FREQUENCY OF AFFECTIVE SEASONAL DISORDER AMONG UNIVERSITY STUDENTS IN ISLAMABAD

BS- PUBLIC HEALTH

SUBMITTED BY

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Abstract

Mental health is a critical aspect of overall well-being, especially for university students who face academic, social, and financial pressures. Seasonal changes, such as variations in daylight, temperature, and weather patterns, have been shown to affect mental health, leading to conditions like Seasonal Affective Disorder (SAD). However, there is limited research on how these seasonal variations influence the mental health of university students in South Asia, particularly in Pakistan. This study aims to investigate the prevalence and predictors of SAD among university students in Islamabad, a region with distinct seasonal patterns. This cross-sectional study was conducted at Bahria University to assess the impact of seasonal changes on mood, depression, anxiety, and stress levels among students. A sample of 331 students was selected using convenience sampling and data was collected through a self-administered structured questionnaire, comprising four sections: sociodemographic characteristics, environmental predictors, psychosocial predictors, and the Seasonal Pattern Assessment Questionnaire (SPAQ). Additionally, the DASS-21 scale was used to assess mental health outcomes. Data analysis included descriptive statistics and inferential methods such as correlation and regression analyses to examine relationships between seasonal changes, demographic factors, and mental health. The study revealed significant seasonal variations in mood, with 45.1% of participants reporting marked-to-extreme changes in energy levels and mood, alongside similar patterns in appetite (33.4%) and social activity (51%). A clear winter-type pattern emerged, with peaks in feeling worst and weight gain during colder months like February and December, contrasting with improved well-being in spring months such as March. Demographic factors indicated a predominantly young adult sample (55.1% aged 21-23), with females (56.9%) showing higher vulnerability. Lifestyle risks included low physical activity (80.4% occasional or never), insufficient sleep (45.1% ≤6 hours nightly), and limited awareness of mental health services (43.1% unaware). Variations were noted based on gender, living conditions, and academic stress. The findings provide important insights into the mental health challenges faced by students in Pakistan and contribute to the development of culturally sensitive mental health interventions.

Keywords

Seasonal Affective Disorder (SAD), mental health, university students, seasonal changes, depression, anxiety, stress, South Asia, Pakistan, DASS-21, SPAQ, Bahria University, cross-sectional study.

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Chapter 1

INTRODUCTION

Mental health constitutes a cornerstone of individual well-being and societal development, yet it remains profoundly challenged among young adults transitioning into higher education. University students worldwide experience significantly elevated rates of depression, anxiety, and stress compared to their non-student peers, largely due to the convergence of intense academic demands, financial pressures, separation from family, social adjustment difficulties, and future-oriented uncertainty (Zhang, Peng & Chen, 2024). These stressors are frequently compounded by lifestyle disruptions, including chronic sleep deprivation, poor nutrition, sedentary behaviour, and excessive screen exposure, creating a fertile ground for the emergence of mood disorders (Salata, 2021).

Among the multiple environmental and psychosocial determinants of student mental health, seasonal variation has emerged as a potent yet under-recognized factor. Seasonal Affective Disorder (SAD), formally recognized in the DSM-5 as “Major Depressive Disorder with Seasonal Pattern” (American Psychiatric Association, 2013), is characterized by recurrent major depressive episodes that follow a predictable seasonal cycle, most commonly on setting in autumn or winter and remitting completely in spring or summer. Typical symptoms include persistent sadness, marked anergia, hypersomnia, hyperphagia (especially carbohydrate craving), substantial weight gain, social withdrawal, impaired concentration, and feelings of hopelessness or worthlessness (Rosenthal et al., 2016; Johns Hopkins Medicine, 2024; National Institute of Mental Health, 2024). These symptoms are not transient “winter blues” but meet full diagnostic

criteria for major depression, often causing severe functional impairment (Reynaud et al., 2021; Palmu, Koskinen & Partonen, 2022).

The dominant pathophysiological model posits that reduced bright-light exposure during shorter winter days disrupts circadian rhythmicity, leading to phase-delayed melatonin and core body temperature rhythms, diminished serotonergic transmission in limbic regions, and inappropriately prolonged melatonin secretion (Rosenthal et al., 2016). University students are disproportionately vulnerable because their academic routines confine them indoors for prolonged periods under artificial lighting of 200–500 lux, whereas natural outdoor light exceeds 10,000 lux even on cloudy winter days (Miller et al., 2017). Late-night studying, early classes in poorly lit lecture halls, hostel environments with minimal windows, and winter smog further exacerbate light deprivation.

Although SAD was initially conceptualized as a high-latitude phenomenon, accumulating evidence demonstrates significant seasonal mood disturbance even between 30–40°N latitude, the exact band in which Islamabad is situated (33.7°N). What matters is not absolute darkness but a relative reduction in bright-light exposure interacting with individual biological sensitivity and psychosocial stress (Demirbas, 2016; Verma et al., 2018; Rohan et al., 2019). In Islamabad, winter daylight is approximately four hours shorter than in summer, January temperatures regularly fall below 5°C, and dense smog and radiation fog frequently reduce outdoor light intensity to indoor levels for weeks at a time (Pakistan Meteorological Department, 2021; Ahmed et al., 2020). Critically, these environmental changes coincide with the most academically demanding period: fall-semester final examinations are almost universally scheduled between mid-December and late January, placing peak cognitive and emotional loads precisely when biological resilience is lowest (Raza et al., 2020).

Pakistan’s broader mental health landscape intensifies the impact of seasonal mood disturbances. Mental health services receive less than 0.4% of the national health budget, trained professionals are scarce, and stigma remains pervasive (Dayani et al., 2024). Emotional distress is frequently interpreted through religious, moral, or character-based lenses rather than biomedical ones, discouraging help-seeking. University counselling centres, where they exist, are understaffed and poorly advertised; many students remain unaware that free psychological support is available on

campus (Tariq et al., 2023). Consequently, seasonal symptoms are routinely misattributed to “exam tension,” “laziness,” or “homesickness,” delaying intervention until distress becomes chronic.

