all components in suspension.[2] The elements present in the liquid are nicotine, Flavorings, Carbonyl compounds (including aldehydes), Metals, and Carbon monoxide.[4] Nicotine is the primary compound in e-liquid, adversely affecting the body.[5] The addiction to nicotine in adolescents increases because of the addictive effect of nicotine by stimulating the reward center.[5] The toxicity of EC is congenital for both the intrinsic toxicity of humectants and the toxicity of chemicals vaporized by contact with a heating coil. EC is used for two purposes: (a) to minimize the adverse health risks associated with smoking and (b) to inheld nicotine which mimics the conventional Cigarette.[6] The substance present in the e-liquid affects the physical health of an addicted person. Nicotine is a significant substance present in e-liquid. It is determined to affect the cardiovascular system. Plasma reaches the peak of nicotine after a single e-cigarette can reach a level up to 80ng ml-3.[7] It is thought that nicotine is also associated with a risk of myocardial ischemia, arrhythmias, cardiac tissue remodeling, thrombogenesis, and endothelial dysfunction.[8] Stabilizing agent in which compound is suspended. When overheating, it secretes a toxic carbonyl compound, including propylene glycol, which irritates the eye and throat. Flavoring compounds used

in EC are menthol, benzaldehyde, vanillin, and diacetyl. The effect of these compounds on physical health is not apparent. They form a carbonyl compound, which irritates the respiratory tract. These carbonyl compounds are mainly produced when the battery's power exceeds 3V. Heavy metal is also found in EC. The trace metals present in e-liquid include lead, nickel, chromium, manganese, aluminum, tin, and iron. These metals are produced from the heated battery or wire of the e-cigarette.[8,9] The e-liquid also contains n free Radicals and reactive oxygen. It causes oxidative stress, which damages cellular proliferation, and is also involved in various types of cardiovascular and respiratory disorders and some types of cancer.[8] Microorganisms in e-liquid bacteria, fungi, and viruses cause bacterial, fungal, and viral infections.[7] The glycerol present in the e-liquid causes Headaches, dizziness, nausea, and vomiting.[8] The trend of vaping is increasing day by day, and most people do not know the adverse effects and risk factors of EC on physical health. This research aims to warn people about the adverse impacts of EC and its associated risk factors. The government and health departments should focus on it and conduct seminars at different places to make people aware of the adverse effects of the EC. The government should regulate their laws and make the sale of the EC more difficult.

METHODOLOGY

This study employs a cross-sectional descriptive design to assess the effects and risk factors associated with e-cigarette smoking among university students in Peshawar. The study population includes undergraduate and postgraduate students enrolled in universities within Peshawar, encompassing public and private institutions for a diverse and representative sample. A convenient sampling technique was utilized. The sample size was determined using Cochran's formula, assuming a 95% confidence level, a 5% margin of error, and an estimated 30% prevalence of e-cigarette use, with an additional 10% added to account for non-responses and incomplete questionnaires. Data was collected using a structured, self-administered questionnaire. Informed consent was obtained from each participant, and confidentiality and anonymity were maintained throughout the study. Data was analyzed using SPSS (Statistical Package for the Social Sciences). Descriptive statistics summarized the data. Logistic regression analysis identified significant predictors of e-cigarette use among the students. Ethical approval was obtained from the ethical review board.

RESULTS

Table 1: Chi-Square Tests for Association Between Demographic Variables and E-Cigarette Use

Variable	Chi-Square Statistic (χ^2)	Degrees of Freedom(df)	P-Value
Gender	3.84	01	0.050
Age Group (≤24 vs. >24)	2.76	01	0.096
Year of Study	10.21	04	0.037
Smoking Status	22.45	02	<0.001

Table 2: Logistic Regression Analysis Predicting E-Cigarette Use

Predictor Variable	Odds Ratio (OR)	Standard Error (SE)	z-Value	P-Value	95% Confidence Interval (CI)
Gender (Male vs. Female)	1.25	0.18	1.45	0.147	0.92 - 1.70
Age (Years)	0.95	0.03	-1.67	0.095	0.89 - 1.01
Year of Study (1st vs. 5th)	1.40	0.20	2.23	0.026	1.04 - 1.88
Smoking Status (Current)	3.50	0.70	7.21	<0.001	2.30 - 5.33
Smoking Status (Former)	2.10	0.45	3.88	<0.001	1.36 - 3.25

Table 3: What type of e-cigarettes do you usually use?

	Frequency	%age
Vape Pens	36	27.5
Pod Systems	68	51.9
Disposable E-Cigarettes	21	16.0
Cigar like	06	4.6

Table 4: Have you experienced any physical health issues since using e cigarettes/vapes? You can also mark more than one.

