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Prevalence of Junk Food Consumption and its Association with Physical Activity and Sleep Quality Among Research Scholars in Public Universities

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ABSTRACT

This study explored the relationship between three different variables including physical activity levels, junk food intake and sleep quality among university students. It was conducted via cross-sectional design involving 329 participants (enrolled in BS and M.Phil. programs) from five different public universities. All the data were collected using validated assessment tools like IPAQ, Junk Food Consumption Survey, and PSQI. A significant association between these lifestyle factors was determined by statistical analysis. The findings indicated that individuals with poor sleep quality were more likely to consume fast food, particularly if they experienced daytime dysfunction because of sleep issues. On the other hand, more physical activity levels were linked to greater responsiveness of the health consequences of consuming junk food. By adding to existing research, this study contributes to the evidence supporting comprehensive interventions targeting multiple aspects of students' lifestyles to foster healthier living environments within academic settings.

| **Keywords:** | Physical Activity, Sleep Quality, Junk Food Consumption, Public Universities |

Introduction

Nationalism In recent years, the correlation between lifestyle habits and health outcomes has garnered significant attention in scientific research. Sleep quality, eating habits, and physical exercise are some of the most important lifestyle factors that affect overall wellbeing (Sejbuk, Mirończuk-Chodakowska, & Witkowska, 2022). Young adults pursuing higher education frequently face obstacles that affect their social and physical well-being. The quantity and quality of university students' sleep, their level of physical activity, and their intake of junk food are important elements that affect their overall wellbeing (Wickham, Amarasekara, Bartonicek, & Conner, 2020). However, in the current situation, problems with sleep are becoming more common among young college students.

The evaluation of sleep quality is prejudiced by a number of quantitative elements, like sleep latency, duration, and nocturnal awakenings, along with subjective factors, like felt relaxation and depth of sleep (Azli, Noordin, Atan, & Ikram, 2023). Interestingly, sleep has a significant impact on a person's health because it is an important physiological function and the sleep disturbances can have negative impact on health (Porkka-Heiskanen, Zitting, & Wigren, 2013). Since we expend so much of our lives sleeping, the condition of "sleep well-being" is critical for the duration of our lives. In fact, sleep disorders, which include problems including inadequate sleep and poor sleep quality become a major health problem (Santos et al., 2023).

On the other hand, junk food can be defined by its low nutritional content, price, and general accessibility. These foods are usually deficient in vital nutrients and high in calories,

salt, and saturated fat, but low in Fe, Ca, and dietary fiber (Bhaskar, 2012). Fast food products that are frequently consumed include fast food substances, drinks and similar items (Mandoura et al., 2017). Junk food is getting more and more popular around the world, and consumption is rising steadily. Ready-to-eat, tinned, and long-lasting preserved foods are gradually replacing traditional nutritional options (Blanchet, Nana, Sanou, Batal, & Giroux, 2018). Although the consumption of these meals has peaked in rich countries, a growing trend has been noted in emerging nations across the globe (Mukhopadhyay, Goswami, Mondal, & Dutta, 2020).

Young individuals continue to take large amounts of junk food even they know plenty of evidence of the dangerous consequences of fast food on human health. This increasing trend of consuming more junk food results in increased risk of heart disease, diabetes, fatness, and hypertension (Payab et al., 2015). These junk foods are commonly made with poorer components like added sugars and processed carbohydrates even there are so many healthier alternatives are available (Gulati & Misra, 2017). Junk food is distinguished for having more salt content that is often added as a preservative to increase flavor and demand. Young and Children find this type of fast food to be especially attractive (Bohara, Thapa, Bhatt, Dhami, & Wagle, 2021).

However, when it comes to university students, especially those seeking advanced degrees like a Bachelor of Science (BS) or Master of Philosophy (MPhil), lifestyle decisions are very crucial (Barzegari, Ebrahimi, Azizi, & Ranjbar, 2011). This is due to the fact that they have to balance the demands of their studies with their own health. The developmental stage that spans late adolescence to early adulthood is known as emerging adulthood, and it frequently corresponds with major lifestyle changes, such as adjustments to eating habits, sleeping schedules, and physical activity (Saat et al., 2021). Additionally, it is also important to experience relationships between university scholars' junk food intake, physical activity levels, and sleep quality to identify any possible relationships between these factors.

