

RESEARCH ARTICLE

An Investigative Study of Seasonal Affective Disorder and its Influence on Students' Quality of Life in Peshawar, Khyber Pakhtunkhwa, Pakistan

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Abstract: The objective of the current research was to examine how seasonal affective disorder (SAD) influences the academic experiences of undergraduate students in Peshawar. The study surveyed 100 undergraduate students from various universities in Peshawar, with participants ranging in age from eighteen (18) to twenty-six (26) years. The research utilized the (SPAQ) along with demographic information and informed consent forms. Statistical analysis indicated that 72 out of the 100 participants experienced SAD. Those identified as affected through the SPAQ screening were subsequently evaluated with the Hamilton Depression Rating Scale (HAM-D) to assess the presence and severity of depression. The findings also highlighted a higher prevalence of SAD among female students compared to their male counterparts. This study yielded a high significance value of 12.698. The results confirmed the initial hypotheses and also demonstrated how seasonal affective disorder impacts the academic performance of undergraduate students, especially among females. Depression is a serious medical condition often leading to feelings of dissatisfaction with one's actions. The cognitive processes of students are impaired and detrimentally impact their academic performance, making it difficult for them to manage daily tasks. To address these symptoms, a treatment plan incorporating exercise, a balanced diet, and psychiatric interventions is recommended.

Keywords: Seasonal Changes, SAD (Seasonal Affective Disorder), Depression (Seasonal)

Introduction

Nature gives every season a special elegance, according to Charles Dickens. People with Seasonal Affective Disorder (SAD) fail to experience the winter enchantment that others normally do. People with SAD encounter worsened difficulties during the winter season because of this mental health condition. The illness creates disruptions in regular routines while simultaneously delivering considerable negative effects on total health status. Major depressive disorder shares common features with SAD, although SAD stands apart by having a seasonal pattern that begins during winter but ends when spring arrives. Effective diagnosis and proper treatment planning require proper identification of (SAD) Seasonal Affective Disorder from other forms of depression (Rosenthal, [2009](#))

Major depressive disorder, otherwise known as depression, intensely affects how individuals feel and how they act, as well as their overall state of wellness. The diagnostic characteristics of this condition include prolonged emotional despondency along with the absence of former interests and bodily stress such as interrupted sleep patterns and eating changes despite no medical reason (American Psychiatric Association, [2013](#))

Seasonal affective disorder (SAD) functions as a depression subtype that emerges primarily in the fall and continues until the winter season ends. People with SAD develop decreased energy levels, which combine with increased irritability until springtime brings relief (Kurlansik, [2012](#)). Medical intervention becomes necessary when signs of depression continue after brief periods of depressive feelings. Mood swings

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throughout different seasons generate intense effects on thinking patterns, emotional states, and daily operating capabilities. Major depression decisively controls feelings, social actions, and bodily health while producing lasting despair and lack of interest alongside physical symptom clusters. Seasonal affective disorder (SAD) emerges from changes in seasons as a specific type of depression (Westrin & Lam, 2007). The condition typically starts in fall time yet continues through winter months while it decreases energy and worsens moodiness. A different subset of individuals may experience SAD symptoms during spring or summer, but their condition later disappears when temperatures cool down (Roeklein & Wong, 2020). Continued depressive symptoms need medical care, although normal experiences of sadness do not require medical attention. Studies link these changes in mood to shifting daylight patterns to demonstrate the mental health consequences (Lam, 2000). Major depressive disorder, known as depression, functions as a mental health issue that modifies both mood and behaviour alongside health well-being through recurring sadness, diminished interest, and disrupted appetite and sleep patterns (American Psychiatric Association, 2013). The specific form of depression known as Seasonal affective disorder (SAD) develops due to natural seasonal changes. The seasonal condition of SAD appears in autumn before affecting patients during the winter months while reducing their energy and intensifying their moodiness (Dam, 1998). In rare instances, SAD surfaces in spring or summer instead. Medical interpretation of symptoms becomes necessary when you experience symptoms beyond brief moments of sadness. The duration of daylight during spring transitions causes individuals to experience "winter blues" and resolve into better mood states (Partonen, 2001)

This research investigates the influence of (SAD) on the academic experiences of UG students, particularly within the context of semester-based systems in higher education. Students who easily develop SAD encounter more difficulties during the semester system because its abbreviated length creates additional obstacles. The student population faces difficulties with exams and assignments as well as quizzes and presentations because of SAD throughout their academic pursuit.