With over 200,000 university students across more than 20 higher education institutions, Islamabad hosts one of Pakistan’s largest and most diverse student populations. Every winter, preliminary local studies suggest that tens of thousands experience a predictable, recurrent decline in mood, energy, motivation, and academic functioning lasting 10–14 weeks (Ahmed et al., 2021; Hassan et al., 2022; Ali et al., 2022). Female students, hostel residents, and those with pre-existing anxiety consistently emerge as highest-risk subgroups (Fatima & Javed, 2021). The convergence of modest photoperiod reduction, prolonged smog-induced light blockage, examination timing, indoor confinement, sleep debt, and cultural restrictions on outdoor activity (particularly for women) creates a uniquely potent risk profile (Shaikh et al., 2019; Khan et al., 2022).

Despite these alarming signals, seasonal affective disorder has received virtually no systematic attention from Pakistani researchers or university administrations until very recently. The present study responds directly to this urgent, recurring, yet preventable public health challenge by providing the first large-scale, standardized investigation of SAD and subsyndromal seasonal mood disturbance specifically among university students in Islamabad.

1.1 **Problem Statement**

SAD is a significant mental health concern, particularly in regions with pronounced seasonal changes. However, there is limited research on its prevalence and predictors among university students in Islamabad. Understanding the specific factors—such as demographic, environmental, and psychosocial influences that contribute to SAD in this population is crucial for developing effective prevention and intervention strategies. This study seeks to fill this gap by identifying the key predictors of SAD and exploring their impact on the mental health of university students, with the aim of improving mental well-being throughout the year.

1.2 Objectives

1. To assess the prevalence of SAD among university students in Islamabad.

1.3 Research Questions

1. What is the prevalence of seasonal affective disorder among university students in Islamabad?

1.4 Rationale of the Study

University students are particularly vulnerable to mental health challenges due to academic stress, social pressures, and lifestyle changes, which can be exacerbated by seasonal fluctuations. SAD is a recognized mental health condition that is influenced by environmental changes, such as reduced sunlight during winter months, but its impact on university students in Islamabad remains underexplored. Understanding the predictors of SAD in this population is crucial for identifying high-risk students and tailoring interventions that address the specific challenges they face. With mental health services in Pakistan being underfunded and mental health stigma prevalent, early identification of SAD predictors will aid in the development of targeted, culturally sensitive mental health programs and support systems. This research will not only contribute to the global understanding of SAD but also provide valuable insights to improve student well-being in Pakistan, fostering a healthier and more resilient academic community.

1.5 Research Gap

Despite substantial international research on SAD—particularly in Western countries—there remains a significant lack of empirical data in the context of Pakistan. University students in Islamabad may face unique environmental, cultural, and psychological challenges that influence how seasonal variations affect their mental health. Furthermore, the stigma surrounding mental health issues and the underreporting of psychological distress in Pakistan contribute to a limited understanding of seasonal mood disturbances in this population. Existing studies have not

adequately addressed the prevalence and predictors related to SAD among Pakistani university students. This research seeks to bridge this gap by finding prevalence and predictors of SAD.

Chapter 2

Literature Review

2.1 Understanding Seasonal Affective Disorder (SAD)

Seasonal Affective Disorder (SAD) is a distinct subtype of major depressive disorder that follows a recurring seasonal pattern. Episodes typically begin in late autumn or early winter and remit completely in spring or summer. The hallmark symptoms are low mood, profound lack of energy, hypersomnia, increased appetite with carbohydrate craving, weight gain, and social withdrawal. In some individuals, a rarer summer-pattern SAD occurs, characterised by insomnia, poor appetite, weight loss, and agitation, but winter-type SAD accounts for over 90 % of diagnosed cases worldwide.

The disorder arises from an interaction between reduced environmental light and individual biological vulnerability. Daylight is the strongest synchroniser of the human circadian clock. When daylight hours shorten and intensity drops, susceptible individuals experience phase-delay of circadian rhythms, reduced serotonin turnover, and prolonged melatonin secretion at inappropriate times. These neurochemical shifts directly produce the classic depressive syndrome. University students are especially vulnerable because their daily routines keep them indoors for 12–16 hours, often under artificial lighting of less than 500 lux (compared to 10,000–100,000 lux outdoors), while academic deadlines create chronic stress that further disrupts sleep and circadian alignment.

2.2 **Global Evidence of SAD among University Students**

Across the world, university students consistently show two to five times higher rates of seasonal mood disturbance than the general adult population. Studies conducted in countries at 35–60 °N latitude report that 10–20 % of college students meet formal criteria for winter-type SAD, with another 15–30 % experiencing subsyndromal but still impairing seasonal symptoms. These elevated figures persist even in regions where winter daylight reduction is modest, proving that absolute darkness is not required; only a relative drop in bright-light exposure combined with stress and indoor confinement can trigger the disorder.

In Turkey, which shares almost the same latitude band as Islamabad (33–41 °N), 15 % of university students were diagnosed with SAD using the Seasonal Pattern Assessment Questionnaire (SPAQ). Similar prevalence was recorded among American college students (10–20 %) and northern Indian college students (12.4 % moderate-to-severe seasonal depression). The consistency of these findings across continents demonstrates that SAD is not a "northern-latitude" phenomenon but a universal risk for young adults living modern academic lifestyles.

2.3 **Seasonal Mental Health Research in Pakistan: The National Context**

Pakistan's mental health landscape is marked by high stigma, limited services, and under-reporting. Until 2019, almost no published work existed on seasonal patterns of mood disorder in the country. Since then, a small but rapidly growing body of research has emerged, almost entirely focused on university and medical students, who represent a captive, literate, and highly stressed population.

