ASSOCIATION BETWEEN STRESSFUL LIFE EVENTS, DEPRESSION AND SOCIAL SUPPORT AMONG UNIVERSITY STUDENTS

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CERTIFICATE OF APPROVAL

It is certified that the Research Thesis titled **"Association between Stressful life events, Depression and Social support among university students"** carried out by **Maryam Nawaz**, Reg. No. **BSP193014**, under the supervision of **Ms. Parveen Akhtar**, Capital University of Science & Technology, Islamabad, is fully adequate, in scope and in quality, as a Research Thesis for the degree of BS Psychology.
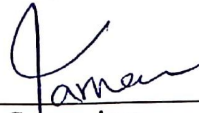
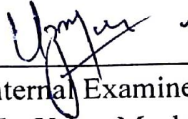Supervisor: --

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I dedicate this thesis entirely to my parents, whose stanch belief in my abilities and support have allowed me to advance in my academic career, my brothers and especially to my youngest brother (Umar Nawaz) and my friends (specifically Fatima), who have supported me through every ups and downs and encouraged me to reach higher.

DECLARATION

It is declared that this is an original piece of my own work, except where otherwise acknowledged in text and references. This work has not been submitted in any form for another degree or diploma at any university or other institution for tertiary education and shall not be submitted by me in future for obtaining any degree from this or any other University or Institution.

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ABSTRACT

The current research attempted to determine the Association between stressful life events, depression and social support among university students. Due to the range of psycho-social changes the university students experience along with managing academic or social responsibilities, they are typically more susceptible to stress and the resulting outcomes. The study's goal was to investigate how stressful life events, depression, and social support are interlinked and was studied using a cross-sectional design. The data was collected from different universities of Islamabad/Rawalpindi. A total of 450 students aged between 18-24 years took part in the studies that were conveniently sampled. Data was collected using Student stress scale (28 items), Patient Health Questionnaire-9 (9 items) and Multidimensional Scale of perceived social support (12 items). Spearman's correlation analysis was run to find the association between the variables. Moreover, Mann Whitney-U test analysis was run to find the gender difference and the mean difference in the semesters the students were enrolled in with reference to depression. The result showed that stressful life events had a significant positive correlation with depression ($r=0.33**$), and between perceived social assistance and depression ($r=-0.50**$). The study findings concluded no gender differences in term of depression ($0.27>0.05$). Moreover the findings also showed that there is no significant difference in depression ($0.37>0.05$) with reference to the semesters the students are enrolled in. Linear relationship between stressful life events and depression had been found out while the moderation analysis could also be run in order to find the moderating affect of social support. Different interventions could be designed that may include group activities or tasks to promote coherence and eventually enhance the sense of social support.

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Key words

APA	American Psychological Association
SSS	Student stress scale
PHQ-9	Patient Health Questionnaire
MSPSS	Multidimensional Scale of Perceived Social support
f	Frequency
M	Mean
SD	Standard deviation
Sk	Skewness
K	Kurtosis
K-S	Kolmogorov-Smirnov
p	Significance value
MSPSS-SO	Multidimensional Scale of Perceived Social support-Significant others
MSPSS-FAM	Multidimensional Scale of Perceived Social support- Family
MSPSS-FRI	Multidimensional Scale of Perceived Social support- Friends

Chapter 1: Introduction

University life is exciting as it prepares establishing individual into a professional life. However, it can be a stressful experience with academic expectations and workload. University students need to adjust to a number of psychological changes in addition to handling the academic and social duties of getting ready for their careers (Uehara, 2010).

The environment could become extremely stressful for students due to the high expectations for academic success, and if it is not addressed, it could be dangerous to both their mental and physical well-being. According to a study, university students are generally more vulnerable to stress and there is an inverse relationship between stress and psycho-physiological health (Houghton, 2012; Ruthig, 2009).

The university offers a number of potentially difficult adjustments that are referred to be sensitive moments of change (Gale & Parker 2014). Transitions start even before joining university and include getting used to yearly changes as well as leaving university and stepping into the workforce or a postgraduate study. It is essential to comprehend students' identification and incorporation into campus life from beginning to end (Tett, Cree, & Christie 2017).

Gale & Parker (2014) suggest that transition is primarily about "whole-of-life changes in actual reality or subjective experience" even though the literature starts from the assumption that transition is an ongoing procedure of induction leading to successive phases of adjustment. The conceptualization of transition as a process that occurs over time, continuing well beyond entry into the university and encompasses changes that students must navigate as they proceed through formal education and beyond (Bowles et al. 2014; Hussey & Smith 2010). Therefore, becoming and

maintaining success as a student involves more than just satisfying institutional criteria; it also involves the entirety of a student's experiences throughout the course of their education (Donche et al. 2010). Psychologically, transitions can be challenging, which could result in a substantial impact on the mental well-being of students. Distress levels never approach pre-university levels, according to studies (Bewick et al. 2010), showing that the transition to university presents significant challenges for students that might not be eliminated. (Conley et al. 2020).

Stressful life events

According to Holmes and Rahe (1967), negative/stressful life events are those that "can contribute to dysfunction and disturbances that are most likely to cause readjustment-requiring adjustments to one's daily life." Stressful life events are undesirable, uncontrollable events that signify major life changes. These are defined as a distinct set of circumstances, such as a job's security and challenges, financial difficulties, social issues, family and personal conflicts, concerns with one's education, and health-related stressors. These stressors can have a significant negative effect on psychological conditions and raise the risk of depression and anxiety. (Hassanzadeh et al., 2017). According to a study conducted in one of the universities of Bangladesh, students who have experienced stressful life events are more likely to develop depressive symptoms. In the same study it was concluded that stressful life events including academic failure, relationship issues or family issues are linked with higher depression rates (Rasheduzzaman, et al., 2021).

Negative life events are an example of risk that has gotten considerable empirical attention, despite the fact that the underlying causes of psychological illnesses are multifaceted (Boe et al., 2018). The move to university is commonly referred to as an "acute stressor" since it places a significant amount of stress on

students' wellbeing right away as they may find it difficult to adjust to academic life (Gall, Evans, & Bellerose 2000).

Seniors in university, in particular, are a unique group of people going through a crucial moment of transition as they leave campus and enter society and make numerous important decisions regarding their life, academic pursuits and future careers (Chen et al., 2013). During this crucial era, they may encounter a range of unfavorable life events, including modifications to daily routines, problems with interpersonal connections, competitiveness and challenges with academic work, economic stress, and difficulties with making significant decisions (Zhou et al., 2012).

Depression

Depression is categorized as a mental disorder that is about low mood, low energy, no or less interest, feelings related to guilt or decreased self-importance, disturbed sleep, appetite issues and lost concentration (Gul, 2020; NICE, 2009). University students are more likely than the overall population to experience depression (Ibrahim et al., 2013). Numerous studies found that between 5% and 40% of students have depressive symptoms (Othieno et al., 2014; Youssef, 2016; Azim & Baig, 2019). Several factors have been linked to university students that are depressed, including sleeping issues, a lack of social assistance, an increase in age or educational year of study, smoking, a lower socioeconomic position (Ibrahim et al., 2013), and poor academic achievement (Peltzer et al., 2013; Othieno et al., 2014; Yuoseff, 2013). Among older individuals and young adults, depression is a frequent mental illness and a major source of concern for their health (Weitzman, 2004).