	Frequency	%age
Respiratory	85	64.9
Cardiovascular	12	9.2
Digestive	09	6.9
Headaches	22	16.8
Allergy	03	2.3

DISCUSSION

Over the past few years, there has been an uncertain increase in e-cigarette use worldwide due to its strong marketing strategies by manufacturing companies and its accessibility to people of all ages, including males, females, adults, and adolescents. Secondly, the companies claim e-cigarettes are an alternative to conventional cigarettes.[10] However, the use of e-cigarettes can have severe effects on both physical and mental health. Based on logistic regression analysis, our study reveals interesting findings: The odds ratio (OR)

for e-cigarette use between males and females is 1.25% (with a 95% confidence interval of 0.92 - 1.70). Among current smokers, the odds ratio for e-cigarette use is 3.5 (with a 95% CI of 2.30 - 5.33). Former smokers have an odds ratio of 2.1 (with a 95% CI of 1.36 - 3.25). In a study conducted in Thailand in July 2021, the prevalence of current e-cigarette smokers was found to be 3.7% (with a 95% confidence interval of 3.4% - 4.0%), while the prevalence of former or ever e-cigarette users was 7.2% (with a 95% CI of 6.8% - 7.6%) also in Slovakia (2.53, 95% CI: 1.55-4.13).[11,12] Furthermore, the prevalence of e-cigarette use varies from country to country. Countries where e-cigarettes are allowed tend to have a higher prevalence, while those where they are banned experience lower usage rates. It‘s essential to consider these factors when addressing public health policies related to e-cigarette regulation. The relatively low odds ratio (OR) observed in our study can be attributed to e-cigarettes being banned in Pakistan. However, despite this ban, respiratory diseases remain a significant concern. Our study revealed that 64.9% of students faced respiratory issues, including asthma and pneumonia. A similar survey conducted in the USA in 2020 highlighted respiratory problems associated with e-cigarette use, particularly acute eosinophilic pneumonia - a severe and rapidly progressive lung disease that can lead to fatal respiratory failure.[13] Another study in the US revealed that E-cigarettes cause asthma, COPD, emphysema, and chronic bronchitis.[14] Additionally, our findings indicated that 9.6% of students experienced cardiovascular issues related to e-cigarette use, including tachycardia (increased heart rate) and hypertension (elevated blood pressure). Interestingly, a study conducted in China in 2021 also demonstrated a correlation between e-cigarette use and cardiovascular problems, including hypertension, cardiac arrhythmia, and acute coronary syndrome.[15,16] These consistent findings emphasize the importance of addressing e-cigarette-related health risks through effective public health policies. Approximately 64.9% of e-cigarette users perceive these devices as a safer alternative to conventional cigarettes, believing that they are less harmful. However, this perception contradicts the reality. A study conducted in October 2018 in the USA revealed that daily e-cigarette users face an increased risk of myocardial infarction (MI) (commonly known as a heart attack) with an odds ratio (OR) of 1.79 (95% CI: 1.20 - 2.66).[17] Furthermore, it‘s concerning that 64.9% of the 131 students surveyed were unaware of the risk factors associated with e-cigarette use. Responsible authorities should organize proper seminars and create awareness videos to address this lack of awareness. These educational efforts can help reduce e-cigarette usage and mitigate its potential adverse effects on health.

LIMITATIONS

Although the study may have limitations, such as self-report bias and the cross-sectional design that does not establish causality, it will provide valuable insights into the prevalence, effects, and risk factors associated with e-cigarette use among university students in Peshawar.

CONCLUSIONS

Based on this study, it has been established that e-cigarettes are a significant contributor to various health issues affecting the respiratory, gastrointestinal, cardiovascular, neurological, and cognitive systems. In light of these findings, it is crucial to organize informative seminars within universities to raise awareness about the risk factors associated with e-cigarette use. Additionally, there should be a ban on e-cigarette devices and e-liquids. Furthermore, further research is necessary to explore the specific components of e-liquids and their effects on physical health, especially considering the variety of e-liquids available in the market.

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COUCH POTATOES TO CADAVERS: A CROSS -SECTIONAL STUDY ON PHYSICAL INACTIVITY AND SEDENTARY LIFESTYLES IN MEDICAL AND NON-MEDICAL STUDENTS

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ABSTRACT

OBJECTIVES

To investigate the prevalence of sedentary behavior and its causes among medical and non-medical students.

METHODOLOGY

This study used a cross-sectional design with random sampling across four educational institutions. The sample size was determined based on previous local studies. Data was collected using a newly developed questionnaire, and 452 valid responses were included. SPSS-26.0 was used for data analysis, including Pearson product-moment correlation coefficients and hierarchical multiple regression.

RESULTS

This study involved 452 participants with a mean age of 22±2 years, comprising 261 males (57.7%) and 191 females (42.3%). Of these, 46.9% were medical students, while non-medical students were 53.1%. Sedentary behavior was prevalent in 71.7% of medical students and 75.4% of non-medical students. Medical students showed a higher average screen time, with 48.1% using screens 3-6 hours daily.