Society progresses as students engage actively in their personal development under the direction of citizens. Academic performance is the fundamental factor for developmental advancement, while abrupt shifts can disturb mental operations (Avery, 2001). The indifference toward SAD prevents people from comprehending its substantial negative effects on academic performance. Systematic studies enable the creation of approaches that assist in decreasing SAD-related problems affecting undergraduate students. Researchers analyze the effects of SAD on men and women who live in Peshawar unless excluded from similar studies in Pakistan. Academic success depends on resolving both winter sadness and declining mental concentration because such factors reduce effective responses and amplify distress. The research aims to improve understanding of SAD as well as improve both mental well-being and psychological comfort. This investigation relies on cognitive theory, which extends beyond 1930s behavioural psychology by implementing Jean Piaget's theoretical framework on mental processes to study human brain operations. (Ban, 2011)

Rationale

The research proves the critical need to understand how Seasonal Affective Disorder affects student academic achievements. The public, along with educational committees, must recognize this problem so affected students can receive support that improves their general wellness.

Operational Definitions

Seasonal Affective Disorder (SAD): Recurring episodes of major depression affect SAD patients during designated periods, particularly during winter conditions. Patients suffering from SAD maintain mental stability while showing yearly depressive symptoms because their condition follows a specific pattern.

Depression: Major Depressive Disorder or depression functions as a prevalent serious medical condition affecting emotions, thought patterns, and actions to generate sadness along with diminished interest in

enjoyable activities previously appreciated.

Cognition: Energy sent to the brain produces conscious mental processes together with unconscious operations for the acquisition of knowledge and understanding. Central to the functioning brain are higher-level activities such as thinking along with knowing as well as judging and remembering and problem-solving abilities. Cognition includes four core functions among others: language imagination and perception and planning activities.

Research Design & Sample

The research design of the current study is co-relational and quantitative. It aims to find out Seasonal Affective Disorder among undergraduate students and correlate which gender suffers from it more. The research was carried out on both male and female populations and was undertaken in the city of Peshawar, Pakistan. The target population was all UG students studying in various PG institutions in Peshawar, and the selected sample was N=100. The sampling technique was simple random sampling. The focus of the study was mostly on the undergraduate population, which consisted of both male and female genders. The participants comprised 50, 50 students with the age range of 18 to 35 years.

Results

The study aimed to explore how Seasonal Affective Disorder (SAD) affects students' academic performance. The results, with a p-value of 12.698, confirmed that gender significantly influences the prevalence and severity of SAD. Out of 100 subjects, 72 were affected by SAD, including both genders. However, a closer look revealed that 46 of the 50 females and 26 of the 50 males were impacted, supporting the idea that women are more susceptible. A key factor is that women typically receive less sunlight, exacerbating the condition more than men, who generally get more sun exposure. This exposure allows men to manage their symptoms better, even if they experience SAD.

Furthermore, after preliminary screening, the 72 affected students underwent additional evaluation using the Hamilton Depression Rating Scale (HAM-D) to confirm and assess the severity of depression. The assessment identified 19 students with mild depression (11 males and eight females), 29 with moderate depression (9 males and 20 females), and 24 with severe depression (8 males and 16 females). These findings highlight the presence of seasonal depression and its disruptive impact on students' functionality. Overall, the study confirmed that SAD negatively affects individuals' academic performance.

Data Analysis

Table 1

Demographic properties of selected Participants

Factors	Value
Total Participants, N	100
Male Participants	50
Female Participants	50
Married Participants	05
Un-Married Participants	95

Interpretation: Table 1 shows the demographic of participants among the sample population used for a research study.

