Master of Science in Public Health

Assessment of Physical Activity Behavior and Mental Health in Covid-19 Post-Lockdown among University Students of Capital City, Islamabad

By

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DECLARATION

In submitting this dissertation, I certify that I have read and understood the rules and regulations of MSPH and QAU regarding assessment procedures and offences and formally declare that all work contained within this document is my own apart from properly referenced quotations.

I understand that plagiarism is the use or presentation of any work by others, whether published or not, and can include the work of other candidates. I also understand that any quotation from the published or unpublished works of other persons, including other candidates, must be clearly identified as such by being placed inside quotation marks and a full reference to their source must be provided in proper form.

This dissertation is the result of an independent investigation. Where my work is indebted to others, I have made acknowledgments.

I declare that this work has not been accepted in substance for any other degree, nor is it currently being submitted in candidature for any other degree.

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ABSTRACT

Background: Due to Covid-19 lockdowns, physical activity and mental health are primarily affected. In this study, we assess university students' physical activity and mental health after the Covid-19 lockdown.

Objective: To assess physical activity behavior and mental health among university students. To determine relation between physical activity and mental health and also sociodemographic factor associated with physical activity behavior and mental health.

Methods: It was cross sectional study and done in 6 months after IRB approval. After meeting the inclusion criteria 384 university students were enrolled. Informed consent and demographic detail was noted. Students were evaluated for physical activity behavior using GPAQ tool and for mental health PSS tool were used.

Results: There has been no noticeable change after the Covid-19 lockdown. We found that 49.36% of university students do not do vigorous-intensity sports or leisure activities for at least 10 minutes, and 49.11% do not do moderate-intensity sports for at least 10 minutes. However, 80.10% of students suffer from moderate stress and 11.06% from mild anxiety. Some demographic variables also have effects on physical activity and mental health.

Conclusion: According to this study, most students are physically inactive, and because of less physical activity, they suffer from moderate to high stress. The contributing factors after the covid-19 lockdown is students living with a family member suffering from covid-19 during the lockdown and family structure.

Keywords: physical activity behavior, GPAQ, mental health, university students, Covid-19 post-lockdown.

ACKNOWLEDGMENTS

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List of Abbreviations

CDC	Center for Disease Control
COVID-19	Coronavirus Disease 2019
GPAQ	General Physical Activity Questionnaire
IPAQ	International Physical Activity Questionnaire
IRB	Institutional Review Board
MET	Metabolic Equivalent
PA	Physical Activity
PSS	Perceived Stress Scale
SARS	Severe Acute Respiratory Syndrome
S.D	Standard Deviation
SOP	Standard Operating Procedure
SPSS	Statistical Package of Social Sciences
WHO	World Health Organization

CHAPTER I: INTRODUCTION

In December 2019, novel coronavirus (COVID-19) identified in Wuhan city of China. Attempts to prevent it failed, allowing the virus to other areas of china and later worldwide. The WHO announced the outbreak as a public health emergency on 30 January 2020 and a pandemic on 11 March 2020 (contributors, august 2022).

The Covid-19 pandemic is expected to negatively impact the mental health of university students, yet there is lack of prospective longitudinal data quantifying such changes (Matthew J. Savage, 2020). Students are very adaptive of the environment they live in especially young students who are in college and pursuing a bachelor's degree. Physical fitness and mental health really matter for young college students, especially when they are lockdown in their homes, and they have no social life. In the Covid-19 pandemic, many students were forced to live off campus and stay in their homes, because of those many mental and physical illnesses were discovered.

Inactivity and sedentary behavior have numerous adverse effects on human health at muscular, cardiovascular, metabolic, and endocrine levels, affecting psychological wellbeing. This effect mediates by mechanisms such as the development of muscle atrophy, the reduction of muscle insulin sensitivity and aerobic capacity, and changes in body composition, which may occur even after limited periods of inactivity. University students, in particular, are revealed to have unhealthy sedentary and dietary habits in the non-pandemic period, especially if living away from home (F. Galle, 2020).

It has been estimated that 970 million people worldwide suffer from mental health problems, such as depressive and anxiety disorders (Costas I.Karageorghis, 2021).

Depression is a disease which is very common in our young generation. This study has proven that majority of the young, aged males and females from 18-25 years old, formed mental illnesses like headache, migraine, and suicidal attempts because of anxiety. The youth of Pakistan is generally very passionate about their careers, and they want to grow in their respective fields of studies. But research shows because of lack of physical activity, the young men and women were more dependent on caffeine intake and some of them were involved in drugs.

Electronic devices had a major impact on our young generation as in COVID-19 pandemic, socialization was not allowed, and you cannot leave out of your house. There was no other way to study, socialize and entertain yourself, other than surfing the internet and using the electronic devices. Many young people were affected by bad eyesight because of enhanced screen time and their eyes were abruptly affected by the usage of these electronic gadgets. Many studies show that our attention span is also lessened by using these social media platforms. As expected, when people are forced to stay inside their homes, lockdown resulted in a ~2h increase in reported sitting time (Costas I. Karageorghis, 2021).

Lack of physical activity and sports resulted in obesity among the youth. Insufficient physical activity causes adverse changes in health, such as muscular atrophy, bone weakness, obesity, cardiovascular changes, etc. Many studies have shown the positive effects of physical exercise in improving general health, as well as immune functions (Irfan Ullah S. A., 2021).

However a recent survey in Croatia, the first subscale is depression, which focuses on a bad mood, motivation, and self-esteem. The second subscale is anxiety, based on psychological excitement, panic, and fear. The third subscale is stress, and it focuses on

tension and irritability. The result on each subscale is obtained by summing the estimates of the corresponding items and subsequently classified as normal, mild, moderate, severe, and extremely severe ((Jasminka Talapko, 2021).