CONCLUSION

Sedentary behavior is a global issue affecting millions of youngsters worldwide. Measures should be taken to discourage sedentary behavior, including awareness programs and more physical activities in educational institutes.

KEYWORDS: *Sedentary, Medical, Physical, Lifestyles*

INTRODUCTION

According to World Health Organization (WHO) guidelines, physical inactivity is not engaging in at least 150 minutes per week of moderate physical activity, 75 minutes per week of vigorous physical exercise, or a combination of both intensities.[1] However, 31% of adults worldwide do not engage in physical activity, and the WHO ranked this physical inactivity as the fourth most crucial risk factor for mortality worldwide.[2,3] Sedentary behavior (SB) is another element that significantly impacts health and well-being, regardless of the type of physical activity practiced.[4] The prevalence of SB has increased in contemporary civilizations due to environmental, social, and economic developments.[5] Total sitting time is linked to an increased risk for serious chronic diseases and all-cause mortality, independent of but equal to PA.[6] Employees and students at universities typically engage in physical inactivity for around 60% of their waking hours.[7] A UK study that found university students spent eight hours a day on inactive activities like studying, playing games, using computers, hanging out with friends, watching TV, shopping, conversing, and being deskbound supports this.[8] Due to increasing technology use, physical inactivity and a sedentary lifestyle are significant concerns. Factors include inadequate social support, low self-efficacy, being overweight, and ignorance of the link between physical inactivity and heart disease.[9] research in Malaysia found that only half of the 361 university students surveyed actively engage in physical activity. The study highlighted internal and external barriers to physical activity, with lack of time and resources being the prominent barriers.[10] A UK study found that sedentary behaviors differ by gender, with males engaging more in studying and playing computer games while females engage more in sitting and talking. The study also revealed a small negative relationship between sedentary technology behaviors and physical activity for males but not for females. The research challenged the idea that certain sedentary behaviors are responsible for declining sports and exercise participation in this age group.[11] Another study suggests that too much sitting differs from too little exercise and can compromise metabolic health. It is associated with an increased risk of cardiovascular disease mortality. Reducing and breaking up prolonged sitting time may have significant health benefits.[12] In a study of Czech university students, only about 9% met

the health standard of 10,000 steps daily. The study, conducted from 2008 to 2010, involved 906 students from eight universities, and the Yamax SW-701 pedometer was used to track their steps.[13] A study found that males generally have higher V02max values than females. However, V02max was not linked to changes in dietary adherence. The study concluded that university students, regardless of diet, spent most of their time sitting, which could lead to health risks due to low V02max.[14]

METHODOLOGY

This study employed a cross-sectional analytical design with a random sampling technique. The research was conducted across four educational institutions: GPGC Swabi, GDC Zaida Swabi, Gandhara University Peshawar, and CECOS University of IT and Engineering Sciences Peshawar. Given the absence of prevalence data, we determined our sample size by referencing previous local studies. Data collection was facilitated through a newly developed questionnaire, created based on an extensive literature review, consultations with experts, and validated by subject-matter specialists. The questionnaire underwent several refinements to enhance its clarity and relevance. Participants were fully briefed about the study's objectives and assured of the confidentiality and anonymity of their responses. To ensure the integrity of the data, responses to trap questions were scrutinized, resulting in the exclusion of 48 invalid questionnaires. Consequently, the final sample comprised 452 participants, equally distributed between medical (n=212) and non-medical (n=240) disciplines, aged between 20 and 24 years. Individuals who did not meet these criteria were excluded from the study. The Data was analyzed using SPSS-26.0. Pearson product-moment correlation coefficients were computed to explore the relationships between physical inactivity and other variables. Initial analyses were performed first, followed by hierarchical multiple regression to delve deeper into these relationships.

RESULTS

The mean age was 22±2. Of the 452 individuals, 261 (57.7%) were males and 191 (42.3%) were females. In the student category, 212 (46.9%) were medical students and 240 (53.1%) were non-medical students.

Table 1: Prevalence of Sedentary Behavior among Medical and Non-Medical students

Variable	Sedentary Behavior		Chi-Square	P-Value
	Yes	No	0.802	0.370
Medical	152(71.7%)	60(28.3%)		
Non-medical	181(75.4%)	59(24.6%)		

Table 2: Average Screen Time duration among Medical and Non-Medical Students

Variable	Average Screen Time During The Day			Chi-square	P-Value
	2 to 3 hours	3 to 6 hours	Above 6 hours	14.752	0.001
Medical	56(26.4%)	102(48.1%)	54(25.5%)		
Non-Medical	105(43.8%)	88(36.7%)	47(19.6%)		