Table 2
Frequency of Age of Participants according to age

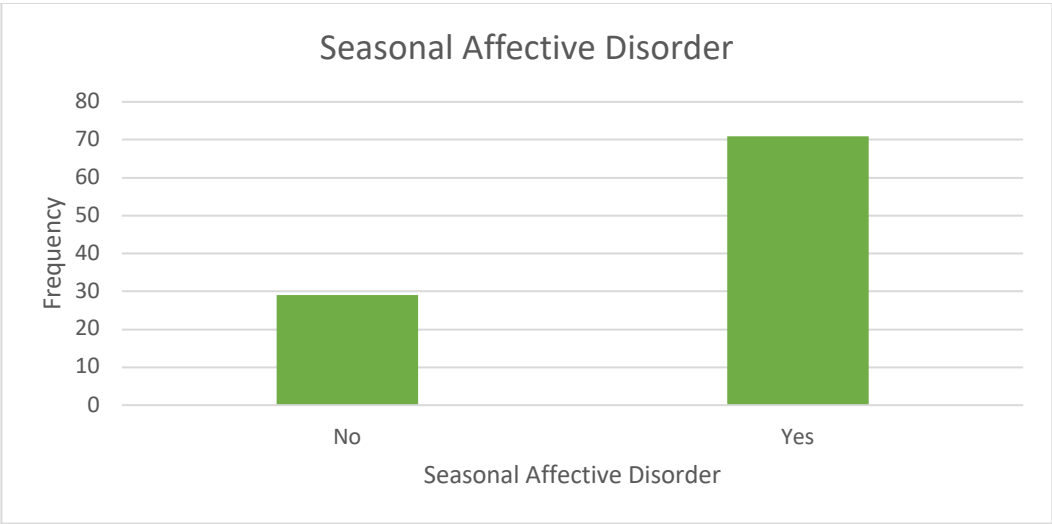
Age	Frequency	Percent	Cumulative Percent
18-20 Years	36	36.00	36.0
21-23 Years	50	50.00	86.0
24-26 Years	13	13.00	99.0
30-32 Years	01	01.00	100.0
Total	100	100.0	100.0

Table 3
Prevalence of those participants who suffered due to SAD

(Response)	(Frequency)	(Percent)	(Cumulative Percent)
No	28	28.00	28.0
Yes	72	72.00	72.0
Total	100	100.0	

Interpretation: Table 3 shows the result of Seasonal Affective Disorder, which clarifies that among 100 participants, 72 were affected, which consisted of the majority of the students.

Figure 1
Data of Participants in the Form of Graphical Representation Suffered from SAD



Interpretation: Above figure is showing the data in graphical form and depicted that out of 100 respondents 72 were affected by SAD.

Sex	No	Yes	Total
M	22	28	50
F	09	41	50
Total	31	69	100

Data presented in the above table showed that respondents noticed a change in food preference during the various seasons. Here in Table M for Males and F for females

Interpretation: Above table showed the data of sample participants who noticed changes in food preference during various seasons and it was marked yes by most of the respondents.

Table 5

Responses for Experiencing change with seasons. Here, Table M is for males, and F is for females.

Sex	No	Yes	Total
M	24	26	50
F	09	41	50
Total	33	67	100

Interpretation: Above table represented the participants who marked more for the option Yes because in their opinion changes in seasonal patterns are actually brings changes and they consider it a problem for themselves.

Table 6

Sex	Mild	Moderate	Marked	Severe	Total
Male	6	17	3	1	27
Female	5	25	7	4	42
Total	11	42	10	5	69

Table 6 showed the data given by respondents to experiencing change with the season and below are responses of participants who marked yes as their response.

Interpretation: Above table showing the responses of selected participants who responded to moderate change while taking into account the changes as a problem with seasonal patterns.