Physical activity has positive effects on maintaining your blood pressure, glucose and Reduction in stress levels ((Elaine A. Hargreaves, 2021). Activities like cycling, walking, Heavy weightlifting and swimming give you the ability to maintain in a good health, and it effects your social life as well. Modern information technology has a deep penetration in the minds of people. People are Addicted to computer screens, games, Nintendo, PlayStation, and Xbox. The survey which was done using modern information resources can be beneficial when taking into account the characteristics of school-age children's psychophysiology development. Online physical education lessons are also a great method to increase the physical activity during the quarantine and social restriction measures. The main strategy for a healthy lifestyle during this period is regular physical activity in a safe environment (Olena Yelizarova, 2022).

Children and adolescents may be more susceptible to mental disorders due to COVID-19 pandemic than adults. Gatekeepers should pay more attention to modifiable factors of psychological well-being in children and adolescents, including family and school contexts, and even feelings and behaviors during COVID-19 pandemic lockdown (Yan Lui, 2021). Behavioral Change in university students has been reported by this survey report. 23% of the youth had mental disorders because of lack of sleep, lack of social interaction and lack of appetite. The university students are busy with watching movies on Netflix during the pandemic that causes their brain to freeze and not think out of the bubble of digital media.

On the other hand, working from home has resulted in less rigidly stipulated work hours and less time spent on routine activities, such as commuting. This increased flexibility in our daily schedules has contributed to changes in our sleep habits, resulting in later sleep timing and longer sleep duration, but also poorer sleep quality and higher reports of insomnia symptoms.

These changes have been robustly measured across a wide range of countries. Furthermore, with Face-to-face communication severely limited, people have turned to digital technology to stay Connected for social interaction, work/education, and entertainment (Stijn A. A. Massar, 2021).Conversely, and some studies noted increased physical activity levels in some population groups. However, data are scarce on the impact of the COVD-19 post-lockdown on lifestyle behaviors in university students, particularly from the South Asian region. Although compared to other students, university students possess better knowledge surrounding healthy lifestyles and the importance of physical activity. However, there is no evidence to specify that university students translate this knowledge into practice. Consequently, the objective of this study was to assess the prevalence of insufficient physical activity and mental health of university students after the COVID-19 lockdown in Pakistan, to determine the relation between physical activity and mental health and also sociodemographic factor associated with physical activity behavior and mental health. Most performed researches are before or during a covid-19 lockdown, but there is none or very negligible data on post-covid-19 lockdown effects on students' physical activity and mental health. Therefore, our study focused on this gap to evaluate Pakistani university students' physical and mental health conditions after the lockdown.

1.1 Rationale:

- Physical activity was restricted, which negatively influenced mental health, e.g., depression, loneliness, sadness, and other mental health issues among students.

- In this study aims to assess the university student's physical activity and mental health status after Covid-19 lockdown.

- Previous studies had collected data regarding physical activity and mental health in pandemics through online surveys. Also, no study assess physical and psychological health together among university students.

- Above gaps will be addressed in this study by physically collecting data in a questionnaire and assessing both variables together.

1.2 Objectives:

- To assess physical activity behavior and mental health among university students.

- To determine association between physical activity and mental health and also sociodemographic factor associated with physical activity behavior and mental health.

CHAPTER-II: LITERATURE REVIEW

The coronavirus disease 2019 (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a major global health issue in the public health sector. Numerous restriction measures have affected entire populations' mental and physical health. Given the whole situation, it is essential to maintain a certain level of physical activity. Students are one of the groups in society whose mental and physical condition is negatively affected by the effects of the COVID-19 pandemic (Talapko J, 2021). With the first report of a novel coronavirus (COVID19) in 2019, the virus spread and continues into a worldwide pandemic. From May 2021, around 142 million people had contacted the virus, and 3 million died. In contrast, the Western Australian community of 2.6 million people had fewer than 1000 infections (most acquired while traveling overseas) and only nine death (Bhoyroo, 2021).

Most of the literature reveals that coronavirus altered individuals' PA behavior; some people increase their engagement with PA while others decrease it (Cheval, 2020) (Constandt B, 2020) (Deschasaux-Tanguy M, 2021) (Galle F, 2020) (Sañudo B, 2020) (Maltagliati S, 2021).

In France, for example, their government implemented a national lockdown from 17th March to 11th May 2020. People were only authorized to go out of their homes for necessary reasons (work, medical check-ups, purchase of groceries, or physical activity for<1 per day and<1 km from home). In the work area, the lockdown has generated significant variations between employers. While teleworking became the rule for most companies, workers who were unable to work were either placed in partial unemployment

(and continued receiving around 85% of their Salaries) or lost their jobs in the case of precarious contracts (e.g., interim workers and nannies) (Teran-Escobar, 2021).

The federal government and other 50 states set emergency statements in the US by 16 March 2020. In reaction to this global pandemic, governments have introduced various measures plan to limit disease transmission to prevent critically over burdening of the healthcare system. These measures range from social or physical distancing (staying$\geq$6 feet/2 m away from others) to quarantining people exposed to the virus for 14 days or longer. Changes in the work area and physical environments occurred rapidly and likely influenced both behavior and mental health, but limited data exist to determine the impact of these changes (Meyer, 2020). Particular concern are University students, who have faced the stress of remote learning and rapid life adjustments due to COVID-19-related restrictions. A small survey of 195 University students noted increased stress and anxiety on 71% of the participants. Survey results among individuals from pre and during the pandemic reported a three-fold increase in depression, and those with lower social and economic resources had higher levels of depression.

Further, the Centers for Disease Control and Prevention (CDC) reported that 63% of college-aged young adults (18–24 years of age) in the U.S. had elevated depression or anxiety between May and June 2020. Increased mental stress among young people may result from inadequate coping skills in the face of COVID-19-related social isolation and boredom; and is even more among University students who may have been replace from the traditional campus setting, leading to learning challenges and grade insecurities. Physical activity is a lifestyle habit to preserve mental health. Regularly active individuals are less likely to be diagnosed with depression or anxiety. In addition, individuals who

were involved but did not meet guidelines demonstrated a 25% reduction in poor mental health days, indicating that even a tiny amount of exercise is beneficial. The World Health Organization (WHO) recently stated that adults should limit the amount of sedentary time and replace it with physical activity of any intensity or type. Data suggest that university students who consistently participate in physical activity may be less likely to experience depression and anxiety related to COVID-19 restrictions. Unfortunately, evidence has demonstrated an increased incidence of sedentary behavior among university students. This situation may inadvertently influence mental health among this group (Coakley K, 2021).