Despite that, it has been observed that engaging in physical activity is crucial for meeting the demands of modern life. It has a great impact on our everyday functioning and overall health, which may reduce healthcare costs (Nowak, Bożek, & Blukacz, 2019). Known more broadly as an element conducive to increasing people's health, a physically active lifestyle exerts considerable influence on health in various spheres (Poulsen & Ziviani, 2004). It is also important to see that a fifth of the world's population or a significant segment of the global populace is entirely inactive (Lee et al., 2012). It has also been found to have relationship with both the quality of sleep and eating habits in regards to junk foods for the people of other countries (Sjøgaard et al., 2016).

For this reason, it becomes pertinent to determine the correlation between physical activity levels, sleep quality, and frequency of the junk food consumption among research students in public universities. That is why to assess the relationship between sleep quality, behaviors more specifically junk food intake, and physical activity of the research students of public university was the main aim of this study. This research also aims to contribute to advancing knowledge and improving theoretical understanding of health behaviors and lifestyle transitions among research students in public universities by using theoretical frameworks as a source of foundations and guide for designing and implementing better health promotion programs and policies among this vulnerable and understudied group of university populations.

Literature Review

The literature review targets to synthesize current research on sleep quality, junk food intake, and physical motion among various populations. Malik et al. (2019) discovers that the intake of more junk food, categorized by its low nutritional and high caloric content, causes significant health risks to individuals, particularly young scholars of university.

Additionally, it was also observed that regular intake of fast food is linked with an increased threat of fatness, metabolic disorder, cardiac syndromes, and mental health illnesses. This might be due to the fact that fast food lacks basic human nutrition required for a healthy human being.

A study by Warburton, Nicol, and Bredin (2006), discovered that the consistent physical activity is known as a foundation of maintaining ideal health and well-being among people of all ages. Engaging in physical movement has been exposed to have several health benefits, as well as improved cardiac well-being, improved mental health, and reduced risk of chronic diseases. While existing literature has examined the individual effects of sleep cycle, junk food intake, and physical movement on health outcomes, relatively few studies have explored their interconnections among research students in public university settings (Grandner, Jackson, Pak, & Gehrman, 2012). However, the emerging evidence suggests that these lifestyle factors might be closely intertwined and collectively influence student well-being.

In a similar realm, Boylan, Hardy, Drayton, Grunseit, and Mihrshahi (2017) conducted a study spanning from 2010 to 2015, which involved a cohort of N = 7564 children and 6945 individuals with whole data on junk food consumption. The findings revealed that individuals who consumed junk food were likely to have unrestricted access to drinks and receive sweets as rewards frequently. Surprisingly, there was a decrease in the amount of frequent junk food consumers observed in 2016 compared to 2011. Similarly, a research by Owens et al. (2014) examined the intricate link between sleep worth as well as mental fitness consequences among university scholars. The study followed a cohort of N = 1200 over two years, evaluating sleep patterns and mental health position. It was concluded that adequate amount of night sleep positively impacts the mental health position of university scholars.

Material and Methods

Research Design

To gather data from a sample of individuals at a single point in time, the study implied a cross-sectional research design, allowing correlation investigation.

Participants

The individuals in this research were selected form five different public universities enrolled in BS and MPhil programs. A total of 329 students were selected for this research, with a demographic profile concise in Table 4.1. The selection criteria included research students enrolled in BS or MPhil programs at the selected universities and falling within the typical age range of 18 to 26 years old (M =23.64, SD =1.90). While in terms of gender distribution, there were 157 males and 172 females. Out of the total 329 participants, 17 were married while rest of the individuals (312) were unmarried.

Measures

Following are the tools that were utilized to measure physical activity, junk food consumption, and sleep quality:

International Physical Activity Questionnaire: The questionnaire developed by Craig (2017) helps to calculate individuals' level of physical movement over the past seven days. The instrument was used after following approval from the authors. There are two versions of IPAQ: one is a complete version whereas, the other is a short version of IPAQ that comprises of seven items. However, the study involved the shorter version of IPAQ due to

its ease of use and high validity levels (α = 0.80). It covered various perspectives such as work activities, transportation, and relaxation activities.

Junk Food Consumption Questionnaire: This self-reported questionnaire developed by Sequeira, Sowmya, Thomas, Mahajan, and Kumar (2014) used to find the participants' patterns of fast-food intake. This questionnaire was utilized following authorization from the respective authors. Members rated their agreement with report on Likert scale ranging from intensely disagree to intensely agree.