Table 7

Relationship of Gender with (SAD) Seasonal Affective Disorder

Sex	No	Yes	Total
M	22	28	50
F	07	43	50
Total	29	72	100

Interpretation: Above table shows the relationship of both genders with SAD and data represented above clearly showed that female respondents in study are more affected by SAD.

Table 8

Chi-square Test Result

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.698	1	.000		
Continuity Correction ^b	11.161	1	.001		
Likelihood Ratio	13.305	1	.000		
Fisher's Exact Test				.001	.000
Linear-by-Linear Association	12.571	1	.000		
N of Valid Cases	100				

Interpretation: The above table shows the data and results which depicts the relationship of gender with S.A.D (seasonal affective disorder).

Figure 2
The figure below depicts the Relationship between Seasonal affective disorder with Gender.

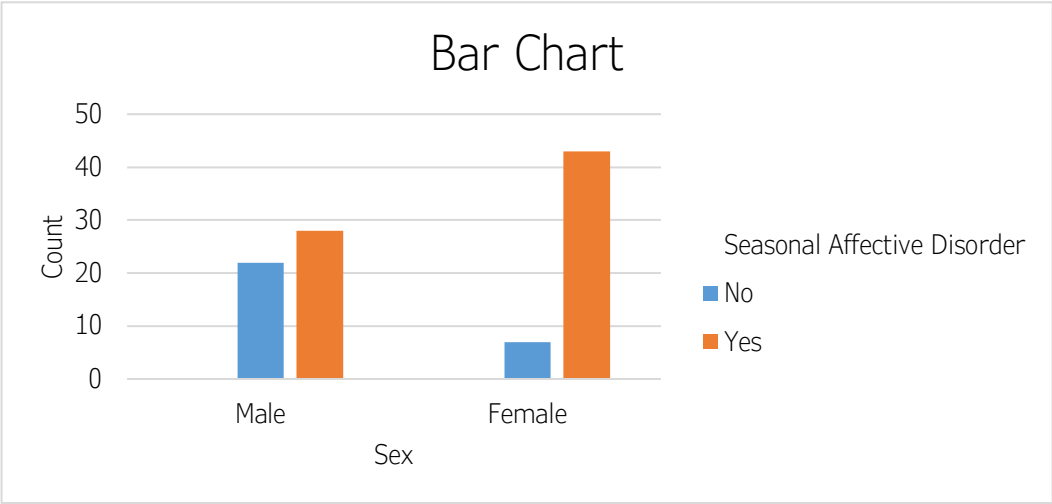
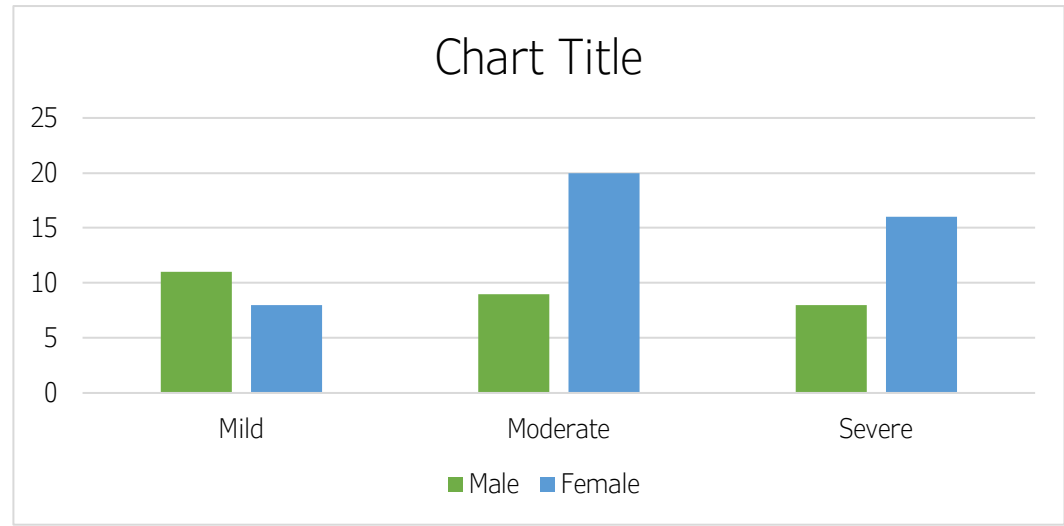


