International Journal of Contemporary Issues in Social Sciences
Volume 3, Issue 2, 2024 ISSN(P):2959-3808 | 2959-2461

COMPARING SEASONAL CHANGES IMPACT ON MOOD, PSYCHOLOGICAL WELL-BEING AND ACADEMIC PERFORMANCE AMONG MALE AND FEMALE UNIVERSITY STUDENTS

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Received: 11 April, 2024 **Revised:** 11 May, 2024 **Accepted:** 29 May, 2024 **Published:** 12 June, 2024

ABSTRACT

Objectives: The aim of this study was (a) to check, the impact of spring and autumn seasonal changes on mood and psychological well-being among university students. (b) to compare, the effect of seasonal changes on academic performance among male and female university students

Study design*:* Cohort study design.

***Methodology*:** This study was conducted in University of Kotli Azad Kashmir Pakistan from January 2021 to august 2021 The samples of 352 male and female students age range between 15 to 25 years were randomly selected. Data was collected from students of university of kotli azad Kashmir Pakistan. Each participant completed the questionnaires of Ryff s psychological well-being scale and mood (Participants Health Questionnaires) scale at two study visits. Academic performance of each student was assessed by students CGPa in their final exams at two study visits.

Results: Results of study shows that autumn seasonal effect on mood was (mean±SD =22.95±3.87) psychological wellbeing was (mean±SD =22.95±3.87), while spring seasonal effect on mood was (mean±SD =31.57.±5.15), and on psychological wellbeing was (mean±SD =31.57.±5.15). Academic performance in spring season for female students was (mean±SD = 3.55±.194), and for male students was (mean±SD =*3.61±.193*), while, academic performance during autumn season for female students was (mean±SD =3.27±.305), male students was (mean±SD =*3.406±.320*).

Conclusion: there were noted significant seasonal changes for mood and psychological well-being among university students over the year. However the academic performance was a little more impact for female students by seasonal changes and female students showed less CGPA s compared to male students CGPA.

Keywords: Spring, autumn, Season, Mood, Psychological well-being, University Students.

INTRODUCTION

Season is a division of year based on changes in ecology, weather and the number of daylight hours in a given region. On the earth, seasons are the result of Earth's orbit around the sun and Earth's axial tilt relative to the ecliptic plane.(Khavrus & Shelevytsky, 2010, 2012) It was reported that near about 85% of the participants in a study reported that they experienced variation in their mood and behavior.(Grimaldi, Partonen, Haukka, Aromaa, & Lönnqvist, 2009) the prevalence of winter depression symptoms showed that 53.2 percent of the participants experienced depressed mood and lack of energy due to seasonal variation and 19.3 percent of the participants reported this to be a problem that effect their daily work performance.(Rastad, SJÖDÉN, & Ulfberg, 2005).

The competitive nature of studies in universities compels the students to be focused on their grades, often at the cost of compassion to oneself and others. Although university students test and grade point average are relatively good predictors of academic success but it is necessary to assess whether seasonal

changes impact academic performance among university students. Research study pointed out that adolescents academic performance is positively correlated with seasonal changes and suggesting the importance of tree cover density in school surrounding area in support of learning. (Li, Chiang, Sang, & Sullivan, 2019) in addition to this, the level of seasonal changes in mood and psychological well-being found to be significant predictors to measure academic achievement among students.(Wang & Sengupta, 2020; Zhang, Mavoa, Zhao, Raphael, & Smith, 2020)

There is a need to understand factors explaining this shift. The available literature in the context of Pakistan suggests that the academic performance of students can be enhancing by controlling the harsh cold and hot learning environment.(Mughal, 2018) As academic achievement is known to be effected by seasonal changes therefore it is needed to check out autumn seasonal changes and spring seasonal changes effected university students performance. Some of the factors that have been explored in western literature are psychological factors mood and psychological well-being affected by seasonal changes play an important role in determinant of academic performance among students. According to Sandra et., al examine that the rate of change of solar insolation during the spring and fall that vary in their intensity may be tracked by superachismatic nucleus and effect disease onset and progression in seasonably susceptible bipolar patients.(Rosenthal, Josephs, Kovtun, & McCarty, 2020) Research study conducted by Helle Ostergard Madsen and co-worker, proposed that there was no strong association between seasonality and visual field or retinal nerve fiber layer thickness and sex age glaucoma may modify light effect on complex regulatory system.(Madsen, Ba-Ali, Lund-Andersen, Martiny, & Hageman, 2020)