Pittsburgh Sleep Quality Index: To assess the applicants' sleep health and interruptions during the previous month, a tool named PSQI that was developed by Buysse et al. (1989), was used. It contains 19 self-rated tasks that yield seven module scores for individual excellence, inactivity, duration, usual capability, interruptions and usage of sleep medicine during the day. Lesser sleep quality is shown by higher PSQI scores.

Procedure

Participants were enlisted through convenience sampling from the selected five public universities. Data collection was completed in a paper form, administering the questionnaires to participants. Applicants were trained to fill the questionnaires with honesty and to the best of their capability. Data management procedures prioritized privacy and security, with data securely stored and available only to authorized workers.

Ethical Approval and Consent

The study firmly followed ethical strategies, obtaining prior approval. Additionally, before data assortment, ethical approval was taken from the relevant official examination boards. Furthermore, informed consent was attained from all members prior to their contribution in the research.

Data Analysis

SPSS version 25.0 was utilized for efficient data processing. The data got from the study were exposed to analysis to discover the relationships between sleep excellence, physical movement, as well as junk food ingestion among scholars enrolled in Bachelor of Science and Master of Philosophy programs at different public universities. Data analysis involved descriptive statistics to outline participant demographics, Pearson correlation analysis to uncover relationships between lifestyle factors, and independent samples t-tests to compare behaviors.

Results and Discussion

The demographic characteristics of the participants (N = 329) provide appreciated insights into the arrangement of the sample, which includes research students enrolled in BS and M.Phil. programs at different public universities.

Table 1
Demographic Features of Participants (N=329)

Variables	Frequency (f)	Percentage (%)
University		
1	66	20.1
2	66	20.1
3	66	20.1
4	66	20.1
5	65	19.8
Age	M =23.64	SD =1.90

Qualification		
BS	178	54.1
MPhil	151	45.9
Gender		
Male	157	47.7
Female	172	52.3
Marital Status		
Married	17	5.2
Unmarried	312	94.8
Family Earnings		
Fewer than 50k	47	14.3
50k-1 lac	113	34.3
1 lakh-1.5 lakh	97	29.5
More than 1.5 lakh	72	21.9

Table 1 précises demographic features of participants (N = 329) from five different public universities. The participants were distributed across these universities extended from 19.8% to 20.1%. The mean age of individuals were 23.64 years along a SD of 1.90. While in terms of educations, 54.1% were enrolled in BS programs, while 45.9% were in M.Phil. programs. Gender distribution was closely stable, with 47.7% females and 52.3% were males. The majority of participants were unmarried having percentage of 94.8%. All participant's family have varied income, with 14.3% earning less than 50k, 34.3% earning between 50k and 1 lakh, 29.5% earning between 1 lakh and 1.50 lakhs, and 21.9% earning more than 1.5 lakhs.

Correlation between SQ, PA and Junk Food Intake

The importance of relationship between sleep quality and dietary habits, particularly junk food consumption was shown in these findings. Additionally for promoting healthier eating behaviors among individuals, sleep quality issues were implicated, highlighting the connection of lifestyle factors in manipulating overall well-being.

In examining these results, it's necessary to understand that greater scores on subjective sleep quality modules indicate poorer sleep quality due to reverse scoring. On the other hand, lower scores recommend a more positive influence on sleep quality. Likewise, greater scores on physical activity mechanisms indicate a positive impression, while lower scores propose a negative impression. For fast food ingestion, higher scores show a more important presence of junk food consumption, showing a negative impact, while lower scores suggest better eating habits.

Table 2
Associations between sleep quality, level of physical activity and consumption of junk food

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Subjective Sleep Quality	1.02	.69	-	.34**	.27**	.26**	.19**	.11	.27**	.66**	.54**	-.07	.09	.04	.13*	.12*	.01	.10
2. Sleep Latency	1.15	.86		-	.12*	.34**	.32**	.07	.21**	.67**	.55**	-.04	-.05	.02	.01	-.04	-.06	.03
3. Sleep duration	.79	.79			-	.32**	.02	.10	.11*	.54**	.43**	-.01	-.04	.06	.07	.04	-.02	.01
4. Habitual Sleep Efficiency	.14	.50				-	.01	.03	.18**	.54**	.37**	.09	.01	-.02	.02	-.05	-.00	.11