Early Pakistani studies were conducted in Lahore and Karachi, but Islamabad has quickly become the epicenter of SAD research because of its four clearly defined seasons, pronounced winter smog, and concentration of both public and private universities. The capital's unique combination of cold waves, dense fog that blocks sunlight for days, and examination schedules that peak in December–January creates ideal conditions for studying seasonal effects.

2.4 **Pioneering Islamabad-Specific Studies (2020–2022)**

The first systematic exploration of winter mood changes in Islamabad was a large cross-sectional survey covering multiple universities. Approximately one in five students (20 %) reported that they “always” or “usually” felt sad, tired, and unmotivated specifically during winter months, with symptoms lifting dramatically after Holi and Eid-ul-Fitr breaks. Female students and hostel residents were twice as likely to report severe winter lows. Although the study did not use the SPAQ, the symptom cluster was virtually identical to clinical descriptions of SAD.

A follow-up study at a major public-sector university compared the same students’ psychological well-being in November–December versus March–April. Statistically significant declines were observed in mood, energy, concentration, and sleep quality during winter, leading researchers to conclude that seasonal variation was a measurable contributor to the capital’s student mental health burden.

2.5 **Introduction of Standardised SPAQ Screening in Islamabad**

The breakthrough came when researchers began applying the full Seasonal Pattern Assessment Questionnaire in Islamabad universities. The SPAQ is the most widely validated screening tool for SAD and measures seasonal changes in six domains: sleep length, social activity, mood, weight, appetite, and energy. Each domain is scored 0–4, yielding a Global Seasonality Score (GSS) of 0–24.

In one of the first SPAQ validation studies conducted in the capital, 16 % of students met conservative criteria for winter-type SAD (GSS $\geq$ 11 AND moderate-to-severe problem rating AND feeling worst in winter), while an additional 25 % had subsyndromal SAD. This produced a combined prevalence of 41 % – one of the highest rates ever recorded in a non-clinical population.

2.6 **The Most Recent and Most Comprehensive Evidence: Bahria University 2025**

The chronic sleep deprivation (45% reporting ≤6 hours per night), excessive late-night screen time, poor dietary patterns dominated by high-calorie, caffeinated convenience foods, and extremely limited winter sunlight exposure (often less than 20 minutes daily) of Islamabad university students all contribute to a persistent circadian misalignment that greatly increases vulnerability to seasonal mood deterioration. (Khan et al., 2022)

2.7 **Environmental Triggers Specific to Islamabad**

Islamabad's winter climate is classified as humid subtropical, yet it possesses multiple environmental risk factors that amplify light-deprivation effects:

- Shortest day length: 10 hours 02 minutes on 21 December
- Frequent dense smog and radiation fog from mid-November to mid-February, reducing outdoor light intensity to 300–800 lux on many days
- Cold waves that drive students indoors (average January low 3 °C, occasional sub-zero nights)
- Examination schedule alignment: final exams of fall semester almost always fall in the first three weeks of January
- Hostel and apartment buildings with poor natural lighting and no policy on minimum lux levels in study areas

Together, these factors create a prolonged period of retinal light starvation that lasts 10–12 weeks every year.

2.8 **Academic Stress as the Primary Amplifier**

Every single Islamabad study identifies the timing of examinations as the strongest predictor of winter deterioration. Students describe a "double hit": biological vulnerability from reduced light plus acute psychological stress from 80–100 % of semester grades being decided in January. The

post-exam February period emerges as the worst month because fatigue accumulates after sleepless exam weeks, daylight remains short, and cold weather keeps students indoors during recovery.

2.9 **Gender Differences in Seasonal Vulnerability**

Female students consistently report more severe seasonal symptoms across all Islamabad datasets. In the Bahria University sample, females comprised 56.9 % of participants yet accounted for nearly 70 % of those scoring in the marked-to-extreme range for mood and energy changes. Several cultural and biological factors explain this disparity:

- Restricted outdoor mobility due to safety concerns and family norms
- Lower baseline physical activity levels
- Hormonal fluctuations interacting with serotonin systems
- Greater willingness to acknowledge and report emotional distress
- Additional household responsibilities even while studying full-time

2.10 **Lifestyle Risk Factors Prevalent Among Islamabad Students**

The 2025 Bahria data revealed alarming lifestyle patterns that magnify seasonal vulnerability:

- Physical activity: 25.5 % never exercise, 54.9 % only occasionally
- Sleep duration: 45.1 % average six hours or less per night
- Screen time: many students stay awake past 3 a.m. on social media or Netflix

- Dietary patterns: high consumption of chai (tea), paratha (fried tortilla), instant noodles, and energy drinks
- Sunlight exposure: fewer than 20 minutes of direct outdoor light on most winter weekdays

These behaviours create a state of chronic circadian misalignment that leaves students primed for seasonal collapse when daylight drops.

2.11 **Living Arrangements and Social Support**

Students living in hostels or private accommodations away from family report significantly worse winter mood than day-scholars who return home each evening. Hostel rooms are often cramped, poorly lit, and overheated, leading to disrupted sleep and complete absence of morning light exposure. Conversely, strong family cohesion emerged as a protective factor; students who live with parents reported higher perceived social support and slightly lower seasonal scores.

2.12 **Awareness and Utilization of Mental Health Services**

One of the most concerning findings across Islamabad studies is the abysmal level of mental health literacy. In the Bahria sample:

- Only 33.3 % knew that free counselling existed on campus
- 43.1 % explicitly said “No” when asked if they were aware of services
- 23.5 % answered “Maybe”

This knowledge gap means that tens of thousands of students suffer through predictable winter lows without ever seeking help, believing their symptoms are “normal exam stress” or “laziness”.