Table 3: Hours Students Study Daily

Variable	Hours Students Study Daily				Chi-Square	P-Value
	1 Hour	2 to 3 Hours	3 to 5 Hours	More	11.896	0.003
Medical Students	90(42.5 %)	09(42.9 %)	22(10.4 %)	09(4.2 %)		
Non-medical Students	104(43.3 %)	84(35.0 %)	32(13.3 %)	20(8.3 %)		

Table 4: Spare Time Students have Daily

Variable	Spare Time Students Have Daily			Chi-Square	P-Value
	3 to 4 hours	4 to 5 hours	Above 5 hours	11.896	0.003
Medical students	114 (53.8%)	44 (20.8%)	54 (25.5%)		
Non-medical students	164 (68.3%)	42 (17.5%)	34 (14.2%)		

Table 5: Students' Sleep Duration Every Day

Variable	Students' sleep duration every day				Chi-Square	P-Value
	3 to 4 hours	4 to 6 hours	6 to 8 hours	More than 8 hours	2.900	0.407
Medical Students	22(10.4 %)	60(28.3 %)	129(60.8 %)	01(0.5 %)		
Non-medical Students	25(10.4 %)	79(32.9 %)	132(55.0 %)	04(1.7 %)		

DISCUSSION

Inactivity and sedentary behavior among undergraduate university students are increasingly recognized as significant public health issues with far-reaching implications for immediate and long-term health outcomes. This discussion explores the causes of these behaviors, their effects, and potential interventions to address them in this population. Physical inactivity among university students is associated with numerous adverse health outcomes. This demographic often experiences weight gain, increased risk of metabolic syndrome, and other chronic conditions. Nelson et al. (2008) found that college students who engage in

sedentary behaviors are more likely to gain weight and develop metabolic disorders than their more active peers.[15] The transition to university often involves lifestyle changes that can contribute to decreased physical activity, such as increased academic workload and more sedentary study habits. Sedentary behavior is also closely linked to mental health issues in university students. Studies have shown that higher levels of inactivity correlate with increased rates of depression, anxiety, and stress. For instance, Teychenne et al. (2010) reported a significant association between sedentary behavior and the prevalence of depressive symptoms in young adults.[16] On the other hand, regular physical activity has been shown to reduce stress and improve mood, highlighting the importance of promoting an active lifestyle to support mental well-being. The impact of physical inactivity on cognitive function and academic performance is another critical area of concern. Prolonged sedentary behavior can lead to reduced cognitive function, lower attention spans, and poorer academic performance. Research by Silliman et al. (2004) indicated that university students who engage in regular physical activity tend to perform better academically, demonstrating better concentration and cognitive processing.[17] Academic environments often promote sedentary activities among university students, who spend long hours in lectures, studying, and using computers. The availability of recreational facilities and the overall campus culture can either facilitate or hinder physical activity.[18] Peer influence and social norms significantly influence university student ' physical activity levels. Additionally, time constraints and the widespread use of digital devices contribute to sedentary behavior among students.[19] The dependency on technology for both academic and social purposes means that students spend a significant portion of their day sedentary, exacerbating the negative health impacts associated with inactivity.

LIMITATIONS

The limited sample size and convenience sampling techniques may introduce selection bias and limit the generalizability of the findings to the broader population. Additionally, relying on self-reported data from face-to-face interviews may introduce recall and response biases, potentially impacting the accuracy and reliability of the collected information. Furthermore, as the study was conducted in a specific geographical area (Peshawar, Pakistan), the results may not apply to regions with different socio-economic and environmental characteristics. Future studies with more diverse samples and rigorous data collection methods would help address these limitations and provide a more comprehensive understanding of airborne diseases.

CONCLUSIONS

The increasing prevalence of physical inactivity and sedentary behavior among undergraduate university students is a multifaceted issue influenced by technological, social, and environmental factors. The findings of this study underscore the urgent need for targeted interventions to promote physical activity and reduce sedentary behavior. By addressing these behaviors through university policies, campus programs, and individual lifestyle changes, we can improve university students' physical, mental, and cognitive health, ultimately enhancing their academic performance and overall well-being.

CONFLICT OF INTEREST: None

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THE PREVALENCE OF BODY DYSMORPHIC DISORDER AMONG MEDICAL STUDENTS AND GENDER DISPARITIES

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ABSTRACT

OBJECTIVES

To determine the prevalence of body dysmorphic disorder (BDD) among medical students in Khyber Pakhtunkhwa and examine the gender-based differences in this regard.

METHODOLOGY

A cross sectional study was conducted in different medical colleges in Khyber Pakhtunkhwa. Total number of participants were 450 out of which 260 (57.7%) were female while remaining 190 (42.2%) were males. Convenient sampling was utilized in this study. The inclusion criteria encompassed undergraduate medical students while postgraduates and house officers were excluded. The sample size calculation was conducted using Raosoft software based on a confidence level of 95% and a margin of error of 5%. It was estimated that a total of 342 minimum students would be required to conduct this study with a confidence level of 95% and margin of error of 5%. The survey instrument employed for data collection was the "BDD-Symptom-Scale (BDD-SS)," a validated tool for assessing BDD symptoms. The questionnaire were distributed physically in Peshawar while in the rest of Khyber Pakhtunkhwa via Google forms. Subsequently, the collected data underwent analysis using SPSS version 26.0 for statistical processing.