Research study conducted by Jacqueline Middleton et., al, demonstrated that indigenous people mental health impacted by meteorological, seasonal and climatic changes can be improved by support indigenous-driven initiative and decision making to enhance the mental wellness of indigenous people by changing the climate.(Middleton, Cunsolo, Jones-Bitton, Wright, & Harper, 2020) According to Sharon Piller *et., al* demonstrated that climate variability adversely affect the psychological well-being of the large number of global population lives in rural areas.(Pailler & Tsaneva, 2018)

Research study conducted by Delisle-Houde suggested that male and female collegiate' hockey athletes shows changes in their physiological responses and body composition profiles over the season. (Delisle-Houde, Reid, Insogna, Chiarlitti, & Andersen, 2019) .

In the light of above evidence no study has yet been conducted to determine the effect of seasonal changes on mood and psychological well-being and academic performance among university students. The purpose of this study is to examine and explore the impact of spring and autumn seasonal changes on mood psychological well-being academic performance among university students. This study also aim to explore the effect of seasonal changes on academic performance among male and female university students.

Methodology

This cross-sectional study was conducted in university of kotli azad Kashmir, Pakistan from January 2021 to September 2021. The sample comprises of 352 male and female adolescents age range between 18-25 years old. Sample size was calculated by Raosoft calculator keeping the confidence interval 95%. Consent was taken from the authorities of university and later consent was taken from the participants on the individual level. Data was collected from students of university of kotli azad Kashmir Pakistan. Each participant completed the questionnaires of Ryff s psychological well-being scale and mood (Participants Health Questionnaires) scale at two study visits.

Demographic forms were obtained for personal information from participants regarding their age, gender, living environment, education, socioeconomic status and family system.

The questionnaires mood scale develop by Alexandra Martin in (2006), consists of 9 items used to assess depressive symptoms. (Martin, Rief, Klaiberg, & Braehler, 2006)

The Ryff s psychological well-being scale: It consists of 42 items and comprises of following dimension; Autonomy dimension (Item 1,7, 13, 19, 31, 37), environmental mastery dimension (Item number 2, 8, 14, 20, 26, 32, 38), personal growth dimension (3, 9, 15, 21, 27, 33, 39) , positive relation dimension(item 4, 10, 16, 22, 28,34, 40) purpose in life diminution (5, 11, 17, 23, 29, 35, 41) self acceptance dimension (6, 12, 18, 24, 30, 36, 42).(Sijtsma, Emons, Bouwmeester, Nyklíček, & Roorda, 2008)

Academic performance was assessed by students CGPa in their final exams .Students would be requested to write on the biodata form provided to them marks they obtained in their previous exam .Top 50 and lower 50 students would be recruited for the research from the list of each class.

SPSS, Version 16 was used to analyze the data. The relationship between sawan seasons on mood with psychological wellbeing among university students. Demographic characteristic were analyzed by frequency percentages. Paired t-test and independent sample t-test were used to see the impact of autumn seasonal changes and spring seasonal changes on mood, psychological wellbeing and academic performance among university students.

RESULTS:

A total number of 352 participants 169(46.3%) were males and 183(51.4%) were females (table-I). The age of participants ranged from 15to 25 years (mean±SD =22.95±3.87). About 52.5% of the participants were aged 15-20 years, 46.3% were age 20-25 years.

Table-1; Descriptive statistics (n=352).

Demographic variables		***n (%)***
Age	15-20	187 (52.5%)
	20-25	165 (46.3%)
Gender	Male	169 (47.5%)
	Female	183 (51.4%)
Living environment	Urban	60 (16.9%)
	Ruler	292 (82.0%)
Family	Joint	81 (22.8%)
	Nuclear	271(76.1%)
Socioeconomic status	Low	53 (14.3%)
	Middle	213 (59.8%)
	High	86 (24.2%
Education	Under-graduate	166 (46.6%)
	Post-graduate	186 (52.2%)

The majority of the participants (82.0%) were residents in a city while, 16.9% the participants were residents in rural areas. About 756.1% of the participants were belong to nuclear family system, 22.8% of the participants were belong to joint family system. Socioeconomic status analysis showing that 14.3% of the participants from low socioeconomic class, 59.8% participants from middle class and 24.2% participants from high socioeconomic class. About 46.6% of the participants were undergraduate students and 52.2% of the participants were postgraduate students.