University students have been found to be more susceptible to mental health problems according to previous studies (Auerbach et al., 2018; Eissler et al., 2020). According to a study, depression, anxiety and stress can influence academic

performance (Wanda, Chernomas & Shapiro, 2013). According to Hysenbegasi, Hass and Rowland (2005), depression frequently co-occurs with low academic performance, severe impairment, drug or alcohol abuse, suicidal thoughts and behaviors ensuing physical and mental health problems, especially in young college and university students. In light of the fact that depression is linked to academic failure and university drop-out, it obstructs both upward social quality and the development of human resources among university students (Adewuya et al., 2006).

There are certain factors that are may result in depression in students. Female gender, higher levels of education/age, poorer socioeconomic position, stressful and traumatic events like post traumatic stress disorder, and addictive behaviors like increased alcohol and tobacco use all increase the likelihood of depression in students (Ibrahim et al., 2013; Othieno et al., 2014; Peltzer et al., 2013).Financial hardships and independent decision-making, such as living independently and managing one's daily life, have been linked to depressive symptoms in university students (Andrews & Wilding, 2004; Leykin & DeRubeis, 2010).

According to Hysenbegasi et al. (2005), there are other bio-psychosocial stresses that students may experience in addition to academic difficulties that contribute to depression. For example, poor mental health in undergraduates has been linked to a variety of factors, including living away from family, concerns about future job prospects, financial situations, psychological characteristics like low resilience, academic strain, an atmosphere of competition, and interpersonal relationships (Pan et al., 2016; Richardson et al., 2017; Sun et al., 2011).

According to a number of studies, early-onset depression is linked to a number of negative outcomes, including education termination (Breslau et al., 2008; Lee et al., 2009), subpar academic performance, severe role impairment, and lowered chances of

finding employment in adulthood (Alonso et al., 2018; Auerbach et al., 2016; Mojtabai et al., 2015).

Social support

Perceived social support is the idea that you are supported by others and have a strong social network to fall back on when things go tough. (Taylor, 2011). It is the subjective assessment of how people view their friends' and family's availability to offer material, psychological, and all-around help in times of needs. It may come from one's family, friends, teachers, community, or other social circles to which one belongs, among multiple sources (Yasin et al., 2010). The perception that other people in one's life regard, respect, care about, and love them is known as perceived social support. The main people around an individual such as family, friends and significant others could provide practical help and assistance, gestures of empathy, affection, confidence, concern, guidance, and suggestions when required.

According to a research, university students' academic, emotional, and social performance is significantly impacted by the social support they receive from friends and family (Awang et al., 2014). Another study concluded that the emphasis changes from parents to peers as the adolescent strives to individuate from family, while friends are becoming a greater source of social support than family during this time of adolescence (Kugbey, 2015).

Social support plays a beneficial function in psychological wellness and standard of life by fostering a sense of belonging and appreciation among its recipients. A defense against depression, this awareness of support is linked to lower instances of psychological issues (Camara & Padilla, 2017). It can take the shape of actual aid given by others or might be seen as social support, which measures people's confidence in the availability of sufficient support when they need it (Cheng, 1997).

Numerous studies have consistently discovered a favorable correlation between psychological well-being and perceived social support, across an array of mental health outcomes (Chu, Saucier & Hafner, 2010). Reduced depression, anxiety, and worry have a link with increased perceived support from others, as well as more positive emotions and life satisfaction (KlaininYobas et al., 2016; Siedlecki, Salthouse, Oishi, & Jeswani, 2014). A study quoted that people's life happiness was positively correlated with their perception of social support, so the more social support people felt, the more satisfied they were with their lives. Conversely, it has been repeatedly demonstrated that a person's feeling of life satisfaction declines when they don't feel that their family, friends, or significant others are there for them (Yu et al., 2020). There is a strong correlation between psychological well-being and perceived social support, making it possible to see it as a protective mechanism that might enhance psychological well-being by sustaining good emotions and reducing stress (Chu et al., 2010; Thoits, 2011; Liu et al., 2014).

According to a study, social support can help with behavioral and mental health concerns and has a significant impact on one's well being (Bishop-Fitzpatrick, 2018; Scott & Havercamp, 2014; Sung, 2021). Previous studies have shown that inadequate social support is associated with anxiety, depressive disorders, attention-related issues, interpersonal problems, physical discomfort, and a low sense of self and that it may also be one of the signs of mental health issues. Social support appears to be essential given that it is viewed as a way to combat life's stressors and promote health and wellness (Steese, et al., 2006).

Literature review

According to the previous literature, it has been concluded that university life is basically a time of change in which young individuals develop skills, have new

experiences, grow their social structure and network and strive to attain knowledge. Experiencing a university period could be a stressful life event for many students since they face changing lifestyle and relationships (Bilgel & Bayram, 2008; Ibrahim et al., 2013; Steptoe, Tsuda & Tanaka, 2007). Evidence suggests that after they are accepted into colleges, students face stress on their mental health, even if it subsides as they progress through their courses. (Macaskill, 2013; Mey and Yin, 2015), it does not recover to levels as before (Cooke et al., 2006; Bewick et al., 2010). Different challenges from the environment impact psychological wellbeing and relationships of both the genders. An increased rate of such distress in any gender could lead to personal or social issues that could as a result increase the chances of substance abuse (Patel et al, 2007).

According to a study's findings, depression has an impact on academic performance. These results support earlier research findings that demonstrate how depressed teenagers are more likely to perform poorly in school. Recent studies found that 72% of medical students in Karachi and 75% of university students in Sialkot, Pakistan, suffer from depression on a regular basis (Asif et al., 2020). The rise in depression and mental health illnesses is significantly attributed to factors such as academic stress, intense competition for degree, scholarship tests, a demanding schedule without time off, and a lack of leisure facilities (Rehmani et al., 2018). A study conducted in the private and public universities of Karachi cited that youth and students of age 18 to 24 to be most susceptible to depression due to the load they face. The study concluded that the depression prevalence was 53.43% (Ghayas et al., 2014). According to a survey, 42.66% of Pakistani university students had depressive symptoms overall (Khan et al., 2020).

A study found out that people's poor life choices, distressing experiences, lack of preparation for the future may result in depression (Rehman et al., 2021). Educational institutions can have negative effects on students' academic achievement, life satisfaction, depressive moods, empathy, and competency skills (Haldorsen et al. 2014; Rehman et al. 2014). Additionally, according to the resource allocation model of the impact of depressed mood on cognitions, researchers have found that depressed symptoms increase a student's propensity to focus on distracting, irrelevant ideas, leaving little time for sustained attention on cognitive activities which eventually lead to academic failure (Masjedi et al., 2019).