Table 9
Severity Level of Depression through HAM-D

Gender	HAM-D Score of Patients			Total
	Mild (10-13)	Moderate (14-17)	Severe (>17)	
Male	11	09	08	28
Female	08	20	16	44
Total	19	29	24	72

Interpretation: The above table shows the Presence and Severity Level of Depression through HAM-D for both genders

Figure 03
The figure below shows the Presence and Severity Level of Depression through HAM-D.



Discussion
The research analyzes how Seasonal Affective Disorder (S.A.D.) affects undergraduate students who experience this depressive condition only during specific seasons, which disappears when spring and summer arrive. Investigators have studied systematic data about seasonal human behavioural variations since 1980

because Rosenthal et al. initiated research on S.A.D. Healthcare difficulties combine with psychological problems from this disorder, which appears as depressive periods during fall and winter but ends during spring and summer (Partonen, [2001](#)).

Medical researchers define depressive disorders as medical illnesses that alter mood states as well as emotional responses and behavioural functions that result in daily life satisfaction decline. S.A.D. functions as one form of seasonal depression that specifically shows depressive symptoms during particular annual periods (Magnusson & Boivin, [2003](#)). According to SPAQ data, full-syndrome S.A.D. develops in 10–12% of those who inhabit locations between 40° and 65° north or south of the Equator. Relatively low winter temperatures in Peshawar, between 4 °C (39 °F) to 18.35 °C (65.03 °F), result in appreciable S.A.D. prevalence. Our research included 100 undergraduate students who split equally into male and female genders, with a minimum age of 18 years, from different Peshawar universities. The research findings showed that 72 participants experienced S.A.D., and female students made up the higher proportion with 43 cases. The research data confirms that women show higher levels of sensitivity to S.A.D., which produces negative effects on their school work. The impact of the study was apparent among male participants. The bulk of research participants noticed mild disruptions in their sleep schedules when seasons changed, yet these alterations were generally faint. The most noticeable symptoms of S.A.D. included mood changes along with appetite variations, although weight changes suffered from diminished evidence and similar energy levels. Socialization served as a major determinant that affected male students. A seasonal affective disorder indicator was dietary preference variations, which 69 students experienced, with 28 males and 41 females among them, according to the research.

A subsequent evaluation utilizing the Hamilton Depression Rating Scale (HAM-D) enabled doctors to both verify depression diagnoses and determine the severity of depression in the 72 affected students. The study results revealed a total of 19 students with mild depression among their 11 male participants and eight female participants, as well as 29 students with moderate depression made up of 9 males and 20 females, and 24 students with severe depression consisting of 8 males and 16 females. The research results demonstrate the occurrence of seasonal depression, which causes significant disruptions in student operational effectiveness. S.A.D. causes substantial harm to students' physical states, including sleep patterns, appetite, and energy regulation; hence, it influences mental functions and academic achievement. Academic performance becomes affected by severe depression, which develops in students who experience stressors from all physical, psychological, and social spheres, with these domains staying closely linked. Statistical data validates the hypothesis about the unequal distribution of S.A.D cases amongst females since the evaluation establishes their greater global presence. Men face S.A.D., but they benefit from sunlight exposure and outdoor activities, which protects them from its symptoms because this exposure affects their natural melatonin and vitamin D production. Females face higher risk because they spend less time outside in Peshawar and, therefore, produce inadequate melatonin and vitamin D amounts, which leads to S.A.D development (Rosenthal et al., [1988](#)).

Medical researchers have yet to establish the complete foundation of S.A.D. but they confirm the disease develops from inadequate light exposure combined with disrupted serotonin and melatonin processing together with environmental elements. The development of S.A.D. depends on environmental factors that include changes in temperature alongside geographic position during seasonal changes in neurotransmitters (Magnusson & Boivin, [2003](#)).