Table-II: Comparing the Impact of autumn seasonal changes and spring seasonal changes on mood and psychological wellbeing among university students. (n = 352).

Parameter	Mood (200)	Psychological wellbeing (200)
Autumn seasonal changes (mean±SD)	22.95±3.87	*217.93±16.95*
Spring seasonal changes (mean±SD)	31.57±5.15	*182.81±21.11*

Table-II results show, that there was noted a significant difference in the score of mood and psychological well-being for autumn and spring seasonal changes among university students. Autumn seasonal effect on mood score was (mean±SD =22.95±3.87), and spring seasonal effect on mood score was (mean±SD =31.57.±5.15), which means that there was a significant differences in the score of mood ad spring seasonal changes for autumn and spring seasonal effect on mood.

Similarly the results in (table-II) shows that the score for autumn seasonal effect on psychological wellbeing score was (mean±SD =22.95±3.87), and spring seasonal effect on psychological wellbeing score was (mean±SD =31.57.±5.15), which means that there was a significant differences for autumn seasonal effect on psychological wellbeing and spring seasonal effect on psychological wellbeing.

Table-III: Comparing the Impact of autumn seasonal changes and spring seasonal changes among male and female university students. (n = 352).

parameter	Female (183)	Male (169)
Spring academic performance in CGPA (mean±SD)	3.55±.194	*3.61±.193*
Autumn academic performance in CGPA (mean±SD)	3.27±.305	*3.406±.320*

Academic performance in spring season for female students was (mean±SD = 3.55±.194), and for male students was (mean±SD =*3.61±.193*), while, academic performance during autumn season for female students was (mean±SD =3.27±.305), male was (mean±SD =*3.406±.320*).

Table-III results show, that there was a little significant difference in the CGPA for male and female university student for spring and autumn season. Students CGPA in spring season for female were (mean±SD = 3.55±.194), and for male CGPA in spring season were (mean±SD =*3.61±.193*). Results of the study showed that male and female students were showing significant difference in their performance due to spring seasonal effect.

Similarly, students CGPA in autumn season for female were (mean±SD =3.27±.305), and for male were (mean±SD =*3.406±.320*). Results of the study showed that male and female students were showing significant difference in their performance due to autumn seasonal effect.

DISCUSSION:

From the forgoing discussion it was established in this study that there was an impact of autumn season and spring season on mood, psychological wellbeing and academic performance among university students. Descriptive statistics results indicated that 352 participants from rural and urban areas belong to different socioeconomic classes answered the questionnaires. Participants were 47.5% and 41.4% males and females respectively.

The current data showed that spring and autumn seasonal changes on mood and psychological well-being among university students. Data analysis indicates that findings are consistent with formulated objectives. Results in table-II, shows that there was noted a significant differences in the participants score on mood and psychological well-being for autumn and spring seasonal changes. The mean score PHQ (participants health Questionnaires assessing mood), score was calculated for autumn season was (mean±SD =22.95±3.87), and for spring season the mean score was (mean±SD =31.57.±5.15), which means that there was a significant differences for autumn seasonal effect on mood and spring seasonal effect on mood. Our results suggest that a seasonal change does have an effect on mood among university students. Our result reveals that autumn season have considerable more effect on mood as compared to spring season. Participant's mood was reported to slow down during autumn season as compared to spring season. The score for mood during spring and autumn seasonal changes reveals that a seasonal change over the year does have an effect on mood. The result of our study is in line with previous research by Kaviani and colleagues suggests that there was a significant changes noted in mood swing in different weather in normal population.(Kaviani, Karamghadiri, & Ebrahimkhani, 2005) Our study also line with previous study conducted by Talat et.,al, suggested that during winter season there was noted increased in emotional symptomatology and depressed mood. (Talat, Phillips, Caradonna, Gray, & Sedaghat, 2019) Similarly results in table-II shows that autumn seasonal effect on psychological wellbeing score was (mean±SD =22.95±3.87), and spring seasonal effect on psychological wellbeing score was (mean±SD =31.57.±5.15), which means that there was a significant difference for autumn seasonal effect on psychological wellbeing and spring seasonal effect on psychological wellbeing. Our results suggest that a seasonal change does have an effect on psychological well-being among university students. Our result reveals that autumn season effect more on psychological wellbeing. Participant's psychological wellbeing reported slowly down during autumn season as compared to spring season. The score for psychological wellbeing during spring and autumn seasonal changes reveal that a seasonal change over the year does have an effect on psychological wellbeing. The result of our study is in line with previous research by Meesters (2018), pointed out that bright light therapy for 20 minutes a day improved mood, increased energy level, and decreased sleepiness.(Meesters, Winthorst, Duijzer, & Hommes, 2016)