Association of stressful life events with depression

Stressful life events are evident changes in a person's circumstances that might be challenging for them to adjust to (such as losing a career or a loved one), may be beyond their physical and mental capacity, and result in psychological distress (George, 2011). Life events can disrupt someone's routine and need a necessary readjustment, or they may disrupt someone's life and leave them feeling distressed (Bruce, 2002).

A greater likelihood of depression and anxiety has been reported to be strongly linked to negative life events (Stikkelbroek et al., 2016). Stressful life events are associated with increased depressive symptoms (Mazure, 1998), major depression in both adults (Hammen, 2005; Stroud, Davila, & Moyer, 2008) and adolescents (Abela & Skitch, 2006).

Research also suggests that even in times of less severe stress, people are more susceptible to depression when they have experienced early adversity or negative life event such as unexpected loss, molestation, parental illness, and child neglect. Student lives are occupied with multiple sociocultural and personal

challenges along with the incoming academic demands (Mansour, Halabi & Dawan, 2008). Some students are better capable at overcoming these challenges while others might experience high level of stress as negative outcome of such challenges, however social support provided by a social network could help in better adjusting in the university student life (Rahat & Ilhan, 2016) that ultimately enhances life satisfaction (Putral & Fauzi, 2015).

Association between perceived social support and depression

Having a strong social support network is important so that people would assist us deal with the crisis. Research indicates the perceived social support effectively protects depressive symptoms (Loannou, Kassianos & Symeou, 2019). Having a higher level of social support could help weakening the effect of stress on depressive symptoms. Lacking social support could lead to psychological issues such as depression or anxiety. These issues as a result impact somatic health by making the individual vulnerable to ill behavioral patterns that could give rise to disease or death (Cohen & Wills, 1985).

In Pakistan's older population, perceived social support significantly predicted depressed symptoms, with depression getting worse as perceived social support declined (Tariq et al., 2020). Strong social support networks increase a person's chance of recovering from situations that cause a high stress response (Brewin et al., 2000). By aiding coping mechanisms, changing negative attitudes, and encouraging changes in health-related behaviour that are frequently the result of stressful life events, social support is thought to enhance mental and physical well-being (Wills &Shinar, 2000). Supportive social networks do influence social and emotional wellbeing of students that as a result, could reduce the chances of having depression and anxiety issues.

A study conducted in Pakistan concluded that perceived social support negatively predicts depression and anxiety (Razia & Afzal, 2017). According to a study, social support positively impacts mental health and the quality of life since its provision makes individuals feel appreciated and more connected to people. This perception of support is associated with less psychological problems, which serves as a deterrent to depression. (Padilla & Camera, 2017; Dafaalla et al., 2016; kugbey, 2015).

Gender differences in depression

In the previous literature, it can be seen that there is a gender difference in terms of depression. In comparison to men, women experience much greater rates of depression (Nolen Hoeksema & Girgus, 1994). Women seem to be affected by depression at a two to one ratio compared to men (Weissman & Klerman, 1977). Previous epidemiological researches have found that women frequently have more mental health problems than males do for two reasons. First, physiological representations of gender-specific emotional and behavioral differences exist (e.g., biological sensitivity, hormones, etc.) (Hankin & Abramson, 1999). Males and females respond to stress in various ways due to their differences in sensitivity to events (Afifi, 2007). Females were more sensitive to stress and discomfort than men, which may explain why they experience higher levels of anxiety and depression (Chaplin et al., 2008). Additionally, their perceptions of traditional masculinity and femininity may have an impact on their attitudes and behaviors towards life situations. Empathy, compassion, and sensitivity to others' needs are characteristics of femininity, whereas independence and assertiveness are characteristics of masculinity (Gibson et al., 2016).

Theoretical framework

Social support is defined as resources provided by other people to a person to aid in more effective problem-solving. The stress-buffering hypothesis describes the relationship between social support and stressful life events and depression by describing how social support functions as a stress-buffer. This hypothesis contends that social support protects a person from the negative impacts of stressful events, acting as a buffer (Cohen and Wills, 1985).

According to studies, those who receive more social support are either less impacted by negative events in their life or are unaffected by them entirely. People feel better when they are in supportive relationships because they provide a source of closeness, embracing oneself, and psychological assistance (which serves as a buffer against various life stressors). People who are encouraging can also offer wise advice and guidance. Due to the resources provided by interpersonal interactions, the effects of stressful situations on depression and anxiety are lowered. Positive social support, in a social network could provide an individual with positive experiences ultimately giving a sense of certainty, self-importance and stability in life. This all could ultimately help in dealing off with stressful life events and subsequently the probability and the onset of psychological issues.

It is probable to view social support as a protective mechanism that can improve psychological well-being by sustaining positive feelings and lowering stress because there is a high association between psychological well-being and the perception of social assistance (Chu et al., 2010; Thoits, 2011; Liu et al., 2014).

Diagrammatic representation of theoretical framework

| Stressful life events | ⟹ | Depression | ⟸ | Social support |

Rationale

Adolescence is a phase of development marked by significant changes in the body, behavior, brain, and emotions. It is also a time when the young person experiences significant social obstacles. Several studies have noted that certain young individuals go through difficult situations as they make the transition to adulthood, which, depending on their nature and severity, may cause psychological issues of an externalizing form (aggression and antisocial behavior) or an internalizing nature; depression and anxiety (Grant et al., 2004).

According to literature, stressful life events do impact the well-being of individuals and the available social support does help individuals get through the hard times efficiently. There is very little work done in this regard in the Pakistani context. There is a study conducted in Pakistan which explored the inverse association between perceived social support and mental well-being but it hasn't touched life stressors causing depression.

Depression affects productivity and academic functioning of university students. According to the United Nations Population Fund report there is 63% of youth in Pakistan out of the total 207 million people (Population Census, 2017). Youth is the biggest asset of developing nations. The students are more susceptible to depression and other mental health problems as a result of life stressors. With reference to Pakistan, the university students do face academic pressure, stress and burden. Along with this, different other elements of the society such as family, friends, and societal expectations demand struggle in competitive university atmosphere. These all factors could hinder seeking support since mental health is considered as a cultural stigma (Husain et al., 2019).

Psychologically ill health could lead to deteriorated academic achievement, performance and success and lower future expectations and preparedness. There is a lot of study on how social support affects depression in adults and the general population. However, the student population faces particular challenges and constitutes a distinct developmental transitional stage, including a fresh sense of independence and social ties (Robotham, 2008). For university students to adjust emotionally, socially, and academically, it is crucial to identify certain sources of social assistance that safeguard their mental well-being and standard of life.

Studying the link between stressful life events, depression, and social support can aid in the development of interventions for university students that incorporate socially supportive behaviors to boost productivity and somewhat lessen the depressive symptoms associated with the stressful life events. Mere the sense or perception of social support available could aid in mental wellbeing. According to a study, people who believed they have more social support were less likely to suffer from negative mental health effects such as social isolation, anxiousness, and depression, and as a result, they reported better levels of life satisfaction (McDougall et al., 2016). In higher education institutions where students are exposed to an extremely demanding and competitive environment, social demands, future expectations, financial concerns, and parental expectations to earn the degree and be the breadwinner of the home, Pakistan falls short in providing career counseling and mental health services.