The World Health Organization has recognized that such social distancing measures may make people more anxious, angry, stressed, agitated, and withdrawn (World Health Organization, 2020). Recent research has shown that levels of poor mental health are high during COVID-19-related social distancing. For example, in one study of 932 UK adults' social distancing owing to COVID-19, 36.8% of the population reported poor mental health. Moreover, poor mental health was associated with being female, having a younger age, lower annual income, being a current smoker, and having a physical multimorbidity (L.Jacob.M.Tully, 2020).

The COVID-19 pandemic has the potential to worsen mental health, as well as emotional and social functioning (Pfefferbaum & North, 2020), with sustained lockdown measures, potentially having a significant long-term adverse effect on mental health (Canet-Juric et al., 2020). Indeed, data emerging in April 2020 indicated a deterioration in mental health among UK residents across all age groups (Pierce et al., 2020), and a recent systematic review and meta-analysis indicated adverse effects on stress, anxiety, and depression

(Salari et al., 2020) in the early months of restrictions. Moreover, it is essential to acknowledge that the full extent of the psychological effects is unlikely to become apparent until the COVID-19 pandemic has been controlled (Akat & Karataş, 2020) (Richardson et al., 2021).

Meanwhile, a study from America reported increased chances of depression, loneliness, and stress in individuals with decreased physical activity behavior and increased screen time from pre and post-COVID-19. In contrast, another reported a positive effect of light activity on mental health effects. Finally, a recent UK online survey reported that mental health outcomes (depression, anxiety, and mental wellbeing) were negatively associated with moderate to vigorous physical activity per day (Pears, 2021).

However China is among the most affected countries of covid-19. Early cross sectional findings shows that 25% of Chinese college students experienced anxiety during the lockdown, and the risk of incidence of anxiety increased in those living away from their family. There is also few indication that, from a mental health perspective, young adults, students, and females may be the most susceptible to the impact of the COVID-19 pandemic. In addition, those with a history of mental health condition could be more susceptible to negative emotional responses to COVID-19, resulting in relapses or worsening of an existing mental illness (Savage M, 2020). Previous studies in Spain have identified increased physical inactivity during the transition from adolescence to adulthood and throughout the college/university years, estimated that physical inactivity among university students in low, middle, and high-income countries was 41%. Social distancing and isolation in homes have largely altered the lifestyle of university students (Valenciano A, 2021).

A previous study assessed physical activity during lockdown using the International Physical Activity Questionnaire IPAQ, (craig, 2003), which was adapted to better reflect the extraordinary circumstances of COVID-19 lockdown. Participants reported the time in minutes on different physical activity categories. These categories were chosen based on a recent opinion article about how to maintain physical activity levels during COVID-19 (Chen P, March 2020). Participants were also asked to add the time spent doing other physical activities and, in this case, define these activities. Then they classified each activity into moderate-to-vigorous physical activity when it was superior to or equal to 3 METS (metabolic equivalent task, which is the amount of energy used during an activity) using the compendium of physical activities of (Ainsworth, 2011).

In India as there was a complete lockdown, people were staying at their homes. Being at home disturbs the physical activity of the individuals. Also, the students of all colleges were allowed to go home during this lockdown. Some of them were happy to reconnect with the family again, wherein some of them have returned home without any hope or interest at home (Singh L, 2021).

Moreover, The Islamic Republic of Iran has been among the most affected countries since the beginning of the COVID-19 outbreak. Accordingly, like many other countries, Iran has taken several public health measures, such as quarantine, isolation, travel restrictions, closure of most non-essential businesses (including leisure and sports centers), stay-at-home orders, and schools and universities closures. Such measures aim to prevent or, at least, mitigate the burden imposed by the COVID-19 pandemic and delay and curtail the spread of the virus. However, according to a report, the resulting quarantine of the virus's reach fostered sedentary behaviors and notably led to decreased physical activity (PA)

participation. This situation led to higher depression, anxiety, and post-traumatic symptoms especially among young population (Akbari HA, 2021).

The first case detected COVID-19 in Pakistan on 25 February, and the first death was reported on 29 March 2020. By the 67th report of the WHO on 29 March, Pakistan identified 14 deaths and 1,597 cases. The primary sources of COVID-19 were individuals who were returning after visits for religious purposes to the neighboring countries of Iran (Zaireen), Saudi Arabia (pilgrims), and Malaysia (Tablighi), with Pakistani students from China. The Tablighi gathering of 14,500 participants in Malaysia in March 2020 had drawn about 1,400 foreigners, including those from Pakistan (Baloch G, 2021).

On 23 March 2020, recorded cases in Pakistan reached 892 with six deaths; to prevent the further outspread of Covid-19. As a result, the government of Pakistan implemented a countrywide lockdown on 24 March 2020, which continued for more than a month. Moreover, strict Standard operating procedures (SOPs) (i.e., wearing masks, keeping six-feet distance, etc.) has enforced to decrease the spread of the disease in the work environment. In addition, a countrywide closure of all educational institutes took place from 13 March 2020; however, some educational institutions offered online classes. All these preventive measures have decreased physical activity in students. Insufficient physical activity causes adverse effects on health, especially mental health affected (Baloch G, 2021). However, many studies have shown the positive effects of physical exercise in improving general health and immune functions. From a public health viewpoint, moderate physical activities have remarkably impacted well-being.