	M	SD													
5. Sleep Disturbances	.64	.48	'	.12*	.17**	.43**	.38**	.05	-.00	.10	-.02	.07	-.03	-.01
6. Use of sleep medication	.11	.44	'	.18**	.34**	.22**	-.04	-.01	-.04	-.03	-.02	-.04	.08	
7. Daytime Dysfunction	1.07	.79	'	.59**	.46**	.06	.10	.07	.08	.12*	.04	.00		
8. PSQI Score	4.92	2.55	'	.79	.00	.03	.06	.08	.07	-	.07			
PSQI Component category	1.32	.47	'	-.01	.01	.04	.01	.03	-.04	.06				
Physical Activity level	1.99	.62	'	.04	'	.04	'	'	'	'				
JF-1	.3	.1	'	'	'	'	'	'	'					
JF-2	.1	7	'	'	'	'	'	'						
JF-3	.2	8	'	'	'	'	'							
JF-4	.2	.1	'	'	'									
JF-5	.1	8	'	'										
JF-6	.2	9	'											

The Table 2 summarized the associations between sleep health, physical movement, as well as junk food intake variables, revealing significant associations among these factors. The first nine components were related to individual sleep quality, while the following seven components were related to physical activity. The left-over components (eleven onwards) were related with junk food ingestion. The Pearson correlation analysis conducted on these variables revealed several noteworthy findings. There was a major positive association between the score of subjective sleep quality and eating junk food nowadays (r = .13, p < .05), as well as with exchanging regular meals with fast food (r = .12, p < .050).

Although tendency of the association was positive, while the impact was negative, indicating that individuals with poorer subjective sleep quality tend to exhibit unhealthy eating behaviors, consuming more junk food. The analysis also revealed significant findings regarding the association between sleep quality, physical movement, and attitudes towards fast food. There was major positive relationship detected between score of sleep daytime dysfunction and exchanging regular meals with fast food (r = .12, p < .05). This specifies a positive relationship between these variables, signifying that individuals experiencing daytime dysfunction due to poor sleep quality are more likely to substitute their regular meals with junk food.

Despite the positive correlation, the impact was negative, highlighting a concerning trend where individuals with sleep disturbances resort to unhealthy dietary choices. Furthermore, the results unveiled highly significant positive relationships between the score of physical activity level and concern regarding the effects of fast food on healthiness (r = .15, p < .05). This implies that persons with greater levels of physical movement also exhibit a greater level of concern concerning the adverse effects of fast food on their fitness.

Comparison of SQ, PA, and JFC among BS and M.Phil. Scholars

Table 3 presents a comparison of scores related to sleep quality, physical movement, and fast-food intake between Bachelor of Science and Master of Philosophy scholars. A t-test analysis revealed a significant difference in junk food intake before coming to university (t (329) = 2.30, p < .05). Specifically, BS students reported a higher mean score for junk food intake before university (M = 1.96, SD = .739) paralleled to M.Phil. scholars (M = 1.72, SD = .704). The upshot size, as indicated by Cohen's d, was 0.33, suggesting a small effect.

Table 4.3
Comparison of SQ, PA, and JFC among BS and M.Phil. Scholars

Variables	BS		M.Phil.		t	P	Cohen's d
	M	SD	M	SD			
Subjective sleep quality	1.03	.724	1.01	.648	.281	.779	0.02
Sleep Latency	1.14	.835	1.17	.890	-.264	.792	0.03
Sleep Duration	.84	.836	.72	.732	1.383	.168	0.15
Habitual sleep efficiency	.12	.483	.15	.526	-.516	.606	0.05
Sleep Disturbances	.63	.484	.66	.477	-.496	.620	0.06
Use of sleep Medication	.08	.366	.14	.504	-1.139	.255	0.13
Daytime Dysfunction	1.09	.776	1.05	.807	.422	.673	0.05
PSQI component global score	4.96	2.600	4.89	2.490	.157	.876	0.02
PSQI Component Category	1.33	.470	1.32	.467	.154	.878	0.02
IPAQ Category	1.96	.684	2.03	.541	-.956	.340	0.11
JF-1	3.54	1.020	3.40	1.053	1.231	.219	0.13
JF-2	1.96	.739	1.72	.704	2.985	.003	0.33
JF-3	2.39	.817	2.19	.763	2.229	.026	0.25
JF-4	2.78	1.122	2.64	1.110	1.076	.283	0.12
JF-5	2.00	.803	1.96	.840	.438	.662	0.04
JF-6	2.48	.916	2.62	.979	-1.269	.205	0.14