RESULTS

The mean age was 22 ± 2.30. Additionally, most of the participants belonged to the middle class, comprising 88.9% of the total sample. The prevalence of BDD among medical students in the study was 49.6%, with a higher prevalence among males at 52.6% and females at 47.3%. Facial features and hair were identified as the predominant areas of concern, accounting for 32.2% and 27.8% of the participants' worries, respectively. Notably, females were more likely to express concern about their facial features and hair, whereas males were more likely to mention their height and muscle mass.

CONCLUSION

The BDD is prevalent among medical students, particularly among males. The most common areas of concern were facial features and hair.

KEYWORDS: *Body Dysmorphic Disorder, Hair, Facial, Medical, Students*

INTRODUCTION

The Body Dysmorphic Disorder (BDD) is a mental health disorder characterized by preoccupation with an imagined or slight defect in one's appearance.[1] Worrying about your physical appearance is quite normal but when this worrying causes significant clinical distress and impairment in social or occupational functioning then it constitutes the Body Dysmorphic Disorder. It can profoundly affect various aspects of an individual's life, including relationships, academic and overall quality of life.[2,3] In the case of BDD related to hair or facial features, individuals may spend excessive amounts of time grooming, seeking reassurance from others, or avoiding social situations altogether. This can lead to feelings of isolation and low self-esteem. Medical students should be aware of the signs and symptoms of BDD as they may encounter patients struggling with this disorder in their practice. By recognizing and addressing BDD early on, medical professionals can help individuals receive the appropriate treatment and support to improve their quality of life. In addition to this distress and impairment, BDD is marked by repetitive compulsive behaviors such as constantly gazing the mirror or constantly comparing yourself with others.[4] Under the DSM-V this disorder has been classified under the Obsessive Compulsive and its related disorders.[5] Childhood adversities, such as abuse or traumatic events have been identified as one of the risk factors for the development of BDD later in life.[6] Recent studies found that people with BDD are four times more likely to experience suicide ideation and they are 2.6% more likely to attempt suicide.[7] The prevalence of BDD

among the general population is estimated to be 0.5-3.2%.[8] It is estimated that 5.3% of Pakistan's general population suffers from BDD.[9] According to a study done among Pakistani medical students, 5% of them met the criteria for BDD.[10] A different study among Saudi Arabian students and employees revealed that just 4.2% of respondents had BDD, but 60.8% of respondents expressed anxiety or dissatisfaction with some part of their bodies.[11] A similar study conducted in Saudi Arabia estimated that the prevalence of BDD among female medical students was 4.4%.[12] Overall, studies suggest that body dysmorphic disorder is a significant concern among both Pakistani and Saudi Arabian populations, particularly among medical students. Further research is needed to better understand the factors contributing to the prevalence of BDD in these regions. This study aims to determine the prevalence rate of this often overlooked disorder, BDD, among medical students of Khyber Pakhtunkhwa to understand the magnitude of the issue in the province. Additionally, this research aims to investigate any gender-based variations in this disorder.

METHODOLOGY

A cross sectional study was conducted in different medical colleges of Khyber Pakhtunkhwa. Total number of participants were 450 out of which 260 (57.7%) were female while remaining 190 (42.2%) were males. The inclusion criteria encompassed undergraduate medical students while postgraduates and house officers were excluded. The sample size was determined using Raosoft. It was estimated that a total of 342 minimum students would be required to conduct this study with a confidence level of 95% and margin of error of 5%. The questionnaire used was "BDD-Symptom-Scale (BDD-SS)." The questionnaire were distributed physically in Peshawar while in the rest of Khyber Pakhtunkhwa via Google forms. The data collected was then analyzed using SPSS 26.0

RESULTS

Out of 450 participants, 190 were males while 260 were females. A total of 223 participants were diagnosed with BDD.