Results in (table-III) shows that Academic performance in spring season for female students was (mean±SD = 3.55±.194), and for male students was (mean±SD =*3.61±.193*), show, that there was a little significant difference in the CGPA of student for spring and autumn season. Students CGPA in spring season for female were (mean±SD = 3.55±.194), and for male CGPA in spring season were (mean±SD =*3.61±.193*). Results of study showed that male and female showing a little significant difference in their performance due to spring seasonal effect. Similarly, academic performance during autumn season for female students was (mean±SD =3.27±.305), male was (mean±SD =*3.406±.320*) shows that students CGPA in autumn season for female were (mean±SD =3.27±.305), and for male CGPA in autumn season were (mean±SD =*3.406±.320*). Results of study were showing that male and female had a little significant difference in their performance due to autumn seasonal effect. The result of our study is in line with previous research by Eagles and colleagues shows that seasonal changes are most pronounced among female of reproductive age. (Eagles, McLeod, & Douglas, 1997) According to study by Hadfield et., al suggested that there was a significant difference in CGPa between the genders with the mean for male at 3.11 and the mean for female was 3.08 showing that females range in CGPa is smaller from mean than with male in final exam test.(Hadfield, 2017)

Academic performance in spring season for female and female (mean±SD = 3.55±.194 (mean±SD =*3.61±.193*), while, academic performance during autumn season for female and female was (mean±SD =3.27±.305), (mean±SD =*3.406±.320*) showing that autumn season does had significant effect on students performance, especially in the academic performance of female university students. Our study results are in line with previous research conducted by besoluke et, al, pointed out that junior and senior students retained higher GPAs and most students had higher scores on tests and assignment in the spring season when the weather is looking up and typically pleasant (Beşoluk & Önder, 2011).

Conclusion of the study

Our finding suggests that the mood and psychological wellbeing of university students are affected by seasonal changes throughout the year among university students. However the academic performance was a little more impact for female students by seasonal changes and female students showed less CGPA s compared to male students CGPA.

Limitation and suggestion of the study

Based on the findings, the current research paper therefore recommends that there should be needed for a more conducive learning environment to enable the students to learn more and perform better in their final exams. The school classroom, lecture halls should be equipped with air condition in hot season and heaters in cold season. There is a need to design class room in such a way that will minimize the effect of harsh weather on student's mood psychological well-being and student's performance in final exams. There are also some suggestions for future research. The findings obtained from this study may be applied in therapeutic interventions social setting to design an environment in such a way that will minimize the effect of harsh weather on student's psychological well-being, and mood that will enhance their ability to learn to achieve maximum CGPa in their final exam.

REFRENCES:

Beşoluk, Ş., & Önder, I. (2011). Do seasonal changes and teaching time affect academic performance of pre-service teachers? *Biological Rhythm Research, 42*(5), 445-456.

Delisle-Houde, P., Reid, R. E., Insogna, J. A., Chiarlitti, N. A., & Andersen, R. E. (2019). Seasonal changes in physiological responses and body composition during a competitive season in male and female elite collegiate ice hockey players. *The Journal of Strength & Conditioning Research, 33*(8), 2162-2169.