Objectives

The objectives of this study are to investigate;

1. The relationship between stressful life events and depression among university students

2. The relationship between depression and social support among university students

3. The difference in depression based on gender and academic year

Hypothesis

There will be

H1:   A significant positive relation between stressful life events and depression

H2:   A significant negative relationship between depression and perceived social support.

H3:   A difference in depression based on gender and no difference based on the academic year among university students

Chapter 2: Method

Research design

The study design was cross-sectional in nature. It was a correlational study which aimed at finding the association between stressful life events, depression and social support among undergraduate students.

Ethical consideration

The consent forms and information sheet were created while taking into account APA's ethical standards. Approval for data collection was taken from Capital University of Science and Technology's psychology department. The participants received a sheet of information along with a consent form. Participants were asked to sign on consent form for their willingness to participate in the study. The participant's rights, including the right to withdraw from the study, confidentiality to maintaining the anonymity of the participants' identities and results, were also covered.

Sample and sampling technique

The number of participants of this study was 450. Both male and female gender was incorporated. Convenience sampling was used in approaching the sample. The recommended age range for the respondents was 18 to 24 years old. University students are predominantly between the ages of 18 and 24 as per the literature that is why this age range has been selected. 1st to 8th semester students were taken into account.

Inclusion criteria

Undergraduate students with the age range from 18 to 24 years.

Exclusion criteria

Physically challenged individuals were not included.

Instruments

A demographic sheet that contained the information regarding the age, gender, and semester, relationship status of the parents, family system and living status of the respondents was administered. Along with this, the stressful life events, depression and perceived social support were assessed by using Student Stress Scale, Patient Health Questionnaire and Multidimensional Scale of Perceived Social Support respectively. Following is the description of the instruments.

Student Stress Scale

In order to provide a distinct perspective for stress evaluation, the Student Stress Scale concentrates on situations that may occur in a student's life. The Life Events Scale, which Holmes and Rahe originally created, was modified for college students as the Student Stress Scale (Noone, 2017). With the use of Life Change Units, this well-known stress test calculated how much change a person had to adjust to in the preceding year.

It has a list of 28 stressful life events. The respondent has to choose the number of stressful events from the list that they have faced in the past 12 months. The respondent's scores are summed up. The score ranges are; of 150; low level of life stress, 150 to 299; moderate level 300 or more; high level. Student Stress Scale is an adaption from the original Holmes-Rahe Stress Inventory.

Multidimensional Scale of Perceived Social Support (MSPSS)

A quick survey instrument called the Multidimensional Scale of Perceived Social Support (or "MSPSS") is used to gauge the extent to which someone feels supported by friends, family, and a close relationship. It is a 12-item questionnaire that has received a great deal of use and has been fully verified.

A research was undertaken in which the Hopkins Symptom Checklist and the Multidimensional Scale of Perceived Social Support (MSPSS; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974) were administered to 275 Duke University undergraduates enrolled in an introductory psychology course (136 women, 139 men). Cronbach's coefficient alpha was used to assess the scale's overall reliability as well as the internal reliability of each sub scale. The Significant Other, Family, and Friends sub-scales had scores of 0.91, 0.87, and 0.85, respectively. The entire scale's reliability was 0.88. These numbers show that the scale as a whole and the three sub-scales have strong internal consistency.

Patient health questionnaire-9

A tool called PHQ-9 is used to detect depression and to diagnose, track, and gauge its severity. PHQ-9 was constructed by Drs. Kurt Kroenke, Janet W.B. Williams, and Robert L. Spitzer in 1999. The severity of depression symptoms over the last two weeks is measured using this scale, which has nine components. The upper limit score is 27 and the final total is determined by adding the individual scores together.

A study was conducted in China to find out the reliability and validity of PHQ-9 to screen out depression among college students. The results showed that its internal consistency and test-retest validity was 0.854 and 0.873 respectively.

Procedure

450 Participants were selected from different universities of Rawalpindi/Islamabad. The universities and the participants were conveniently sampled. Before handing over the forms, the students were asked regarding their semesters and their willingness to participate. Consent form was signed prior to the conduction. The participants were debriefed about the objectives, purpose and

procedure of the study and were given the right to withdraw. Additionally, the respondents were provided with the opportunity to ask any questions they might have had about the questionnaire or the study.

The participants were ensured that their identity, personal information and identity would be kept confidential. The privacy of all of the individuals was protected to build the rapport and a trustworthy relationship. Moreover, it was done in order to keep in the ethical standards and the grace of the research purpose.

Demographic information sheet, Student Stress Scale, Multidimensional Scale of Perceived Social Support (MSPSS) and Patients Health Questionnaire-9 were administered to the respondents.

Statistical analysis

For analyzing the data, Statistical Package for Social Science (Version-21) was used (IBM). Demographic factors were subjected to descriptive analysis. For categorical variables, frequencies and percentages were determined, while mean, median, mode, standard deviation, skewness, kurtosis, and Kolmogorov-Smirnov test (K-S) were employed for continuous variables. For the purpose of illustrating the distribution of data, histograms are displayed. Cronbach's alpha reliability analysis was run on the three variables. Moreover, Spearman's correlation analysis was employed on the study variables since the data was not normally distributed. In order to check the difference in terms of depression based on gender and academic year, Mann Whitney U test was employed.

Chapter 3: Results

Table 1

Demographic characteristics of study participants

Demographics	f	%
Gender		
Male	210	46.7
Female	240	53.3
Age (in years)		
18-21	235	52.2
22-24	215	47.8
Current semester enrolled in		
1-4th	160	35.6
5-8th	290	64.4
Relationship status of parents		
Married	386	85.5
Divorced	15	3.3
Widow	49	10.9
Family system		
Joint	179	39.8
Nuclear	179	39.8
Separated	92	20.4
Living status		
Hostel	136	30.2
With parents	298	66.2
With guardian	16	3.6

Note: f=frequency, %=percentage

Table 1 shows the frequency and percentages of the demographic variables. Descriptive analysis shows that study sample was predominantly females (53.3%). Age analysis show that 52.2% of the sample comes under the age range of 18 to 21

years while 47.8% of the sample is of 22 to 24 years. Majority (64.4%) of the respondents are enrolled in 5th to 8th semester while the rest 35.6% are in 1st to 4th semester. The relationship status of parents' shows the highest percentage is married (85.5%). Out of 450 respondents, 136 (30.2%) were living in hostels, while 298 (66.2%) were living with parents.