Moreover, physical activity has alleviated symptoms of depression and anxiety and enhanced mental well-being. However, previous studies have suggested that the

restrictions on public health linked to the COVID-19 pandemic have increased sedentary behaviors and insufficient activity. For example, a study based on Italian medical students showed a reduced amount of physical activity and an increased amount of sedentary behaviors during the lockdown. Similar findings have also been studied among the student population in other jurisdictions, including Canada, Italy, Spain, Switzerland, etc.

Most research on the COVID-19 Coronavirus has focused on adult populations, with less attention on young populations. However, given the high prevalence of mental health problems in youngsters, it is somewhat surprising. Furthermore, lockdown restrictions leading to sudden university closures, a switch to online and more independent learning, and the cancelation of end-of-year final exams were likely to contribute to stress and anxiety. In addition, young adults were at home, organized sports and group physical activity stopped, and they could no longer socialize in person with others outside their household. It is, therefore, not surprising that initial Coronavirus pandemic research in young population found a high prevalence of depressive and anxiety symptoms (Wright J, 2021) .

2.1. OPERATIONAL DEFINATIONS:

2.1.1 Physical Activity Behavior: Physical activity is a behavior performed several times per week, which takes the body out of rest. In this study it is measured by GPAQ scale, it can be walking or cycling, vigorous intensity and moderate intensity activity.

2.1.2 Mental health: In this study mental health is measured by PSS scale. It is most widely used psychological instrument for measuring perception of stress. It is a measure of the degree to which situation in one's life are appraised as stressful. (cohen, 1994)

2.1.3 COVID-19 Post-lockdown: Due to the coronavirus pandemic, worldwide lockdowns took place. In this study, we measure the impact of the lockdown on physical and mental well-being.

2.1.4 University Students: Young adults of undergraduate of age 18-25 included in this study.

CHAPTER III: MATERIALS AND METHODS

3.1. Study design:

It was cross sectional study.

3.2. Setting:

This study was carried out in public and private universities of capital city.

3.3. Duration of study:

The duration of the study was 6 months after IRB approval.

3.4. Sample size:

The sample size was calculated to be 384 using 48% previous prevalence 95% (Ullah, 2021) CI and 5% margin of error by using open EPI calculator. The final sample size will be n=407.

Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(N):　1000000
Hypothesized % frequency of outcome factor in the population (p):50%+/-5
Confidence limits as % of 100(absolute +/- %)(d):　　　　　　5%
Design effect (for cluster surveys-$DEFF$):　　　　　　　　　1

Sample Size(n) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	384
80%	165
90%	271
97%	471

3.5. Sampling Technique:

The convenience non-probability sampling technique was used.

3.6. Study Participants:

Males and females of 18-25 years old.

3.7. Sample Selection:

The sample selection includes:-

3.7.1. Inclusion Criteria:

Males and females of 18-25 years old

Bachelor's students.

Participants who are present at the time of data collection.

3.7.2. Exclusion Criteria:

Participants were excluded on the basis of following conditions,

If diagnosed with some mental illness.

Other than bachelors program.

If the students were not willing to participate.

3.8. Study variables:

The following are the study variables.

3.8.1. Dependent variable;

Physical activity behavior (GPAQ scale)

Mental health (PSS) scale.

3.8.2. Independent variable:

Socio-demographic profile:

Age, gender, family type, education, monthly pocket money, participation in extracurricular activities.

Post-lockdown COVID-19 situation (diagnose with covid-19, living with covid-19 patient).

3.9. Data Collection Tool:

Data was collected using pre-tested structured questionnaire, which was adapted and modified according to context. The reliability of the questionnaire was evaluated after pre-test activity of 40 questionnaires. Scale for measuring physical activity behavior among university students was global physical activity questionnaire (GPAQ) and for mental health perceived stress scale (PSS) was used. Both scales are reliable and valid. GPAQ questionnaire consists of 10 questions related to walking/cycling, moderate activity, vigorous activity and sitting time. However, PSS consists of 10 questions to measure low stress, moderate stress and highly perceived stress. We have modified the PSS scale according to COVID-19 post lockdown. Results were summed up for each respondents.

3.10. Data management:

Data was collected and compiled according to the date of the visit to the selected universities. Statistical package for social sciences (SPSS) version 26 was used for data entry and data analysis. The questionnaire were checked for the missing information, on

the same day. After completing data entry, data was double checked for consistency, completeness and errors.

3.11. Data Confidentiality:

No one had access to the questionnaires. The data entered was accessible by the researcher and respective supervisor only.

3.12. Data Analysis:

All the quantitative data like age etc. was presented in the form of mean and SD and all the qualitative data like socio-demographic variables and GPAQ, PSS questionnaire variables were presented in the form of frequency and percentages. For association of physical activity behavior with mental health and with socio demographics chi square test was applied $p\text{-value} < 0.05$ was taken as significant.

3.13. Ethical consideration:

The rules and regulations set by the ethical committee were followed while conducting the research and the rights of the research participants were respected.

Research proposal as ratified from internal review board (IRB) of Al-Shifa trust Eye hospital Rawalpindi. After the endorsement of the research proposal permission was taken from the HODs of the concerned institutions.

Written informed consent attached was taken from all the participants.

Data was kept in under key and lock while keeping keys in hand. In laptop it was kept under password.

CHAPTER IV: RESULTS

A total 384 respondents were asked to participate in the study. Response rate was 100%.