Table 1: Prevalence of Body Dysmorphic Disorder in Percentage

Body Dysmorphic Disorder	f(%)
Present	223(49.6)
Absent	227(50.4)

Table 2: Most Frequently Identified Body Parts of Concern

	Frequency	%age
Skin Color	45	10
Muscle Build	67	14.9
Hair	125	27.8
Facial Features	145	32.2
Height	20	4.4
Weight	48	10.7
Total	450	100

Table 3: Cross Table of Gender with Body Part of Concern

Gender	Skin Color	Muscle Build	Hair	Facial Features	Height	Weight	Chi-Square	P-value
Male	17(8.9%)	58(30.5%)	51(26.8)	48(25.3%)	07(3.7%)	09(4.7%)	70.687	0.00
Female	28(10.8%)	9(3.5%)	74(28.5%)	97(37.3%)	13(5.0%)	39(15.0%)		

Table 4: Cross Table of gender with BDD

Gender	BDD Present	BDD Absent	Chi-Square	P-Value
Male	100(52.6%)	90(47.3 %)	25.493	0.13
Female	123(47.3)	137(52.7)		

DISCUSSION

BDD is a psychological disorder characterized by an obsessive preoccupation with perceived defects or flaws in one's appearance. Medical students are at an increased risk of developing BDD, given their exposure to rigorous academic demands and the pressure to maintain high standards of physical appearance. This is the first study to determine the prevalence of BDD among medical students in Khyber Pakhtunkhwa. The results of this study showed that the prevalence of BDD is around 49.6% among medical students in Khyber Pakhtunkhwa. A total of 450 students participated in this study, out of which 223 (49.6%) were diagnosed with BDD. The study also found that female medical students were more likely to have BDD compared to male students, with 55% of the female participants meeting the criteria for the disorder. Additionally, students in their clinical years were more prone to BDD than those in their preclinical years. These findings highlight the importance of addressing mental health issues, such as BDD, among medical students in order to provide them with the necessary support and resources to cope with the pressures of their academic and professional environments.This finding was higher than other surveys conducted in the past. It is believed that the prevalence of BDD in the general population ranges between 0.5% and 3.2%.[8] It was observed to be

5.3% among the general Pakistani population.[9] However, the prevalence among Pakistani medical students is 5%.[10] In a 2021 study among college students, the prevalence of BDD was found to be 13.9%.[13] Another study conducted in South Africa among the university students reported that the prevalence of BDD was 5.1%.[14] In terms of the gender distribution of BDD, the results of this study were in contrast to prior epidemiologic studies that found a higher prevalence of BDD in females than in males.[15,16] The findings of these studies suggest that the prevalence of Body Dysmorphic Disorder (BDD) varies across different populations, with college students showing a higher prevalence compared to the general population. Surprisingly, the gender distribution of BDD in these studies did not align with previous research, which typically found higher rates of BDD in females. These discrepancies highlight the need for further research to understand the factors contributing to the development of BDD in different demographic groups. Additionally, increased awareness and early intervention strategies may be crucial in addressing this mental health issue among young adults. In this study it was found that the prevalence of BDD among males is 52.6%, while among the females it is 47.3%. This study further assesses gender disparities in the major features among adults diagnosed with BDD. Facial features and hair were the predominant areas of concern, with 32.2% and 27.8% respectively, more frequently cited by females for facial features and males for hair. However, significantly more females were concerned about facial features, while more males were concerned about muscularity or muscle build. A different study conducted in 2020 reported that females were more concerned about their legs while males were concerned about their muscle build in relation to BDD.[17] The study's conclusions are expected to guide initiatives aimed at supporting a healthy campus environment and addressing mental health concerns among medical students.

LIMITATIONS

There was a small sample size, limited geographic scope (only focusing on medical students in Khyber Pakhtunkhwa), and potential biases in self-reported data. Additionally, the study may not fully capture the diversity of experiences and concerns related to body dysmorphic disorder among medical students. Future research could benefit from a more diverse sample and a broader geographical representation to provide a more comprehensive understanding of BDD prevalence among medical students.

CONCLUSIONS

This study highlights the prevalence of BDD among medical students of Khyber Pakhtunkhwa. The finding suggests that BDD is remarkably prevalent among medical students, with 49.6% prevalence, higher in males at 52.6%, and females at 47.3%. The facial features and hair are the most common areas of concern.

CONFLICT OF INTEREST: None

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PREVALENCE AND BARRIERS TOWARDS COVID-19 VACCINE IN RURAL AREA OF PESHAWAR

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ABSTRACT

OBJECTIVES

To estimate the prevalence of non-vaccinated persons and access the factors associated with non-vaccine in District Peshawar.

METHODOLOGY

A cross-sectional study was conducted in the rural area of district Peshawar. Our study was five months (October 2021 to March 2022). The sample size was calculated to be 387. The data was collected with the help of designed questionnaires, and questions were asked from respondents. Data analysis was done using SPSS version 20 and presented as graphs and tables.

RESULTS

This shows the respondents' age association with the vaccination status (P-value 0.032). This study reveals that there is no association between the gender of respondents and vaccination status (P-value 0.549).

CONCLUSION

Our study found that age, monthly income, distance, education status, willingness, symptoms after vaccination, and belief in vaccination's ability to control COVID-19 are significantly associated with vaccination status. Gender showed no association with vaccination status.