Table 2

Descriptive statistics of Scales used in study (N= 450)

Scales	M	Median	SD	Sk	K	K-S	*p*
SSS	10.78	10	4.12	0.28	-0.17	0.08	0.00
PHQ9	11.5	11	5.82	0.21	-0.54	0.07	0.00
MSPSS	56.52	58	15	-0.38	-0.56	0.06	0.00

Note: *M= mean, SD= Standard Deviation, SK= skewness, K= kurtosis, K-S= Kolmogorov- Smirnov, p= significance value, SSS= Student stress scale, PHQ9= Patients Health Questionnaire, MSPSS= Multidimensional Scale of Perceived Social Support.*

Table 2 illustrates the psychometric properties of the study variables. The mean score of the respondents on Student's stress Scale is 10.78 (SD=4.12). The distribution is positively skewed with a value of 0.284 and the value of kurtosis is -0.17. The mean score on Patient Health Questionnaire is 11.5 (SD= 5.82). The distribution has positive skewness with the value 0.205. The value of kurtosis is -0.54. The mean score of Multidimensional Scale of Perceived Social support is 56.52 (SD= 15.8). The distribution is negatively skewed with the value of -0.378. The value of kurtosis is -0.56. The Kolmogorov- Smirnov normality test has been employed to the scales. The significance level (*p* value) for all three variables is 0.00 (< 0.005) which indicates that the data is not normally distributed.

Figure 1

Distribution of scores across 'Student stress scale (SSS)".
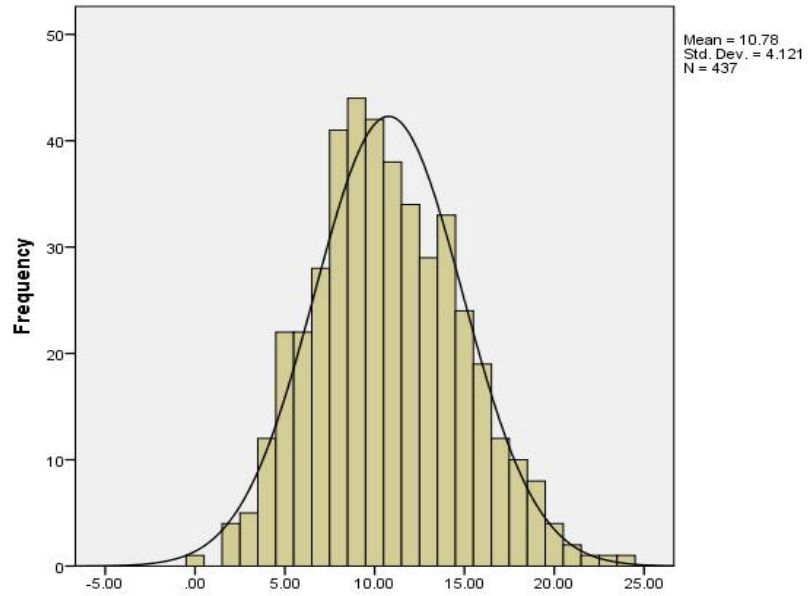
Figure 2

Distribution of scores across 'Patient Health Questionnaire (PHQ-9)'.
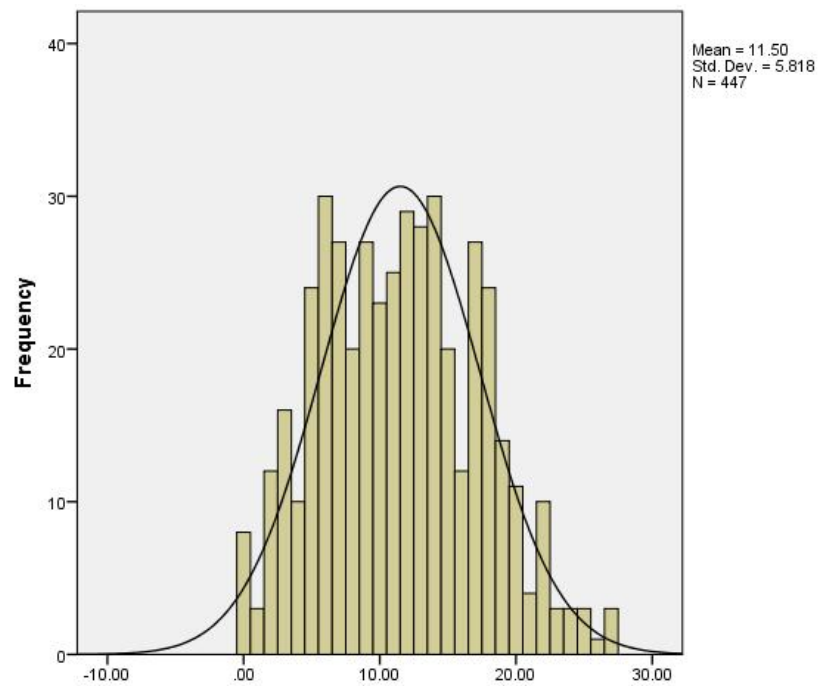
Figure 3

Distribution of scores across 'Multidimensional Scale of Perceived Social Support (MSPSS)'.
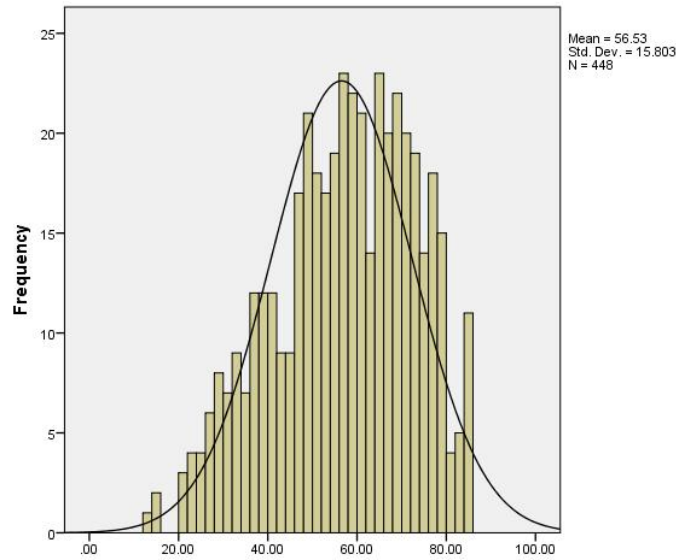
Table 3

Cronbach's Alpha reliability of the scales used in the study

Scales	Items	M	SD	*a*	Range	
					Actual	Potential
SSS	28	10.78	4.12	0.71	0-24	0-1149
PHQ-9	9	11.5	5.82	0.81	0-27	0-27
MSPSS	12	56.52	15.8	0.91	13-84	12-84
MSPSS-SO	4	18.47	6.14	0.83	4-28	4-28
MSPSS-FAM	4	19.2	6.2	0.86	4-28	4-28
MSPSS-FRI	4	18.8	5.97	0.85	4-28	4-28

Note: *a= Cronbach's Alpha reliability coefficient, M= mean, SD= Standard Deviation, SSS= Student stress scale, PHQ9= Patients Health Questionnaire, MSPSS= Multidimensional Scale of Perceived Social Support, MSPSS-SO= Multidimensional Scale of Perceived Social Support-Significant others, MSPSS-FAM= Multidimensional Scale of Perceived Social Support- family, MSPSS-FRI- Friends.*

Table 3 demonstrates the Cronbach's Alpha Reliability Coefficient of the scales. The '*a*' for Student stress Scale is 0.71, 0.81 for Patient Health Questionnaire and 0.91 of Multidimensional Scale of Perceived Social Support. All the three reliabilities are considered good.