4.1. Descriptive Analysis:

4.1.1. Descriptive Statistics of Independent Variables:
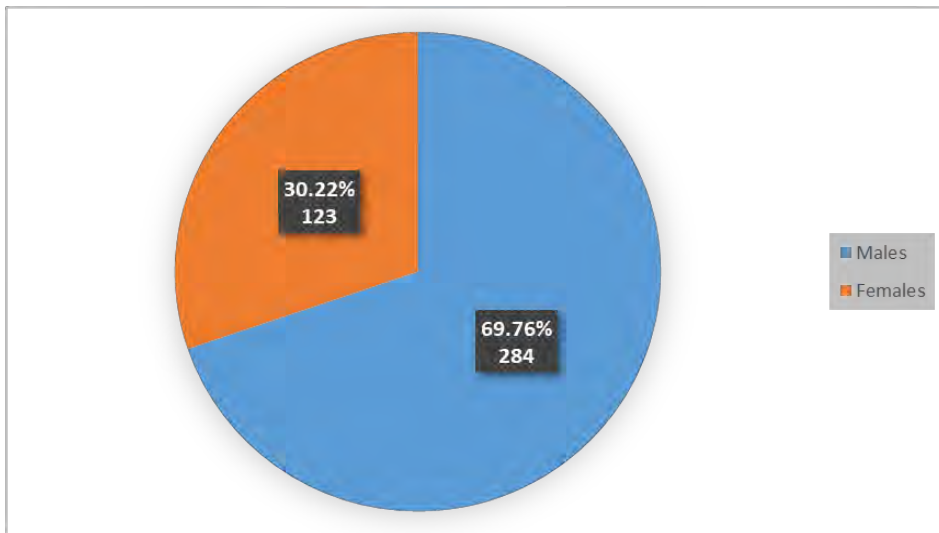
Figure 1 Frequency Distribution of Gender

According to this study 284(69.78%) students were male and 123(30.22%) were females.

male to female ratio of the students was 2.3:1.

Table 1 Descriptive Statistics of Age (years)

Age (Years)	**n**	384
	Mean	21.22
	Std. Deviation	1.91
	Minimum	18
	Maximum	25

In this study total 384 students were enrolled. The mean age of the students was

21.22±1.91 years with minimum and maximum ages of 18 & 25 years respectively.
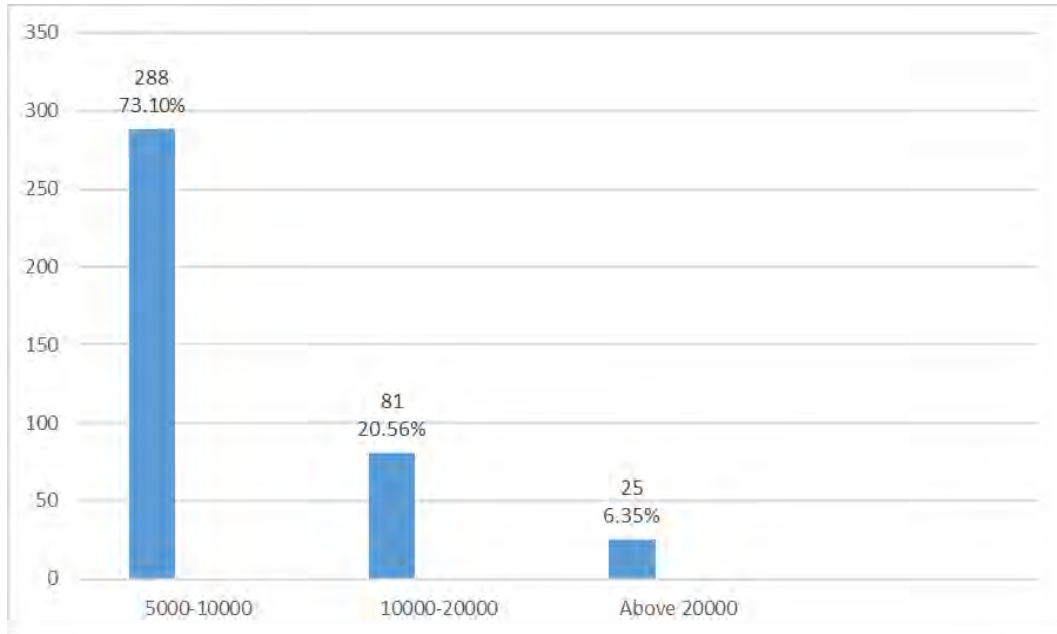
Figure 2 Distribution of Monthly Pocket Money

In our study the students having pocket money in between 5000-1000 Rs were 288(73.10%), the students having pocket money between 10000-20000 Rs were 81(20.56%) and the students shaving pocket money >20000 Rs were 25(6.35%).

Table 2 Frequency Distribution of Leisure Activities

		Frequency	Percent
Leisure activities	**Yes**	242	59.5
	No	165	40.5
	Total	407	100.0

The students had leisure activities were 242(59.5%).

Table 3 Frequency Distribution of Family Type

		Frequency	Percent
Family Type of Students	**Nuclear**	257	63.1
	Joint	150	36.9
	Total	407	100.0

In this study 257(63.1%) students were from nuclear family type and 150(36.9%) were

from joint family type.

Table 4 Frequency Distribution of Curriculum of study

		Frequency	Percent
Curriculum of study	**Healthcare**	109	26.8
	Engineering	80	19.7
	Science	163	40.0
	other	55	13.5
	Total	407	100.0

In this study 109(26.8%) students were from healthcare curriculum, 80(19.7%) were from engineering, 163(40%) were from science and 55(13.5%) were from other curriculum type.
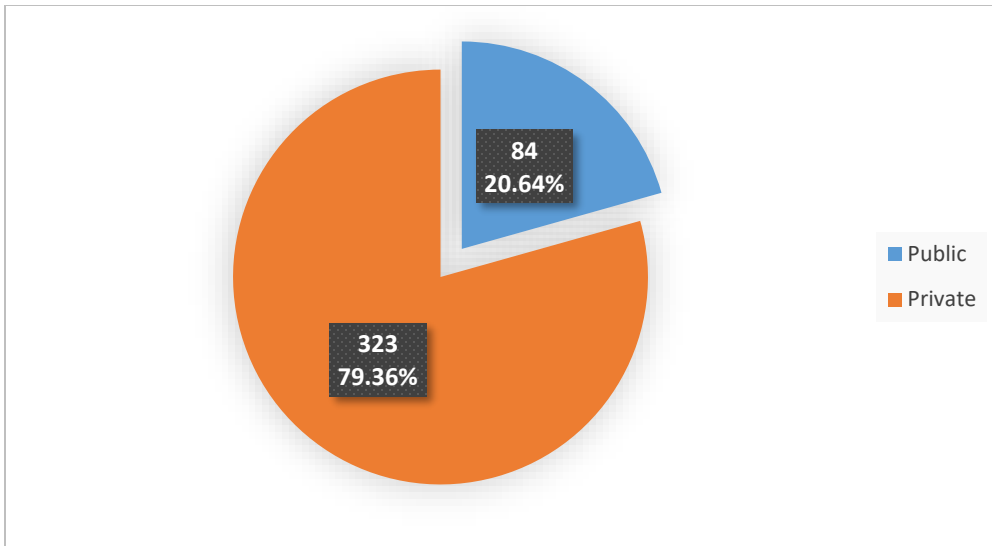
Figure 3 Distribution of Institution Type