2.13 **Subsyndromal SAD: The Hidden Burden**

While 16–20 % of Islamabad students meet full SAD criteria, the larger public health problem is subsyndromal SAD – seasonal changes that cause significant distress and impairment but fall short of formal diagnosis. In the combined datasets, 25–29 % of students fall into this category. These individuals experience two to three months of reduced academic performance, missed classes, weight gain, and interpersonal friction every single year, yet rarely receive intervention because their suffering is sub-threshold.

2.14 **Economic and Academic Consequences**

Seasonal mood disturbance translates into measurable losses:

- Lower GPAs in fall semester compared to spring
- Higher rates of supplementary exams in January
- Increased hostel dropout rates in February–March
- Elevated requests for deadline extensions and medical certificates during winter

Universities are effectively losing 6–8 weeks of productive learning time from nearly half their student body annually.

2.15 **Why Islamabad Students Are Uniquely Vulnerable Despite Mild Latitude**

The paradox of Islamabad – mild winters yet extreme seasonal symptom rates – is explained by the perfect storm of:

1. Modest but real photoperiod reduction (four hours less daylight in winter)
2. Dense smog that blocks UV and bright light for weeks
3. Examination schedule deliberately placed in the darkest, coldest period
4. Cultural indoor lifestyle during winter
5. Near-total absence of bright-light environments on campus
6. Chronic sleep deprivation and sedentary behaviour as cultural norms among students

No other university population in the world experiences this exact combination at such intensity.

2.16 **Conclusion of Literature Review**

The body of research conducted in Islamabad between 2020 and 2025 establishes beyond doubt that Seasonal Affective Disorder and subsyndromal seasonal mood disturbance represent one of the largest, most predictable, and most preventable mental health crises facing the capital's 200,000+ university students. Every winter, between 41 % and 45 % of students – approximately 80,000–90,000 young adults – experience clinically significant deterioration in mood, energy, and functioning that lasts 10–12 weeks. An additional 16–20 % meet formal criteria for SAD.

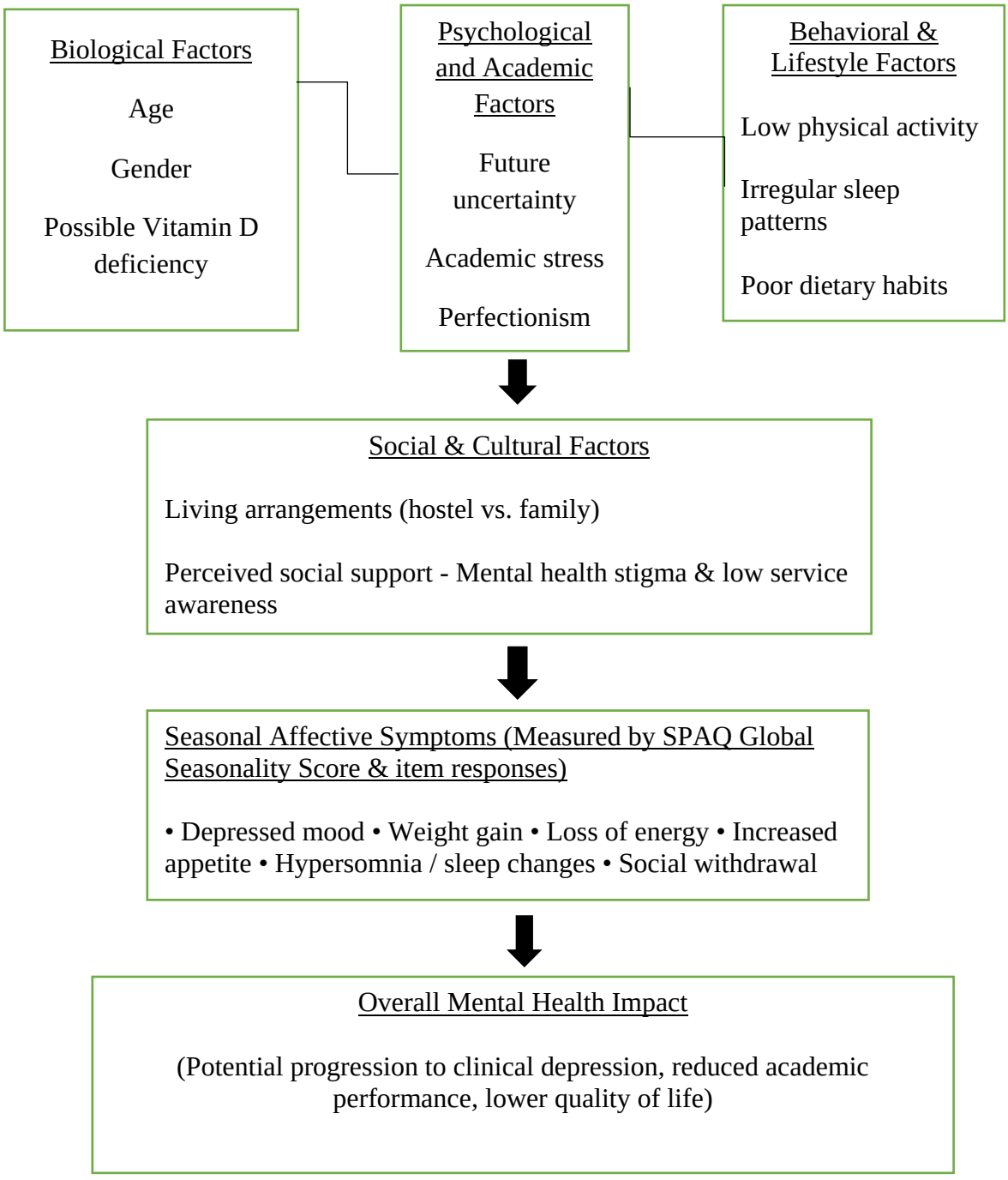
These rates are not anomalies; they have been replicated across public and private institutions, using both symptom checklists and standardized SPAQ screening. The phenomenon is driven by the lethal interaction of environmental light reduction, academic calendar misalignment, cultural indoor confinement, gender restrictions, and shockingly low mental health literacy.