Table 4

Spearman's correlation analysis for the study variables

Variables	1	2	3
1 Stressful life events	-	-	-
2 Depression	**0.33****	-	-
3 Perceived Social Support	-0.21**	**-0.5****	-

Note: *M= mean, SD= Standard deviation, N= no. of participants*
**. Correlation is significant at the 0.01 level (1-tailed).

Table 4 illustrates the Spearman's correlation between the three variables used. The values indicate there is significant positive correlation between Stressful life events and depression (0.33**) and significant negative correlation between depression and perceived social support (-0.50**).

Table 5

Spearman's correlation analysis for depression and MSPSS's sub-domains

Variables	1	2	3	4
PHQ	-	**-0.41****	**-0.46****	**-0.41****
MSPSSSO	-	-	.577**	.65**
MSPSSFAM	-	-	-	.61**
MSPSSFRI	-	-	-	-

Note*: SO=significant others, FAM= Family, FRI= Friends*

The Multidimensional scale of perceived social had also been divided into 3 subscales. The three subscales were related to the support provided by Significant others (SO), Family (FAM), and Friends (FRI). Spearman's correlation analysis was

run for all the three subscales with depression. In the table 5, it has been shown that there is significant inverse relationship between depression and social support provided by three domains; (-0.41**) for significant others, (-0.47**) for support by family and (-0.41**) for friends. All the three values of the perceived social supports' domains are fairly equal.

Table 6

Mann Whitney U test for difference in depression based on gender

Variable	Male		Female				
	N	Mean Rank	N	Mean Rank	U	Z	p
PHQ9	208	216.8	239	230.3	23361.5	-1.09	0.27

Note*: N= No. of participants, PHQ9= Patient Health Questionnaire, U= Mann Whitney U test, p= significance value*

Table 6 shows the Mann Whitney U test employed to test the gender difference in depression. The significance value in the present case is greater than the conventional significance value (0.27>0.05), indicating that there is not a significant distinction between the responses from male (M=216.8, N=208) and female (M=230.3, N=239) participants with regard to the depression (PHQ-9).

Table 7

Mann Whitney U test for difference in depression based on the semesters of students

Variable	1-4th semester		5-8th semester				
	N	Mean Rank	N	Mean Rank	U	Z	p
PHQ9	159	231.45	288	219.89	21712	-0.91	0.37

Note*: N= No. of participants, PHQ9= Patient Health Questionnaire, U= Mann Whitney U test, p= significance value*

The Mann Whitney U test, which was used to compare respondents' semesters of depression, is shown in Table 7. With regard to the variables being examined, depression (PHQ-9), the significance value in the current case is greater than the conventional significance value (0.37>0.05), indicating that there is no significant difference between the responses from the two groups; participants in the 1-4th semester (M=231.5, N=159), and 5-8th semester (M=219.9, N=288). The non-significant p-value (0.37) indicates these results. These results show that prevalence of depression is almost same across all the semesters.

Chapter 4: Discussion

The current study aimed at finding relationship between stressful life events and depression among university students and also how perceived social support seems to be beneficial. For this purpose, a cross-sectional survey was carried out, and undergraduates in the age range of 18 to 24 years from different universities in Islamabad and Rawalpindi were invited to take part. The universities as well as the students were conveniently sampled. After taking the consent of the respondents, 3 questionnaires; Student Stress scale (SSS), Patient Health Questionnaire-9 (PHQ-9) and Multidimensional scale of Perceived Social Support (MSPSS) along with the demographic sheet were administered.

In the light of literature it was hypothesized that there will be a positive association between stressful life events and depression. After employing the Spearman's correlation between the two variables (stressful life events and depression), it had been found out that a significant positive relationship does exist which refers to the fact that in an increase in stressful life events is associated with increase in depressive symptoms. Undergraduates are more likely to develop depression as a result of stressful life experiences. These results are consistent with other research studies that indicated a link between negative life experiences and a higher likelihood of depression and anxiety (Stikkelbroek et al., 2016). Another study reported that stressful life events are linked to worsened depressive symptoms (Mazure, 1998) and major depression in both adults and adolescents (Hammen, 2005; Stroud, Davila, & Moyer, 2008).

It was also hypothesized that there is a significant inverse relationship between depression and perceived social support. The results of this study have shown the significant negative relationship between these variables. Meaning that, with an

increase in perception of social support available, depressive symptoms decrease and vice versa. The findings of this study in this regard are aligned with the previous literature. Social support's perception is crucial in reducing the emergence of depressive symptoms. A research indicated that "the perceived social support effectively protects depressive symptoms" (Loannou, Kassianos & Symeou, 2019). Another study concluded that perceived social support negatively relates to depression and anxiety (Razia & Afzal, 2017). A study's findings concluded that social support is believed to improve both physical and mental wellness by assisting coping strategies, altering negative attitudes, and promoting changes in behaviors associated with health that are typically the outcome of stressful life experiences (Wills and Shinar, 2000).

The background behind this study was to study the stressful events that university students face, how they lead to depression and how the social support helps reduce the symptoms. The stressful life events do cause psychological issues particularly depression. Social support plays a crucial function in promoting health and wellness since it is thought to act as a protective mechanism against life's stresses (Steese et al., 2006). The student population experiences unique difficulties and represents a special developmental stage of transition, including a newfound sense of autonomy and social bonds (Robotham, 2008).

Finding specific social support systems that protect university students' mental health and standard of living is essential if they are to thrive psychologically, professionally, and academically. The study's goal is to investigate the relationship between stressful life events, depression, and social support in order to inform the development of interventions for university students that incorporate socially supportive behaviors and increase productivity while reducing the severity of depressive symptoms associated with stressful life events.

The 3rd hypothesis stated that there would be gender difference in terms of depression. After employing Mann Whitney U test, in this study it has been found out that not a significant gender difference exists in the manifestation of depressive symptoms. These results contradict the previous literature's findings. Although it is widely accepted that women are twice as likely to receive a diagnosis of major depression, population-based statistics reveal that a considerable percentage of males also suffer from the condition, so there is reason to believe that the gender gap is closing. Studies have consistently found that women are diagnosed with depression at higher rates compared to men. This could be due to a combination of biological, psychological, and social factors, including hormonal changes, societal expectations, and gender-related stressors. However, it's important to note that depression can still occur in men, and the prevalence rates may be influenced by under diagnosis and under reporting in males.

Additionally, experts in men's mental health have noted that man's serious depressive disorders can occasionally be "disguised," which may result in a false estimate of the number of men who actually suffer from the condition. Second, notwithstanding the fact that men are four times more probable to die from attempts at suicide than women, men are nonetheless twice as probable to try suicide as women. Third, research repeatedly shows that men are less likely than women to seek out psychological treatment for mental health problems.