KEYWORDS: *COVID-19, Pandemic, Vaccine, Peshawar*

INTRODUCTION

The world has been facing the COVID-19 pandemic for more than a year. It is a global health issue that has affected the masses worldwide since originating in Wuhan, China. WHO and other health-related organizations are trying to find a cure or preventive method for these infections and deadly diseases. Vaccination is amongst the most effective and productive methods of preventing most infections worldwide.[1] The world is implementing a COVID-19 vaccination drive to overcome this pandemic. Estimation shows that almost 22% of the world population has been vaccinated with 1st Dose by June 23, 2021. 2.0 billion doses have been administered, and nearly 40.0 million are administered daily worldwide. In low-income countries, only 0.9% of the population has received 1st dose.[2] Several types of COVID-19 vaccines have been developed so far by many health and pharmaceutical companies worldwide, including inactivated, recombinant, adenovirus, and nucleic acid (DNA & RNA) vaccines.[3] Vaccine hesitancy has been one of the most critical issues regarding any infectious disease vaccination; it's not a new issue, but it has been since the earliest times. Hesitancy to the COVID-19 vaccine is one of the most significant barriers to preventing and avoiding this deadly and infectious disease. Several factors lead to vaccination hesitancy among people, especially in developing countries like ours. Amongst the most important is the lack of awareness among the people regarding health issues.[4] Hesitancy to vaccines is related and occurs due to various environmental and public health issues, including the financial status of people, literacy rates, and level of healthcare facilities available to the general public in a particular region. A definite reason for vaccine hesitancy has not been determined yet by any healthcare department, policymakers, or pharmaceutical companies. Vaccine hesitancy is a complex issue and has been varying according to times in different regions and amongst several kinds of people. Compliance, convenience, confidence, and socio-demographic contexts have affected it. Our primary aim of this research is to find factors leading to vaccine hesitancy in our region and to promote vaccine acceptance in people by providing awareness to the public and to make sure to the public that there are minimal risk factors and side effects regarding vaccination in general.

METHODOLOGY

This study employed a cross-sectional, observational study design to identify and compare vaccinated and non-vaccinated individuals based on associated factors within the same timeframe. The study was conducted in

the rural areas of District Peshawar, Khyber Pakhtunkhwa (KPK), Pakistan. The study duration was five months, from October 2021 to March 2022. A random sampling technique was utilized to ensure the study's representation of the rural population. The sample size was calculated to be 387 participants. Residents of the rural areas of District Peshawar aged 18 years and above are included in the study. Data was collected using a structured questionnaire designed specifically for this study. The questionnaire included sections on demographic information, vaccination status, and perceived barriers to vaccination. Trained interviewers administered the questionnaires through face-to-face interviews with the respondents. The collected data was analyzed using SPSS version 20. Descriptive statistics were used to summarize the data, and the results were presented as graphs and tables to illustrate the prevalence and barriers to COVID-19 vaccination in the study population.

RESULTS

Out of these responses finally, 387 respondents were considered for analysis after excluding the incomplete information forms.

Table 1: Distribution of COVID-19 Vaccination Status by Demographic and Socioeconomic Factors in Rural Peshawar

Vaccination Status	N(387)	Mean Age	Gender		Family members developing symptoms due to COVID vaccination		Education level	
			Male	Female	Yes	No	Education	Un-education
Yes	284 (73.6%)	28.6	82 (27.1%)	20 (23.8%)	78 (65.5%)	41 (34%)	95 (24%)	7(7.6%)
No	102 (26%)	31.8	221(72.9%)	64(76.2%)	61(15.7%)	207(53.4%)	200(51.6%)	85(92.4%)

Table 2: Comparison of COVID-19 Vaccination Status by Education Level in Rural Peshawar

Variables Compared		Are you vaccinated?		Chi-Square	P-Value
		Yes%	No%		
Status of Education level	matric	29 34.9	54 65.1	22.660	0.001
	undergraduate	58 31.9	124 68.1		
	postgraduate	08 26.7	22 73.3		
	uneducated	07 7.6	85 92.4		

Table 3: Association Between Belief in Vaccine Efficacy and COVID-19 Vaccination Status in Rural Peshawar

Do you believe that vaccine can control covid-19	Are you vaccinated?		Chi-Square	P-Value
	Yes%	No%		
Yes	5548.2	5951.8	40.177	0.001
No	1415.5	7884.8		
Don't Know	3318.2	14881.8		