Eagles, J. M., McLeod, I. H., & Douglas, A. S. (1997). Seasonal changes in psychological well-being in an elderly population. *The British Journal of Psychiatry, 171*(1), 53-55.

Grimaldi, S., Partonen, T., Haukka, J., Aromaa, A., & Lönnqvist, J. (2009). Seasonal vegetative and affective symptoms in the Finnish general population: testing the dual vulnerability and latitude effect hypotheses. *Nordic Journal of Psychiatry, 63*(5), 397-404.

Hadfield, J. L. (2017). *Comparative Analysis of Student-Athletes with Learning Disabilities Academic Performance in and Out-of-Season.* Delaware Valley University.

Kaviani, H., Karamghadiri, N., & Ebrahimkhani, N. (2005). Mood swings in different weathers and during seasonal changes in normal population.

Khavrus, V., & Shelevytsky, I. (2010). Introduction to solar motion geometry on the basis of a simple model. *Physics Education, 45*(6), 641.

Khavrus, V., & Shelevytsky, I. (2012). Geometry and the physics of seasons. *Physics Education, 47*(6), 680.

Li, D., Chiang, Y.-C., Sang, H., & Sullivan, W. C. (2019). Beyond the school grounds: Links between density of tree cover in school surroundings and high school academic performance. *Urban Forestry & Urban Greening, 38*, 42-53.

Madsen, H. Ø., Ba-Ali, S., Lund-Andersen, H., Martiny, K., & Hageman, I. (2020). Mood and behavior seasonality in glaucoma; assessing correlations between seasonality and structure and function of the retinal ganglion cells. *Plos one, 15*(3), e0229991.

Martin, A., Rief, W., Klaiberg, A., & Braehler, E. (2006). Validity of the brief patient health questionnaire mood scale (PHQ-9) in the general population. *General hospital psychiatry, 28*(1), 71-77.

Meesters, Y., Winthorst, W. H., Duijzer, W. B., & Hommes, V. (2016). The effects of low-intensity narrow-band blue-light treatment compared to bright white-light treatment in sub-syndromal seasonal affective disorder. *BMC psychiatry, 16*(1), 1-10.

Middleton, J., Cunsolo, A., Jones-Bitton, A., Wright, C. J., & Harper, S. L. (2020). Indigenous mental health in a changing climate: a systematic scoping review of the global literature. *Environmental Research Letters, 15*(5), 053001.

Mughal, A. W. (2018). *Investigating the issue of out-of-school children in rural Pakistan: implications for policymakers.* Loughborough University.

Pailler, S., & Tsaneva, M. (2018). The effects of climate variability on psychological well-being in India. *World Development, 106*, 15-26.

Rastad, C., SJÖDÉN, P. O., & Ulfberg, J. (2005). High prevalence of self-reported winter depression in a Swedish county. *Psychiatry and clinical neurosciences, 59*(6), 666-675.

Rosenthal, S. J., Josephs, T., Kovtun, O., & McCarty, R. (2020). Seasonal effects on bipolar disorder: A closer look. *Neuroscience & Biobehavioral Reviews, 115*, 199-219.

Sijtsma, K., Emons, W. H., Bouwmeester, S., Nyklíček, I., & Roorda, L. D. (2008). Nonparametric IRT analysis of quality-of-life scales and its application to the world health organization quality-of-life scale (WHOQOL-Bref). *Quality of Life Research, 17*(2), 275-290.

Talat, R., Phillips, K. M., Caradonna, D. S., Gray, S. T., & Sedaghat, A. R. (2019). Seasonal variations in chronic rhinosinusitis symptom burden may be explained by changes in mood. *European Archives of Oto-Rhino-Laryngology, 276*(10), 2803-2809.

Wang, C., & Sengupta, A. (2020). Seasonal impact on cognitive performance when socioeconomic environments desynchronise with natural environments: evidence from college students' academic performance. *Interdisciplinary Environmental Review, 20*(3-4), 195-216.

Zhang, Y., Mavoa, S., Zhao, J., Raphael, D., & Smith, M. (2020). The association between green space and adolescents' mental well-being: a systematic review. *International journal of environmental research and public health, 17*(18), 6640.