According to this study 84(20.64%) students were from public institution and 3232(79.36%) were from private institutions.

Table 5 Frequency Distribution of Academic year of Study

	n	384
	Mean	2.65
Academic year of study	**Std. Deviation**	1.06
	Minimum	1
	Maximum	4

The mean academic year of the students was 2.65±1.06 years with minimum and maximum academic years of 1 & 4 years respectively.

Table 6 Frequency Distribution of Diagnosed with Covid-19

		Frequency	Percent
Diagnosed with Covid-19	**yes**	100	24.6
	No	307	75.4
	Total	407	100.0

The study results showed that there were 100(24.6%) students were those who were diagnosed with COVID-19.

Table 7 Frequency Distribution of "Living with person Diagnosed with Covid-19"

		Frequency	Percent
Living with person diagnosed with covid-19	**Yes**	165	40.5
	No	242	59.5
	Total	407	100.0

According to this study there were 165(40.5%) students were those who were living with person diagnosed with covid-19.

4.2. Outcome Variables:

Table 8 Frequency Distribution of "walk or use a Bicycle for atleast 10 minutes"

		Frequency	Percent
walk or use a bicycle for at least 10 minutes	**Yes**	238	58.5
	No	169	41.5
	Total	407	100.0

According to this study there were 238(58.5%) students were those who walked or use a bicycle for at least 10 minutes.

Table 9 Frequency Distribution of "In a typical week, on how many days do you walk or bicycle"

In a typical week, on how many days do you walk or bicycle	**n**	256
	Mean	4.81
	Std. Deviation	1.81
	Minimum	1
	Maximum	7

In this study the mean days of the students who walk or use bicycle in a week was 4.81±1.81 days with minimum and maximum days of 1 & 7 respectively.

Table 10 Frequency Distribution of "How much spend on walking and bicycling on a typical day"

How much spend on walking and bicycling on a typical day	**n**	255
	Mean	86.92
	Std. Deviation	91.98
	Minimum	10
	Maximum	1080

In our study the in a typical day the mean time spend in walking and bicycling was 86.92±91.98 minutes with minimum and maximum time of 10 & 1080 minutes respectively.
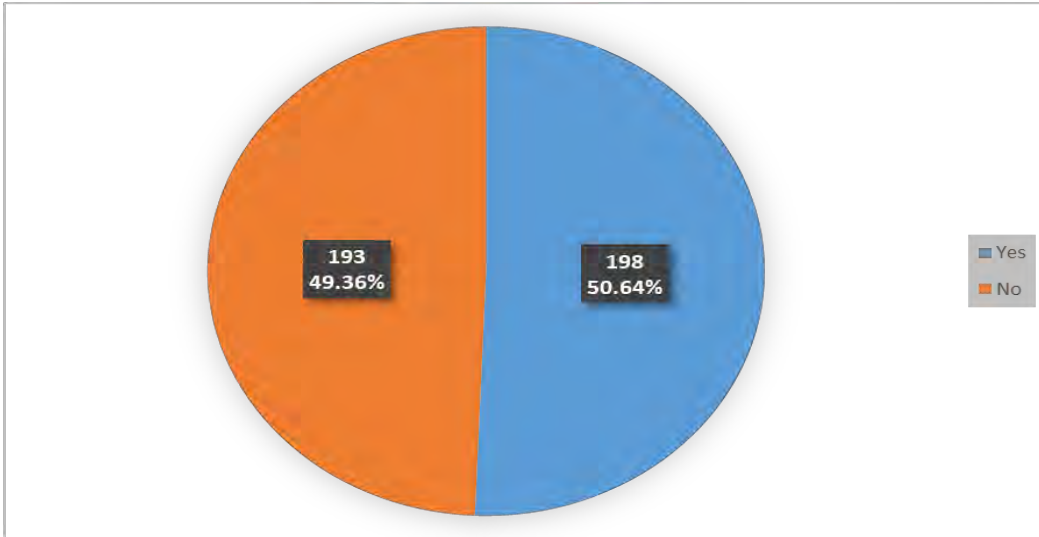
Figure 4 Frequency Distribution of "Do any vigorous intensity sports or leisure activities for 10 minutes"?

According to this study there were 198(50.64%) students were those who do any vigorous intensity sports or leisure activity for 10 minutes.

Table 11 Descriptive statistics of "In a typical week how many days for vigorous intensity activities and how much time spent on vigorous intensity sports on a day?"