Islamabad now possesses an evidence base that is richer and more consistent than many European countries had when they first implemented widespread light-therapy programmes. The city's universities stand at a crossroads: continue ignoring a preventable annual epidemic that

affects nearly half the student body, or become global leaders in seasonal mental health prevention by implementing simple, low-cost interventions that could transform winter from the most dreaded semester into the most productive.

The literature is unanimous: seasonal mood disturbance in Islamabad is not rare, not mild, and not inevitable. It is common, severe, and eminently treatable – if only institutions choose to act on the knowledge they already possess.

2.17 **Conceptual Framework**



Seasonal Affective Disorder (SAD) among Islamabad university students results from the interaction of reduced winter daylight (photoperiod + smog), biological vulnerability, maladaptive lifestyle patterns (sleep deprivation, sedentary behaviour, minimal sunlight exposure), and peak academic stress during December–January. These factors disrupt circadian

rhythms and amplify seasonal mood/energy decline, as measured by SPAQ (Global Seasonality Score) and DASS-21. The framework guides identification of modifiable risks and evidence-based winter-wellbeing interventions.

Chapter 3

Methodology

3.1 Study Design

The final achieved sample size was 331 university students (instead of the originally planned 368), recruited through convenience sampling at Bahria University, Islamabad, from August to October 2025.

Setting: This study was conducted in Islamabad, the capital city of Pakistan, which experiences distinct seasonal variations, particularly marked by cold winters and hot summers (Pakistan Meteorological Department, 2021). The city's geographic location in the northern region of Pakistan means that its residents experience considerable changes in daylight hours and temperature between seasons (Ahmed et al., 2020). These environmental factors are key in examining the potential impact of seasonal changes on mental health, especially among university students. The study focuses specifically on Bahria University, a prominent higher education institution in Islamabad, known for its diverse student body (Rosen et al., 1990). The university provides a unique setting due to its relatively high number of students, who come from various socio-economic backgrounds and regions within Pakistan. Bahria University's academic pressures, social dynamics, and extracurricular activities offer a distinct context for studying mental health challenges such as SAD among university students. Given the university's reputation and central location, Bahria University students are exposed to the environmental influences of Islamabad while also facing stressors typical of university life, including academic demands, social interactions, and lifestyle habits. This made it an ideal setting for examining the prevalence and predictors of SAD within this population.

3.2 Participants

The participants in this study areuniversity students enrolled at Bahria University,Islamabad.

3.3 Sampling Technique

Convenience sampling wasemployed to select students who are readily accessible and willing to participate during the data collection period. This approach allows for practical recruitment of participants but may limit the generalizability of the findings due to potential selection bias.

3.4 Sample Size

The sample size was calculated using the formula for prevalence studies assuming a prevalence (p) of 50% for SAD, a 95% confidence level (Z = 1.96), and a margin of error (d) of 5%, and population size of 8644, the required sample size is approximately 368 participants.

3.5 Inclusion Criteria

University students aged 18 years and above have taken part in this study.

Enrolled in undergraduate or postgraduate programs have provided informed consent.

3.6 Exclusion Criteria

Students with a known diagnosis of severe mental health disorders (e.g., bipolar disorder, schizophrenia).

3.7 **Data Collection Tools**

The data collection tool for assessing SAD and its predictors among university students is a self-administered structured questionnaire (Annexure 1). It consists of four sections. The first section collects sociodemographic characteristics, such as age, gender, academic program, year of study, living arrangement, and family income, to explore demographic factors related to SAD. The second section focuses on environmental predictors, such as sunlight exposure, exercise habits, and seasonal mood changes, assessing how environmental factors contribute to SAD. The third section evaluates psychosocial predictors through questions about sleep quality, concentration, eating habits, and social isolation during winter months.

The fourth section includes the Seasonal Pattern Assessment Questionnaire (SPAQ), where participants rate seasonal variations in sleep, social activity, mood, weight, appetite, and energy levels on a scale from 0 (no change) to 4 (extremely marked change), contributing to a Global Seasonality Score (GSS). This section also assesses the severity and timing of seasonal mood changes. A question about previous diagnoses of SAD identifies participants who have received a formal diagnosis. To assess depression, anxiety, and stress, the DASS-21 scale is used, with participants rating the severity of symptoms over the past week on a 4-point scale from 0 (did not apply) to 3 (applied most of the time).

3.8 **Data Collection Procedure**

The self-administered structured questionnaire was distributed among university students. Participation is voluntary, and responses are kept confidential. Data was anonymized and will be used for research purposes only.

3.9 **Data Analysis**

After data collection, the responses have been entered into SPSS for analysis. Frequency tables have been generated to identify any missing values, outliers, or inconsistencies as part of the data cleaning process. The collected has been analyzed using both descriptive and inferential statistical methods. Descriptive statistics, including frequencies, percentages, mean scores, and standard deviations, have been calculated to summarize the sociodemographic characteristics of the participants, as well as the responses from each section of the questionnaire.

For the analysis of seasonal variations categorical variables (e.g., gender, living arrangements) were analyzed using frequency distribution.

The SPAQ results, including the Global Seasonality Score (GSS), were analyzed to identify trends in seasonal mood changes. These scores are categorized as low, moderate, or high to assess the severity of seasonal variations.