Students who deal with Seasonal Depression find their regular activities extremely difficult to cope with. The research emphasizes the complex circumstances of undergraduate students since they need to handle their mental health together with their emotional state while dealing with rigorous semester frameworks. Individuals with depression encounter extra difficulties with their academic duties, including quizzes, assignments, presentations together, and exams, because their ability to focus and their energy

levels remain affected. Academic success declines because of which students obtain poor marks that intensify their depressive symptoms.

Conclusion

The study evaluates how Seasonal Affective Disorder (SAD) negatively affects academic outcomes among undergraduate students residing in Peshawar. The study demonstrates why it is important to make SAD information widely known, as the condition affects student populations differently between men and women. Existing evidence demonstrates that SAD causes major disruption of academic success through modifications in food choices together with emotional states and social connections. Students who experience SAD require thorough treatment plans that match their situation because this approach helps their academic performance. The study promotes active institutional interventions that should tackle SAD while enhancing undergraduate mental health and academic standing.

Recommendations

This complex disorder requires active identification and awareness from the population, even though some people dismiss its prevalence in this geographic area. The research community must undertake nationwide studies about SAD occurrence and its effects in Pakistan through large-scale studies to obtain precise data. A quality-of-life assessment tool will measure how SAD affects different age demographics. Medical staff needs to identify the root causes of Seasonal Affective Disorder and create suitable treatment approaches. The development of supportive, student-friendly systems becomes essential for addressing the needs of students who suffer from SAD. The faculty together with the administration should establish academic modifications for SAD students to reduce their emotional pain while providing academic assistance.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. American psychiatric association.
- Avery, D. H., Eder, D. N., Bolte, M. A., Hellekson, C. J., Dunner, D. L., Vitiello, M. V., & Prinz, P. N. (2001). Dawn simulation and bright light in the treatment of SAD: a controlled study. *Biological psychiatry*, 50(3), 205-216. [https://doi.org/10.1016/S0006-3223\(01\)01200-8](https://doi.org/10.1016/S0006-3223(01)01200-8)
- Ban, T. A. (Ed.). (2011). *An Oral History of Neuropsychopharmacology: The First Fifty Years: Peer Interviews*. American College of Neuropsychopharmacology Incorporated,(ACNP).
- Dam, H., Jakobsen, K., & Mellerup, E. (1998). Prevalence of winter depression in Denmark. *Acta Psychiatrica Scandinavica*, 97(1), 1–4. <https://doi.org/10.1111/j.1600-0447.1998.tb09954.x>
- Kurlansik, S. L., & Ibay, A. D. (2012). Seasonal affective disorder. *American family physician*, 86(11), 1037–1041. <https://pubmed.ncbi.nlm.nih.gov/23198671/>
- Lam, R. W., & Levitan, R. D. (2000). Pathophysiology of seasonal affective disorder: a review. *Journal of Psychiatry and Neuroscience*, 25(5), 469. <https://pmc.ncbi.nlm.nih.gov/articles/PMC1408021/>
- Magnusson, A., & Boivin, D. (2003). Seasonal affective disorder: an overview. *Chronobiology international*, 20(2), 189-207. <https://doi.org/10.1081/CBI-120019310>
- Partonen, T., & Pandi-Perumal, S. R. (Eds.). (2010). *Seasonal affective disorder: practice and research*. Oxford University Press.
- Roeklein, K. A., & Wong, P. M. (2020). Seasonal affective disorder. In *Encyclopedia of Behavioral Medicine* (pp. 1964–1966). Springer International Publishing. https://doi.org/10.1007/978-3-030-39903-0_836
- Rosenthal, N. E. (2009). Issues for DSM-V: seasonal affective disorder and seasonality. *American Journal of Psychiatry*, 166(8), 852-853. <https://doi.org/10.1176/appi.ajp.2009.09020188>
- Rosenthal, N. E., Mazzanti, C. M., Barnett, R. L., Hardin, T. A., Turner, E. H., Lam, G. K., ... & Goldman, D. (1998). Role of serotonin transporter promoter repeat length polymorphism (5-HTTLPR) in seasonality and seasonal affective disorder. *Molecular psychiatry*, 3(2), 175-177. <https://doi.org/10.1038/sj.mp.4000360>
- Westrin, Å., & Lam, R. W. (2007). Seasonal affective disorder: a clinical update. *Annals of Clinical Psychiatry*, 19(4), 239-246. <https://doi.org/10.3109/10401230701653476>