	Mean	SD	Minimum	Maximum
In a typical week how many days for vigorous intensity activities	3.66	1.65	1	7
How much time spent on vigorous intensity sports on a day?	83.25	62.26	10	360

In a typical week the mean days for vigorous intensity activities was 3.66±1.65 days and the mean time spent on vigorous intensity sports on a day was 83.25±62.26 minutes.
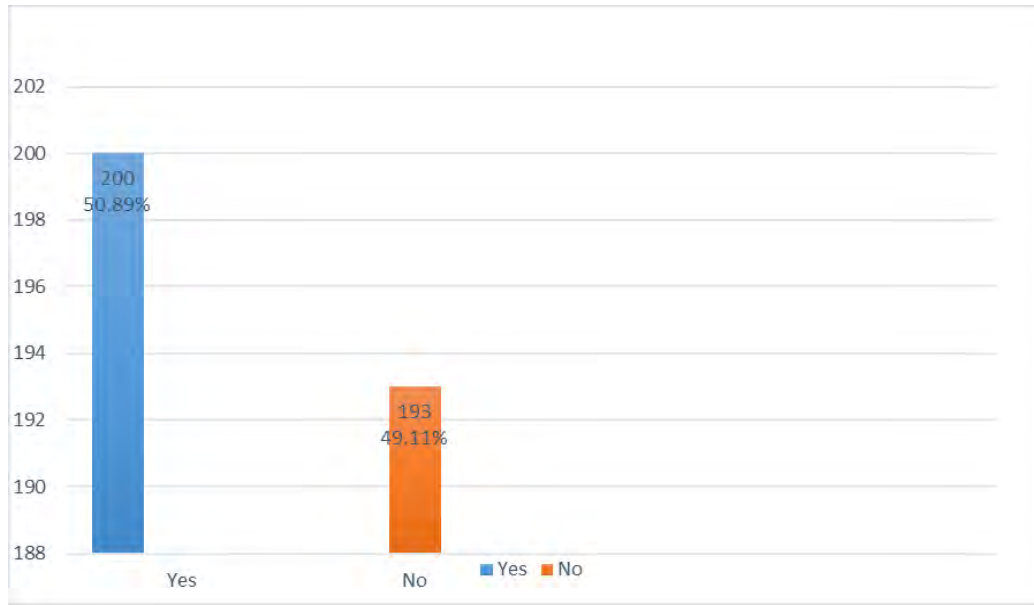
Figure 5 Frequency distribution of moderate intensity activity for at least 10 minutes

In this study there were 200(50.89%) students were those who do moderate intensity activity for at least 10 minutes.

Table 12 Descriptive statistics of Time spent on Activities

	Mean	SD	Minimum	Maximum
On a typical week how many days spend on moderate activities	3.69	1.64	1	7
On a typical day how much time spend on moderate intensity activities	69.68	65.31	2	540
How much time usually spend on sitting or reclining	526.86	346.03	2	1440

In our study on a typical week the mean days spend on moderate activities was 3.69±1.64, on a typical day the mean time spend on moderate intensity activities was 69.68±65.31 minutes and the mean time usually spend on sitting or reclining was 526.86±346.03 minutes.

Table 13 Descriptive statistics of PSS score

	n	384
PSS score	**Mean**	20.30
	Std. Deviation	5.52
	Minimum	0.00
	Maximum	36.00

The study results showed that the mean PSS score of the students was 20.30±5.52 with minimum and maximum scores of 0 & 36 respectively.
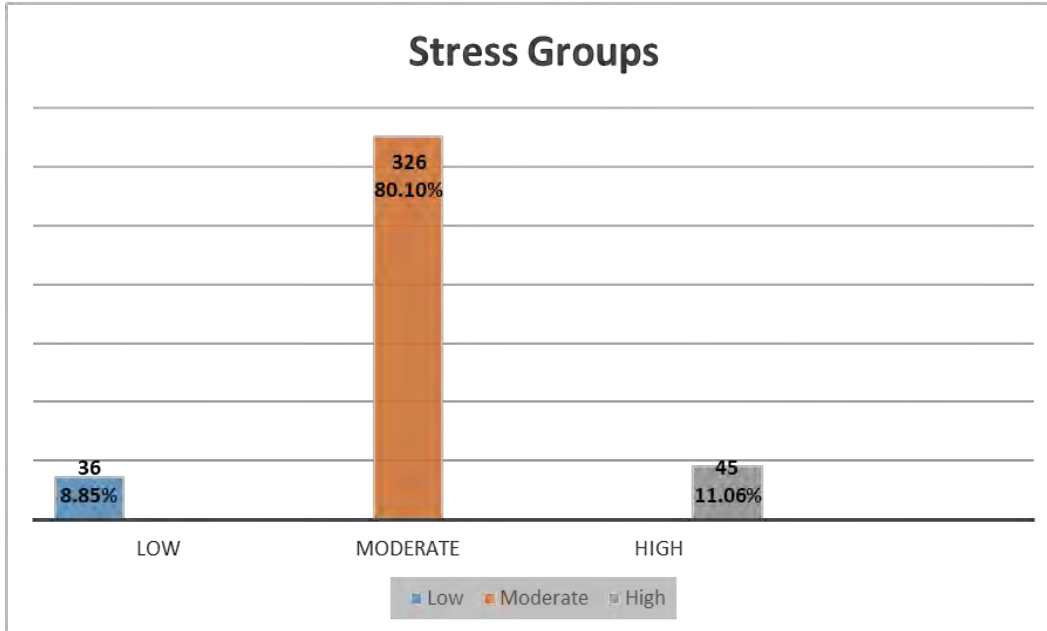
Figure 6 Frequency Distribution of Stress Groups

According to this study low stress was noted in 36(8.85%) students, moderate stress was noted in 326(80.10%) student and high stress was noted in 45(11.06%) students.

4.3. Inferential Analysis:

Table 14 Comparison of Ages (years) between Mental Stress of the Students

Mental Stress		n	Mean	Std. Deviation	p-value
Age (years)	**High**	22	21.16	1.75	0.801
	Low and Moderate	362	21.23	1.93	

The mean age of the students having high mental stress was 21.16±1.75 years whereas the mean age of the students who had low and moderate mental stress was 21.23±1.93 years. This difference was statistically insignificant. i.e. p-value=0.801.

Table 15 Comparison of sex of students between Mental Stress

		Mental Stress		p-value
		High	**Low and Moderate**	
Sex of Individuals	**Female**	6	117	**0.009**
		4.9%	95.1%	
	Male	39	245	
		13.7%	86.3%	

In this study high mental stress among females was noted in 6(4.9%) students whereas high mental stress among male was noted in 39(13.7%) students. This difference was statistically significant. I.e. **p-value=0.009.** The comparison between sex of individuals and mental stress is statistically significant.