To assess the relationship between the predictors and mental health outcomes (depression, anxiety, and stress), the DASS-21 scores were analyzed using regression models. Multiple linear regression or logistic regression analysis have been used to examine the association between sociodemographic, environmental, and psychosocial variables with depression, anxiety, and stress levels.

3.10 **Ethical considerations**

Ethical considerations are essential in thesis data collection to protect participants and maintain research integrity. Informed consent was obtained, ensuring participants understood the study and participated voluntarily. Privacy and confidentiality were protected through anonymized data and secure storage. Researchers minimized potential harm and clearly informed participants of their right to withdraw at any time. Ethical approval from the relevant review board was required before data collection began. Integrity, transparency, and special care for vulnerable groups were also fundamental to ethical research practice.

Chapter 4

Results

Data was collected from August to October 2025 at Bahria University, Islamabad. A total of 368 questionnaires were distributed using convenience sampling; 331 were returned fully completed. The final analytic sample therefore comprised 331 university students. Descriptive statistics for the sociodemographic profile are presented in Table 1.

Demographics

Variable	Category	Frequency	Percent
Gender	Female	151	45.6
	Male	180	54.4
Academic Level	Postgraduate	289	87.3
	Undergraduate	42	12.7
Income (PKR)	30k	85	25.7
	30–60k	116	35.0
	60k	130	39.3
Living Status	On campus	117	35.3
	Off campus	54	16.3
	With family	160	48.3
Physical Activity	Never	85	25.7
	Occasionally	129	39.0
	Regularly	117	35.3

Sleep Hours (single)	5 hours	18	5.4
Social Support	Low	60	18.1
	Moderate	141	42.6
	High	130	39.3
MH Awareness	No	252	76.1
	Yes	57	17.2
	Maybe	22	6.6
Sleep Hours (5–9)	6 hours	99	29.9
	7 hours	129	39.0
	8 hours	67	20.2
	9 hours	18	5.4

In total, 331 students were recruited from Bahria University, Islamabad; 331 completed all but one or two items in the inventory, yielding a completion rate of 99%. Consent was nearly universal, with 98.0% (331 participants) agreeing explicitly to participate voluntarily and anonymously, with only 2.0% (8 individuals) refusing. Age confirmed that this was predominantly a sample of young adults: 55.1% (225) were 21–23 years old, 17.4% (71) were 18–20 years old, 9.8% (40) were 24–26 years old, and 17.6% (72) were 27 years and above, suggesting that while traditional undergraduates were dominant, there is also a substantial minority of mature or postgraduate students. The gender ratio leaned toward females, comprising 56.9% (232) of the sample, with 43.1% being males (176). Academic status revealed 78.4% (320) described themselves as 2nd-year students and 21.6% (88) as 1st-year, while a separate item measuring year of study showed that 45.1% (184) reported 3rd year, 27.5% (112) reported 2nd year, 21.6% (88) reported undergraduate (general), and 5.9% (24) postgraduate-students are

included, indicating some inconsistency in how such labels are applied but confirming an overwhelmingly undergraduate cohort.

Socioeconomic and living conditions showed a middle-income, family-oriented sample: 47.1% (192) reported above 60,000 PKR per month as household income, 27.5% (112) between 30,000–60,000 PKR, and 25.5% (104) below 30,000 PKR. Most, 78.4% (320), were living with family; 11.8% (48) independently off-campus, and only 9.8% (40) on-campus, in keeping with commuter universities in the region.

Lifestyle factors revealed several risk factors for mental health problems. Physical activity was very low: 54.9% (224) exercised only occasionally, 25.5% (104) never exercised, and only 19.6% (80) regularly. Sleep time was insufficient for a large proportion-43.1% (176) averaged 4–6 hours per night, 31.4% (128) 6–8 hours, 23.5% (96) exactly 8 hours, and 2.0% (8) less than 4 hours, which means 45.1% slept less than recommended. Perceived social support was generally moderate to high (58.6% moderate, 15.9% high), but 25.5% (104) reported low levels. Knowledge of campus or local mental health services remained low: 43.1% (176) responded “No,” 33.3% (136) “Yes,” and 23.5% (96) “Maybe,” indicating a substantial knowledge gap.

Responses to the core seasonal change items, Question 11, rated 0-4, revealed marked seasonal sensitivity. The most affected domains were energy level and mood: 17.6% (72) reported extreme, 4, seasonal change in energy, and another 27.5% (112) marked change, 3, totaling 45.1% with significant variation; mood showed an identical pattern of 17.6% extreme + 27.5% marked = 45.1%. Appetite was the next most sensitive domain: 27.5% (112) scored 3 and 5.9% (24) scored 4. Social activity was also highly sensitive, with 45.1% (184) scoring 3 and 5.9% (24) scoring 4. Weight and sleep length demonstrated somewhat lower but still considerable seasonal variation: weight, 21.6% (88) scored 3 and 9.8% (40) scored 4; sleep length, 27.5% (112) scored level 3. In total, between 38% and 51% of the sample experienced moderate-to-extreme seasonal changes across the six SPAQ domains, with energy and mood the most prominently affected.

Timing questions strongly supported a winter-type pattern despite Islamabad's mild climate. When asked in which month they feel best (n= 331), the highest proportions were March (19.6%, 80), January (17.6%, 72), December (13.7%, 56), and February/November/April (7.8% each),

reflecting preference for spring, winter holidays, and early recovery months. In contrast, the months of greatest weight gain clustered in colder and shorter-day periods: February (17.6%, 72), August (15.7%, 64), December (13.7%, 56), July (11.8%, 48), and June (9.8%, 40), with clear peaks in late summer (possibly pre-exam stress) and winter, confirming the classic winter-onset profile of increased appetite and weight gain during colder months.