APPENDIX A

Consent Form

I am going to conduct research, titled "Impacts of seasonal affective disorder on academic performance of undergraduate students in Peshawar, Pakistan".

The purpose of the current study is to find out the impacts of seasonal affective disorder on the academic performance of undergraduate-level students and also share coping strategies with them. A questionnaire would be administered which would take almost 5-10 minutes for which your participation would be highly appreciated.

The information provided will be used for research purposes only and will be kept confidential. Moreover, you can discontinue at any stage you want.

Ms .Aimen Khalil

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APPENDIX B
Seasonal Pattern Assessment Questionnaire

1. Name_____2. Age _____

3. Place of birth - City/Province (State)/Country _____

4. Today's date _____

MonthDayYear

5. Current Weight (in lbs.) _____

6. Years of Education

a. Less than four Years of High School1

b. High School Only2

c. 1-3 years post-high Schol3

d. or more years post-high School4

7. Sex: Male 1Female 2

8. Marital Status: Single 1Married 2Sep./Divorced 3Widowed 4

9. Occupation _____

How many years have you lived in this climatic area? _____

INSTRUCTIONS

* Please circle the number beside your choice.

Example:

Sex: Male 1Female 2

The purpose of this form is to find out how your mood and behaviour change over time. Please fill in all the relevant circles. Note: We are interested in your experience; not others you may have observed.

To what degree do the following change with the seasons?

	No Change	Slight Change	Moderate Change	Marked Change	Extremely Marked Change
A. Sleep length	0	1	2	3	4
B. Social activity	0	1	2	3	4
C. Mood (overall feeling of well being)	0	1	2	3	4
D. Weight	0	1	2	3	4
E. Appetite	0	1	2	3	4
F. Energy level	0	1	2	3	4

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

At what time of year do you....

	Jan	Feb	Mar	Apr	Mah	Jun	Jul	Aug	Sep	Oct	Nov	Dec	No particular month(s) <u>OR</u> stand out as extreme on a regular basis
A. Feel best	O	O	O	O	O	O	O	O	O	O	O	O	O
B. Gain most weight	O	O	O	O	O	O	O	O	O	O	O	O	O
C. Socialize most	O	O	O	O	O	O	O	O	O	O	O	O	O
D. Sleep least	O	O	O	O	O	O	O	O	O	O	O	O	O
E. Eat most	O	O	O	O	O	O	O	O	O	O	O	O	<u>OR</u> O

F. Lose most weight	0	0	0	0	0	0	0	0	0	0	0	0	0
G. Socialize least	0	0	0	0	0	0	0	0	0	0	0	0	0
H. Feel worst	0	0	0	0	0	0	0	0	0	0	0	0	0
I. Eat least	0	0	0	0	0	0	0	0	0	0	0	0	0
J. Sleep most	0	0	0	0	0	0	0	0	0	0	0	0	0

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

0-3 lbs	1	12-15 lbs	4
4-7 lbs	2	16-20 lbs	5
8-11 lbs	3	Over 20 lbs	6

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	Over18
Spring	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Over18
Summer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Over18
Fall	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Over18

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 problems for you?

No: 1	Yes: 2	If yes, is this problem - mild	1
		moderate	2
		marked	3
		severe	4
		disabling	5

Thank you for completing this questionnaire.

* Raymond W. Lam 1998 (modified from Rosenthal, Bradt and Wehr 1987).