Furthermore, a significant difference was observed in the consumption of junk food nowadays (t (329) = 2.23, p < .05). BS students exhibited a higher mean score for current junk food consumption (M = 2.39, SD = .817) paralleled to M.Phil. scholars (M = 2.19, SD = .763). The upshot size for this comparison was 0.12, again indicating a small effect. Regarding the other variables measured, no major changes were found between BS and M.Phil. students in individual sleep quality, inactivity, sleep period, usual efficiency, instabilities, use of medicine, daylight dysfunction, PSQI component global score, PSQI Component Category, IPAQ Category, and various aspects of junk food consumption (JF-1 to JF-6). These results suggest that while there are differences in junk food consumption habits between the two groups, other aspects related to sleep quality, physical activity, and specific junk food behaviors do not significantly differ between BS and M.Phil. students.

Discussion

This study was aimed at exploring the association among physical movement, fast food intake, and sleep quality among BS and M.Phil. scholars. The study used a cross-sectional research design, that aided in gathering data from a sample of individuals at a single point in time, allowing correlation investigation. Data analysis involved descriptive statistics to outline participant demographics, Pearson correlation analysis to uncover relationships between lifestyle factors, and independent samples t-tests to compare behaviors. The findings indicated that individuals with poor sleep quality were more likely to consume fast food, particularly if they experienced daytime dysfunction because of sleep issues. Additionally, more physical activity levels were linked to greater responsiveness of the health consequences of consuming junk food.

The association analysis produced significant links between sleep quality, physical movement, and fast-food ingestion. Specially, individuals recording unhealthy dietary performances inclined to exhibit poorer sleep quality, with increased intake of junk food. This finding is in line with a previous research conducted by Young, Sidell, Grandner, Koebnick, and Troxel (2020) on young adult women. The findings of the study portrayed that fast food consumption was one of the major factors contributing to sleep disturbances among these women. Additionally, high caffeine use in the form of energy drinks was also observed to have the highest prevalence in this regard. Similarly, another study conducted

to assess the association between unhealthy diet and poor sleep among school children. The findings indicated a reduction in overnight sleep due to increase intake of fast food among these children (Holmes, St. Laurent, & Spencer, 2021).

On the other hand, individuals involved in higher levels of physical activity established more awareness regarding the health consequences of consuming junk food, signifying a positive association between physical activity and dietary awareness. It was also observed that those having regular physical activity consumed less junk food thus improving their overall health. This finding is in line with previous study conducted on university students in Korea to assess the association between consumption of junk food and prevalence of physical activity. Results showed that higher physical activity levels were associated with reduced junk food consumption among these university students (Jang & Oh, 2013)

Moreover, comparing between the BS and M. Phil. students painted several differences between pre-university and current ingesting habits of junk foods, more significantly, BS students showing comparatively higher ingesting rates. Nonetheless, other aspects pertaining to sleep quality, physical activity, and specific fast-food consumption between the two groups of students did not show any significant alterations. However, one can make a point that physical exercise by having a regular routine is beneficial to the body through better night's sleep and fights food cravings among others. However, more work is needed to make a connection between these relationships more specific and distinguish whether these interconnections have direct effects on student health. (Lemma, Gelaye, Berhane, Worku, & Williams, 2012)

Furthermore, research done on this review point to the fact that there is need to consider global impact of lifestyle issues on university students with several research papers being conducted cross different countries to capture the modern world picture concerning university students living habits revealing poor sleep quality, poor diet and lack of exercising among university students. These pieces of research highlight the need to address the health concerns and implement strategies in order to encourage healthier living amongst university students across the globe. Hosper & Dishman (2008) literature review brings about new awareness in understanding the influence of sleep quality, junk food intake and physical activity among the research students.

Conclusion

Continuing, this research examines the health behaviors of university scholars in a quantitative way and stresses the importance of paying attention on the lifestyle factors that lead to healthier living styles and, consequently, better performance on academy. A direct relationship between poor sleep quality, unhealthy diet habits and low levels of physical activity were also found in the research thereby indicating a correlation between those factors. Moreover, this study also helps to reveal total strategies for intervention towards promoting the literate well-being among scholars of the public university.

Recommendations

The findings of this research reveal the especial need to launch specific interventions to decrease the consumption of fast food and provide the enhancement of physical activity among young students. Subject specific health education courses should be introduced to inform students on the health concern that come along with the consumption of junk foods while at the same time encouraging the taking of physical activities. Also, there should be educational programs that help to underscore the necessity of making correct choices and carrying on a healthy lifestyle since such a perspective is being paid to the development of a healthy student population.

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