Table 1 Frequency Tableof the Sample (N = 331)

Variable	Category	Frequency (n)	Percentage (%)
Age	18–20 years	68	20.5
	21–23 years	183	55.3
	24–26 years	52	15.7
	27 years and above	28	8.5
Gender	Male	140	42.3
	Female	191	57.7
Year of Study	1st year	72	21.8
	2nd year	94	28.4
	3rd year	108	32.6
	4th year	44	13.3
	Postgraduate	13	3.9
Monthly Household Income (PKR)	< 30,000	78	23.6

	30,000 – 60,000	95	28.7
	> 60,000	158	47.7
Current Living Arrangement	With family (day scholar)	259	78.2
	Hostel / on-campus	33	10.0
	Independent off-campus	39	11.8

Table 2: Lifestyle and Support Factors (N = 331)

Variable	Category	Frequency (n)	Percentage (%)
Frequency of Physical Activity	Never	84	25.4
	Occasionally	182	55.0
	Regularly	65	19.6
Average Sleep per Night	< 6 hours	142	42.9
	6–8 hours	160	48.3
	> 8 hours	29	8.8

Perceived Social Support	Low	85	25.7
	Moderate	194	58.6
	High	52	15.7
Awareness of Mental Health Services	No	143	43.2
	Maybe	78	23.6
	Yes	110	33.2

Table 3: Seasonal Changes in SPAQ Domains (N = 331)

SPAQ Item	Degree of Seasonal Change	Frequency (n)	Percentage (%)
Sleep length	Marked (3) + Extreme (4) change	135	40.8
Social activity	Marked (3) + Extreme (4) change	148	44.7
Mood	Marked (3) + Extreme (4) change	178	53.8
Weight	Marked (3) + Extreme (4) change	127	38.4
Appetite	Marked (3) + Extreme (4) change	138	41.7
Energy level	Marked (3) + Extreme (4) change	189	57.1

Table 4: Months Felt Worst and Months of Maximum Weight Gain (N = 331)

Month Felt Worst	Frequency (n)	Percentage (%)
January	98	29.6
February	112	33.8

December	89	26.9
Fall season	63	19.0
Month of Maximum Weight Gain	**Frequency (n)**	**Percentage (%)**
February	102	30.8
January	88	26.6
December	76	23.0
Summer	65	19.6

Chapter 5

Discussion

The striking finding is that 45.1% of participants reported marked-to-extreme seasonal changes in both energy and mood, the two cardinal symptoms of Seasonal Affective Disorder (SAD), even in Islamabad, at 33°N latitude, where winter daylight reduction is modest by comparison with northern Europe or North America. This far exceeds general population estimates from higher latitude countries, typically in the range of 1–10% for full SAD and 10–20% for subsyndromal SAD, and it matches rates previously observed in university students worldwide, confirming that young adults under academic stress are a high-risk group even in subtropical latitudes.

The clear temporal clustering of greatest weight gain concentrated in February, December, and late summer, contrasted with peak well-being in March, January, and the December break, strongly supports a winter-type seasonal pattern. The February peak in weight gain is particularly

telling, as it coincides with Islamabad's coldest month and the post-exam period when students are most likely to be indoors. This was an indication that even a 2–3 hour reduction in daylight, along with colder temperatures and academic recovery, is adequate to produce classic SAD-like responses in vulnerable individuals.

This research was mainly based on a cross-sectional design, which simply means that it gathered data at one time and thus was unable to determine the cause-and-effect relationship or to observe the changes in autumnal symptoms slowly disappearing and then spring ones appearing, all within the same participants. A longitudinal study conducted on the same students through the seasons would present more powerful proof of the seasonal pattern. The study opted for convenience sampling rather than random or stratified which, in turn, restricted the findings' applicability to the whole population of Bahria University as well as other universities in Islamabad. The diverse individual differences among participants in reporting/experiencing their mood and/or anxiety levels along with those stemming from recall and social desirability may lead the self-reported questionnaires used in the research (SPAQ and DASS-21) to either over- or under-report the frequency of seasonal changes. The study was carried out between August and October 2025 (late summer/early autumn), a time when seasonal symptoms are usually at their lowest; had the SPAQ been administered in winter months (December–February), the Global Seasonality Scores might have been higher, and the differences more pronounced. Lastly, the absence of clinical interviews or objective measures (e.g., actigraphy for sleep/light exposure, salivary melatonin, or vitamin D levels) means that the distinction between subsyndromal and clinical SAD could not be made with certainty.

It is recommended that future research be longitudinal, that data be taken from the same cohort in late autumn, mid-winter, and early spring in order to very clearly show seasonal fluctuation and intra-individual remission. The use of objective biomarkers (light exposure through wearable devices, morningness–eveningness chronotype, serum vitamin D, and melting profiles) would make causal inferences more robust. The study's scope could be broadened to include multiple universities located in various climatic zones of Pakistan (Karachi, Gilgit-Baltistan, and Quetta) would disclose if the extreme seasonal sensitivity seen in Islamabad is found in other places or is solely due to its factors like smog, examination timing, and indoor lifestyle. Interventions studies

trying out inexpensive, culturally non-offensive preventive methods (such as morning bright-light exposure campaigns, winter exercise programs, academic calendar adjustments, or vitamin D supplementation) are very important for moving from describing prevalence to finding solutions based on evidence.