When depressed, men and women may have different symptoms. Women frequently exhibit symptoms of depressive symptoms, such as sadness, a sense of inadequacy and excessive crying that are more in line with the more conventional concept of the illness. On the other side, men can be more inclined to participate in high-risk behaviors and show signs like irritation, rage, and violence. There could be

many causes of depression in males such as negative life experiences. Issues in relationships, unemployment, difficulties in work, being overworked, pressures of being the breadwinners, poverty etc.

According to study, men may be less likely to seek treatment for depression than women because of a variety of reasons, such as societal expectations, cultural standards, and traditional masculine norms. Due to the common belief that men should be powerful, reserved, and self-reliant, men in particular may experience difficulties. This may result in a resistance to asking for help or expressing feelings, which may under-diagnose and under-treat depression in men. It is important to keep in mind that these are generalizations and that people of any gender can exhibit a wide variety of symptoms. It is critical to approach depression knowing what to expect and that, irrespective of gender, individuals might deal with it in various manners. Because every person's experience is different, getting expert assistance from mental health professionals can offer tailored support and direction.

It was hypothesized that, the semesters the students were enrolled in would not significantly affect the level of depression. It was discovered after using the Mann Whitney U test that there is no apparent variation in the prevalence of depression; it is present in all students across all semesters. There could be many reasons for this prevalence. A lack of drive or ambition, helplessness, feeling overloaded, low self-esteem, and homesickness are only a few of the causes of depression in students. Moreover Social anxiety, academic pressure, adjustment issues, peer pressure, or worries about parental expectations, worry about future job and post-graduate status, together with feelings of loneliness and distractions could be the leading factors.

This study has significantly emphasized on different factors that are causing or contributing to depressive symptoms. Moreover, the importance of social support has

also been highlighted. According to Neinstein and colleagues (2008), adolescence is a developmental stage marked by substantial physical, psychological, and emotional growth. Adolescents may be exposed to events that test their potential for healthy coping due to changes in these domains, as well as increased peer relationships, demanding academic expectations, and changing patterns of communication with family and friends. There has been a lot of study done on the connection between adolescents stress and psychopathology (Grant & McMahon, 2005).

Considering the Pakistani context, Students certainly experience numerous difficulties and stressors which may contribute to the development of psychological problems, particularly depression. Students frequently come from diverse backgrounds with varied language and cultural backgrounds. They may find it challenging to adapt in a setting where communication is similarly impacted by such variances.

The majority of students in Pakistan frequently experience transport issues. Because there are few transport options, majority of students experience transport issues. Their educational institutions are difficult for them to access. One of the largest concerns in the majority of Pakistani cities is the morning and evening traffic jams. Many schools, colleges, and universities also have their own student transport options, however many demand a high fee for the service. And most people cannot afford such expensive costs.

A number of students in Pakistan belong from middle-class families, making it extremely difficult for them to afford the costly expenses of an education. Students do not have access to enough resources, and they are unable to purchase the materials they need for learning and studying. Some students work part-time jobs to support their study expenses.

In most of the cases, students aren't allowed to study and learn about the subjects that they are interested in since they lack the freedom to do so. They are forced by their family and parents to select the field of their choice.

Parents and society have high expectations of Pakistani children's academic performance. In Pakistan, the idea of career counseling does not exist. Students don't produce the expected results, forcing them to spend their valuable education because they can't find somebody to mentor them in this area. They are unable to decide on their career, which cause them a lot of problems in the future. It provides one of the answers for why there are so few vacancies in Pakistan on some topics since they are so overexposed.

The study of only theory at educational institutions is one of the major problems that students face in their academic lives. Most educational institutes in Pakistan only place a strong emphasis on theoretical learning. They do not teach students how to undertake practical work. They can have trouble applying their knowledge in real-world situations where they are obligated to do so.

It's critical to comprehend the problems with mental health that affect young adults and students in particular. Early-adult mental health has effects on a variety of facets of well-being, including alcohol and drug misuse, academic success, future career, and relationships. The majority of mental disorders specifically depression may be made worse by many university stressors such inconsistent sleep habits, shifting interpersonal dynamics, and academic obligations.

Universities are in a good position to support young people's mental health since they cover a variety of vital parts of their lives, including academics, health services, housing, social networks, and extracurricular activities. Considering that, institutional administration could make strategies or policies that could help lessen the

academic load or other relevant pressures. Furthermore, different activities or projects should be introduced in the classroom settings as well as at a larger level that could foster the sense of social support and cohesion among the students.

Conclusion

According to the current study's findings, stressful life experiences cause depression, which is in agreement with the findings of other studies. Moreover, the assumption that social support aids in lowering the depressive symptoms has also been proven. This study also concluded that there is gender difference in the manifestation of depressive symptoms. Along with the burden of their studies, university students face a variety of social and interpersonal difficulties that may increase their susceptibility to psychological problems. All the bad things that could happen to a student could lead to depression, but the social support that is provided or how it is perceived could help to mitigate the impacts. Having acquaintances and other people, such as loved ones, to look to in instances of need or disaster offers a wider focus and a good self-image. As a defense against unfavorable life occurrences, social support improves quality of life.

Limitations

Since this study was conducted only using the Rawalpindi/Islamabad's university's sample, the results might not be generalizable to other institutes. Convenient sampling was employed, reducing the generalization of the findings. Linear relationship between social support, depression and stressful life events had been found, however social support as a moderator could also be analyzed.

Implications

The understanding of social support is important since it makes stressful situations less damaging and certainly benefits general well-being. A sensitive indicator of one's capacity to deal with difficulties, perceived social assistance is linked to better mental and physical health outcomes as well as higher quality of life. By influencing self-worth, a sense of security, and belonging, which are components of self-esteem, perceived social support may enhance psychological wellness.

This study may emphasize how critical it is to increase mental health education among university learners, their loved ones, and university administrators, especially in societies where mental illness may be less accepted. The results should aid in the design and development of efficient treatments and plans, not just for university students dealing with mental health issues but also for university management.

Future studies could explore the coping methods in this regard and about how individuals could effectively manage stress. Plus, different attempts could be done to design interventions such as education, awareness,counseling sessions, making activity plans that would include groups as to foster coherence and subsequently enhance social support. Moreover, university administrations could play a significant role in alleviating the risk factors that are related to anxiety or depression. They could altogether plan to design such an academic schedule and outline minimized load and pressure on the students. They could support students and induce or produce such a socially supportive environment so that the students could feel relaxed and confident. Effective coping mechanisms could be introduced in order to deal with the stressors leading to mental health issues, specifically depression. The difficulties mentioned should inspire or drive the administration to help students to develop the abilities they

 need to succeed in university and in the post-grad life. A more flexible approach that takes into account the demands of each individual student should be adopted. The focus must be on adequately regulating student expectations and normalizing any welfare concerns that students may encounter. When difficulties may increase a student's risk of stress, they can be identified in advance so that protective elements, including social supports, can be developed. This study aimed at getting a reliable calculation of how different life events are causing depression among university students so that required interventions could be designed to cater the needs of the students of Pakistan.