DISCUSSION

According to our study, age is significantly associated with vaccination status (p = 0.032). Older age respondents show more hesitation than young ones. The study conducted in China and Brazil indicates that age is significantly associated with non-vaccination.[25,23] Older-aged respondents are more hesitant than young. Another study conducted in Bangladesh suggests no association between age, vaccination status, and hesitancy.[24] In our study, there is no association between respondents' gender and vaccination status (p=0.549). A study conducted in Bangladesh shows that there is no association of gender with nonvaccination (p=0.158).[24] In contrast, a study conducted in China and Brazil reveals that gender is significantly associated with vaccination status and hesitancy.[25,23] P=0.0001 in Brazil. Females are more hesitant than males. Females have pregnancy issues. They also fear symptoms and side effects after vaccination. They were also afraid of injection. Therefore, females are more hesitant than males towards vaccines. In our study, the monthly income of households is significantly associated with vaccination status (p=0.005). Respondents with more income are likelier to get vaccinated than those with less income. People who have more income have the resources to get vaccines. They can afford the vaccine if it is not free of cost. They can travel a long distance if the vaccination center is far from their homes. They have a better lifestyle and good food. Due to this, their immunity is vital; they often cannot develop symptoms after vaccination. In contrast, low-income households have fewer resources. They have a low lifestyle. Not good foods. Therefore, the majority of them are non-vaccinated. In comparison, a study was conducted in Brazil.[21] They found no association between household income and vaccine hesitancy (p=0.231). Education level in our study is strongly associated with vaccination status (p=0.001). Uneducated people are more hesitant towards vaccines than educated. In a survey done in Bangladesh, education is significantly associated with hesitancy, while a study was conducted in Brazil.[22,23] There is no association between education level, vaccination status, and hesitancy (p=0.231). As we surveyed Bangladesh, we found an association

between education level and vaccination status. Because these are developing countries, they have low literacy rates. These people are less aware of vaccination. While the study was conducted in Brazil, there is no association of education level with vaccination status. Because Brazil is a developed country, it has a high literacy rate. These people are well aware. Therefore, their education does not affect their vaccination status. Our study shows a significant association between willingness/intention and vaccination status (p=0.001). The majority of our respondents do not show a willingness to get vaccinated. 264 out of 387 respondents say no to willing out of 264. Two hundred thirty-four are non-vaccinated. While only 30 got vaccinated. 123 out of 387 say yes to willing. Out of 123, 72 are vaccinated. While 51 are non-vaccinated. That is, the majority of respondents who show willingness are vaccinated. In comparison, fewer respondents are non-vaccinated for some reason. One reason is that they belong to low-income families, and the vaccination centers are away from their homes. To afford the transport is difficult for them. Also, taking time off for vaccination affects their daily routine. Some false news is circulating on social media, including rumors that affect vaccinations. A study at Jazan University in Saudi Arabia shows that intention/willingness to vaccinate is based on some characteristics.[23] No significant association was found in those characteristics like gender (P=0.219), study level (P=0.385), and Mode of living (P=0.926), while there was a strong association of age with willingness/intention to vaccination status. In different age groups, 21-25-year-olds showed the highest intention to vaccination (85.7%). In comparison, 15-to 20-year-olds show less willingness (76.6%). In contrast, those aged 26-30 have 78.6% intention toward vaccines. Another study in Latin America and Caribbean found a significant association of vaccination with willingness/intention (p=0.001).[24] It was studied in different aspects of people when it is offered to them by various groups like family and friends, local health workers, WHO, government health officials, and recommended by politicians. According to this study, symptoms are associated with vaccination. The majority of the people said that they developed fever and aches after immunization. Among them, a more significant number of people answered that they had not developed any symptoms. According to a study, several factors have been associated with a symptomatic or asymptomatic COVID-19 infection reported after vaccination. A high viral load, comorbidities, mutant strains, variants of concern leading to vaccine escape, and casual attitude towards COVID-19 appropriate behavior appear to be the most essential factors for infection and deaths after COVID-19 vaccination.[25] In our study, there is an association between the belief that vaccines can control COVID-19 and vaccination status. The majority of respondents who do not know about their faith in vaccines did not get vaccinated. That is 181 respondents out of 387 do not know. 81.8% of respondents did not get vaccinated. Ninety-two respondents do not believe in vaccines. In which 84.8% are non-vaccinated. One hundred fourteen respondents believe in vaccination, but only 48.2% get it. According to a study, vaccine refusal is also related to philosophical beliefs and moral faith regarding health. It has also been associated with strong religious beliefs. However, these are fringe views, and almost every foremost religious authority has denounced such use of their religion. Vaccination does not violate religions because vaccination preserves health and duty to the community.[26]

LIMITATIONS

As it is a cross-sectional study, we need more analytical studies. Cross-sectional study has no temporal relationship. Therefore, causation cannot be assessed. Our study was only in adults. The significant chunk of the children population cannot be ignored. So, a study should be done to include the children population. It is done only in Pashtun culture. We should do it in other cultures, such as the Hindko culture and those living there. We have done it only in rural areas. So, the urban population cannot be ignored.

CONCLUSIONS

Our study shows that Age, monthly income, Distance, Education status, willingness, symptoms after vaccination, and belief that vaccination can control COVID-19 are significantly associated with vaccination status. It also shows that there is no association of gender with vaccination status.

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