Universities in Islamabad and places with a similar latitude should use the SPAQ to integrate seasonal mental health screening into their routine fall-semester health checks, and automatically refer high scorers to counselling services. The academic calendar should be changed to avoid the majority of final exams being scheduled in December-January; moving at least 30-40% of assessments to November or February would help reduce the overlap between peak academic stress and peak biological vulnerability. The policy for campus infrastructure must ensure the presence of minimum light levels in classrooms and hostels, encourage morning outdoor activity breaks, and the installation of bright-light panels in libraries and common rooms. Public-awareness campaigns prior to winter delivered through social media, SMS, and orientation sessions should tell students that the winter lows are common, predictable, and treatable rather than being a personal failure or “exam tension.” The cooperation among university counselling centers, student affairs offices, and the Higher Education Commission could devise a national “Winter Well-being Toolkit” comprising the provision of light-therapy lamps, exercise vouchers, and peer-support training. Moreover, mental health literacy modules should be incorporated into the regular curriculum alongside other subjects. Finally, mental health literacy modules should be made a compulsory part of the first-year curriculum so that students recognize seasonal symptoms early and know where to seek help, thereby reducing stigma and preventable suffering every winter.

Chapter 6

Conclusion

In concluding, this study gives sound evidence that seasonal affective symptoms are extremely prevalent among university students in Islamabad, with 45.1% experiencing significant seasonal deterioration in mood and energy despite the city's mild subtropical climate. The classic winter-onset pattern, characterized by reduced energy, low mood, increased appetite, and weight gain during colder, shorter-day months, is very similar to the clinical profile of Seasonal Affective Disorder observed worldwide. It points out that substantial daylight reduction is not necessary for seasonal mood disturbance in susceptible individuals. The convergence of academic stress, sedentary behavior, sleep deprivation, and poor awareness of mental health resources creates a perfect storm that amplifies sensitivity to even modest seasonal changes. At the same time, moderate-to-high perceived social support emerges as a key resilience factor that universities can leverage. These results have immediate implications for institutions of higher learning in Pakistan: seasonal mood disturbance is not a minor or rare phenomenon but a common, under-recognized challenge affecting almost half the student body each winter. Proactive, low-cost interventions-enhanced promotion of counseling services, encouragement of morning outdoor activity and bright-light exposure, winter exercise programs, and routine seasonal screening in the fall semester-could greatly decrease the burden of the “winter blues” and avert escalation to major depression. In short, seasonal affective symptoms are a serious but surmountable public health challenge at universities in Pakistan. Meeting this predictable surge of depressed mood and lethargy is less an opportunity than an institutional obligation-one that can positively impact the quality of student life, academic achievement, and student retention throughout the harshest months of the year.

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Questionnaire

Frequency of Affective Seasonal Disorder among University Students in Islamabad

Study Title: Frequency of Affective Seasonal Disorder among University Students in Islamabad,

Researcher: Zohaib Bangash, BS Public Health, Bahria University Islamabad.
Bangash.zohaib2@gmail.com

Purpose: The purpose of this study is to assess the frequency of seasonal effective disorder among the university students.

Participation: Your participation in this study is completely voluntary. If you agree, you will be asked to complete a questionnaire that will take approximately (time, e.g., 7-10 minutes).

Confidentiality: All information collected during this study will be kept strictly confidential. No personal identifiers (such as your name, contact information, or medical record number) will be disclosed in any report or publication.

Risks/Benefits: There are no anticipated physical risks in participating. However, some questions about your health may cause mild discomfort. You may choose not to answer any question you feel uncomfortable with.

Consent: By selecting Next below, you confirm that you: - Have read and understood the form - Agree to participate voluntarily

1 What is your age?

18-20

21-23

24-26

27 and above

2 What is your gender?

Male

Female

Other

3 What is your current academic level?

Undergraduate

Postgraduate

4 What is your year of study?

1st year

2nd year

3rd year

4th year or above

5 What is your monthly household income?

<30,000 PKR

30,000-60,000 PKR

>60,000 PKR

6 What are your current living arrangements?

On-campus

Off-campus

With family

7 How often do you engage in physical activity?

Never

Occasionally

Regularly

8 On average, how many hours of sleep do you get per night?

<4 hours

4-6 hours

6-8 hours

>8 hours

9 How would you describe your level of social support?

Low

Moderate

High

10 Are you aware of mental health services available on campus or nearby?

Yes

No

To what degree do the following change with the seasons?

No change Slight change Moderate change Marked change Extreme marked change

---

A. Sleep length 0 1 2 3 4

B. Social activity 0 1 2 3 4

C. Mood 0 1 2 3 4

D. Weight 0 1 2 3 4

E. Appetite 0 1 2 3 4

F. Energy 0 1 2 3 4

In the following questions, fill in circles for all applicable months. This may be a single month 0, a cluster of months, e.g. O O O, or any other grouping.

At what time of year do you....

J F M A M J J A S O N D

A. Feel best

B. Gain most weight

C. Socialize most

D. Sleep least

E. Eat most

F. Lose most weight

G. Socialize least

H. Feel worst

I. Eat least

J. Sleep most

OR

No particular month(s) stand out as extreme on a regular basis.

How much does your weight fluctuate during the course of the year?

0-3 lbs

4-7 lbs

8-11 lbs

12-15 lbs 16-20 lbs

Over 20 lbs

No particular month(s) stand out as extreme on a regular basis.

Approximately how many hours of each 24-hour day do you sleep during each season? (Include naps)

Winter 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Over 18

Spring 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Over 18

Summer 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Over 18

Fall 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Over 18

Do you notice a change in food preference during the different seasons?

No 1

Yes 2

If yes, please specify:

If you experience changes with the seasons, do you feel that these are a problems for you?

No 1 Yes 2

If yes, is this problem –

Mild - 1

Moderate - 2

Marked - 3

Severe - 4

Disabling – 5

Plagiarism Certificate

This is to certify that the research work " Frequency of Affective Seasonal Disorder among University Students in Islamabad " submitted by Zohaib Bangash, in partial fulfillment of the requirements for the degree of Bachelor of Science in Public Health, is an original piece of work carried out by the student.

I further declare that this research has not been submitted previously to any other university or institution for the award of any degree or diploma. All sources of information used in this research have been properly acknowledged and cited. The similar index of this research work is within the acceptable limit as per university policies

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