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Appendices

Appendix A: Approval Letter

Capital University of Science and Technology Islamabad

Islamabad Expressway, Kahuta Road, Zone - V, Islamabad, Pakistan
Telephone :+92-(51)-111-555-666
:+92-51-4486700
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Email: :info@cust.edu.pk
Website: :www.cust.edu.pk

Ref. CUST/IBD/PSY/Thesis-362
February 14, 2023

TO WHOM IT MAY CONCERN

Capital University of Science and Technology (CUST) is a federally chartered university. The university is authorized by the Federal Government to award degrees at Bachelor's, Master's and Doctorate level for a wide variety of programs.

Ms. Maryam Nawaz, registration number **BSP193014** is a bona fide student in BS Psychology program at this University from Fall 2019 till date. In partial fulfillment of the degree, she is conducting research on "Association between stressful life events, depression and social support among university students.". In this continuation, the student is required to collect data from your institute.

Considering the forgoing, kindly allow the student to collect the requisite data from your institute. Your cooperation in this regard will be highly appreciated.

Please feel free to contact undersigned, if you have any query in this regard.

Best Wishes,

Dr. Sabahat Haqqani
Head, Department of Psychology
Ph No. 111-555-666 Ext: 178
sabahat.haqqani@cust.edu.pk

'

Appendix B: Information sheet

I am Maryam, a student of Psychology at Capital University of Science and Technology, Islamabad. I am doing a research study which aims to find out the association between stressful life events, depression and social support among university students under the supervision of Ms. Parveen Akhtar.

To take part in this study, kindly read the information given below. If you want more information regarding this study, you can ask questions.

Purpose of the Research

The purpose of this research is to examine how stressful life events, depression and social support are interlinked. University life is already challenging and other life stressors make students vulnerable to psychological health issues, specifically depression. By looking at the association among these variables, we will be able to propose, introduce or design interventions that could alleviate the depressive symptoms caused by the stressful life events. The importance of social support would also be highlighted.

What is involved in the Study?

This study is being conducted as a part of this degree. If you are willing to participate, you will be presented with a questionnaire having questions related to different stressful life events, depression and social support. You are required to respond as accurately as possible. There is no right or wrong answer so choose the option that you could best relate with. This process would take more or less 15-20 minutes.

You are free to ask any queries. Your personal information would be kept confidential. Moreover, your participation is completely voluntary and you are granted the right to withdraw from study at any stage without any penalty.

Risks

There are no foreseeable risks and harms in this study. In case of any discomfort or problem that arises due to this study, you can contact at the information given at the end.

Privacy and Confidentiality

Your information will be kept confidential and will be used for research purposes only. Overall results of the participants will be drawn and the participants' identities will not be revealed in any way.

Instead of individual data, collective responses would be used in the final report.

Contacts for Questions or Problems

In case of any problem or question you can email at: bsp193014@cust.pk or parveenakhtar@cust.edu.pk

Appendix C: Consent form

1	I hereby confirm that I have read the above information carefully and I have read and understood the purpose of this study.	Yes	No
2	I understand that my participation in this study is voluntary and I have the right to withdraw from the study at any time without any of my rights being affected.	Yes	No
3	I understand that information obtained as a part of this study will be kept confidential and will be anonymous and will be used only for research purposes.	Yes	No
4	I agree to participate in this study.	Yes	No

Signature of participant: _____

Signature of researcher: _____

Date: _____

Appendix D: Demographic information form

For the following items, please select the response that is most descriptive of you.

Gender: Male ☐ Female ☐

Age: _____

Current semester enrolled: _____

Relationship status of Parents: Married ☐   Divorced ☐   Widow ☐

Family system: Joint ☐   Nuclear ☐   Separated ☐

Living status: Hostel ☐   With Parents ☐   With Guardian ☐

Appendix E: Student stress scale

See how many of the following changes have occurred in your life in the past year.

Check all those that apply and mark them.

	STATEMENTS	Mark the correct
1	Death of a close member	
2	Death of a close friend	
3	Divorce of parents	
4	Jail term	
5	Major personal injury or illness	
6	Marriage	
7	Fired from job	
8	Failed important course	
9	Change in the health of a family member	
10	Any personal problem	
11	Serious argument with close friend	
12	Change in financial status	
13	Change in academic major	
14	Trouble with parents	
15	New friends	
16	Increased academic workload	
17	Outstanding academic achievement	
18	First/last semester in university	
19	Change in living conditions	
20	Serious argument with instructor	

21	Lower grades than expected	
22	Change in sleeping habits	
23	Change in social activities	
24	Change in eating habits	
25	Change in number of family get togethers	
26	Too many missed classes	
27	Change of institution	
28	Minor traffic violations	

Appendix F: Patient Health Questionnaire-9

Over the last 2 weeks, how often have you been bothered by any of the following problems?

The response categories are as follows:

Not at all: **0**, Several days: **1**, More than half the days: **2**, Nearly every day: **3**

		Not at all	Several days	More than half the days	Nearly every day
1	Little interest in doing things	0	1	2	3
2	Feeling down, depressed or hopeless	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4	Feeling tired or having little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling that you are a failure or have let yourself or your family down	0	1	2	3
7	Trouble concentrating on things	0	1	2	3
8	Moving or sleeping so slowly that other people could have noticed- or being so fidgety or restless that you have been moving around alot more than usual	0	1	2	3

9	Thoughts that you would be better off dead or of hurting yourself	0	1	2	3

Appendix G: Multidimensional Scale of Perceived Social Support

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Very Strongly Disagree: **1**, strongly Disagree: **2,** mildly Disagree: **3**, neutral: **4**, mildly Agree: **5**, strongly Agree: **6**, Very Strongly Agree: **7.**

	Very Strongly Disagree	strongly Disagree	mildly Disagree	neutral	mildly Agree	strongly Agree	Very Strongly Agree
There is a person who is around when I am in need.							
There is a person with whom can share joys and sorrows							
My family really tries to help me							
I get the emotional help & support I need from my family							
I have a special person who is a real source of comfort to me							
My friends really tries to help me							
I can count on my friends when things go wrong							
I can talk about my problems with my family							
I have friends with whom I can share my joys and sorrow							
There is a special person in							

my life who cares about my feelings						
My family is willing to help me make decisions						
I can talk about my problems with my friends						

Appendix H: Plagiarism report

report

ORIGINALITY REPORT

13%	9%	8%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.tandfonline.com Internet Source	1%
2	www.researchgate.net Internet Source	1%
3	link.springer.com Internet Source	1%
4	www.frontiersin.org Internet Source	1%
5	Submitted to University of Sheffield Student Paper	<1%
6	Submitted to Leeds Trinity and All Saints Student Paper	<1%
7	www.mdpi.com Internet Source	<1%
8	Submitted to Laguna State Polytechnic University Student Paper	<1%
9	Submitted to Universiti Utara Malaysia Student Paper	<1%