Table 16 Comparison of Monthly Pocket money of Students between Mental stresses

		Mental Stress		p-value
		High	Low and Moderate	
Monthly pocket money	5000-10000	34	254	0.477
		11.8%	88.2%	
	10000-20000	8	73	
		9.9%	90.1%	
	Above 20000	2	23	
		8.0%	92.0%	

In this study high mental stress was noted in 34(11.8%) students who had monthly pocket money between 5000-1000 Rs, high mental stress noted in 8(9.9%) students who had pocket money between 10000-20000 Rs whereas high mental stress was noted in 2(8%) students who had monthly pocket money >20,000 Rs. This difference was statistically insignificant. I.e. p-value=0.477.

Table 17 Comparison of Leisure activities of Students between Mental Stress

		Mental Stress		p-value
		High	Low and Moderate	
Leisure activities	Yes	26	216	0.808
		10.7%	89.3%	
	No	19	146	
		11.5%	88.5%	

In our study the student who had leisure activities, high mental stress was found in 26(10.7%) while the student who does not have leisure activities the mental stress was found in 19(11.5%) students. This difference was statistically insignificant. i.e. p-value=0.808.

Table 18 Comparison of Mental Stress between Covid-19 statuses of the Students

		Mental Stress		p-value
		High	**Low and Moderate**	
Diagnosed with Covid-19	**Yes**	12	88	
		12.0%	88.0%	**0.729**
	No	33	274	
		10.7%	89.3%	

According to this study high mental stress was found in 12(12%) students had were diagnosed with COVID-19 whereas high mental stress was found in 33(10.7%) students who were not diagnosed with COVID-19. This difference was statistically insignificant. I.e. p-value=0.729.

Table 19 Comparison of Mental Stress between Students living with person diagnosed with Covid-19

		Mental Stress		p-value
		High	**Low and Moderate**	
Living with person diagnosed with covid-19	**Yes**	28	137	**0.002**
		17.0%	83.0%	
	No	17	225	
		7.0%	93.0%	

In this study high mental stress was noted in 28(17%) students who were living with person diagnosed with covid-19 while mental stress was noted in 17(17%) students who were not living with person diagnosed with covid-19. This difference was statistically significant. i.e. **p-value=0.002**. The comparison of mental stress between students living with person diagnosed with Covid-19 is statistically significant.

Table 20 Comparison of Mental Stress between Students who walk or use a bicycle for at least 10 minutes

		Mental Stress		p-value
		High	Low and Moderate	
Walk or use a bicycle for at least 10 minutes	Yes	27	211	0.826
		11.3%	88.7%	
	No	18	151	
		10.7%	89.3%	

According to this study high mental stress was noted in 27(11.3%) students who walk or use a bicycle for at least 10 minutes while high mental stress was noted in 18(10.7%) students who does not walk or use a bicycle for at least 10 minutes. This difference was statistically insignificant. I.e. p-value=0.826.

Table 21 Comparison of Mental Stress between "Do any vigorous intensity sports or leisure activity for at least 10 minutes"

Do any vigorous intensity sports or leisure activity for at least 10 minutes?	Mental Stress		p-value
	High	**Low and Moderate**	
Yes	24	174	
	12.1%	87.9%	**0.582**
No	20	173	
	10.4%	89.6%	

The study results showed that high mental stress was found in 24(12.1%) students who do any vigorous intensity sports or leisure activity for at least 10 minutes while the high mental stress was found in 20(10.4%) students who does not have vigorous intensity sports or leisure activity for at least 10 minutes. This difference was statistically insignificant. i.e. p-value=0.582.

Table 22 Comparison of Mental Stress between Students who do not do moderate intensity activities for at least 10 minutes

Students who do not do moderate intensity activities for at least 10 minutes	Low and Moderate	p-value
Yes	179	
	89.5%	
No	170	**0.656**
	88.1%	
	89.5%	

In our study high mental stress was noted in 21(10.5%) students who do moderate intensity activities for at least 10 minutes while high mental stress was noted in 23(11.9%) students who do not have moderate intensity activities for at least 10 minutes. This difference was statistically insignificant. i.e. p-value=0.656.

Table 23 Comparison of "Vigorous intensity sports or leisure activity for at least 10 minutes "between ages

Do any vigorous intensity sports or leisure activity for at least 10 minutes?		Mean	Std. Deviation	p-value
Age in years	Yes	21.38	1.92	0.133
	No	21.09	1.89	

The study results showed that the mean age of the students who any vigorous intensity sports or leisure activity for at least 10 minutes was 21.38±1.92 years and the mean age of the students who do not have any vigorous intensity sports or leisure activity for at least 10 minutes was 21.09±1.89 years. This difference was statistically insignificant. I.e. p-value=0.133.

Table 24 Comparison of "Vigorous intensity Sports or leisure activity for at least 10 minutes "between gender

		Vigorous intensity sports or leisure activity for atleast 10 minutes?		p-value
		Yes	No	
Sex of individuals	Female	73	45	0.004
		61.9%	38.1%	
	Male	125	148	
		45.8%	54.2%	

In this study 73(61.9%) female student do vigorous intensity sports or leisure activity for at least 10 minutes whereas 125(45.8%) male students vigorous intensity sports or leisure activity for at least 10 minutes. This difference was statistically significant. I.e. **p-value=0.004.**

The comparison of vigorous intensity sports or leisure activity for at least 10 minutes between genders is statistically significant.

Table 25 Comparison of "Vigorous intensity sports or leisure activity for at least 10 minutes" between monthly pocket money

Monthly pocket money	Vigorous intensity sports or leisure activity for at least 10 minutes?		p-value
	Yes	No	
5000-1000	136	140	
	49.3%	50.7%	
10000-20000	46	32	0.277
	59.0%	41.0%	
>20000	11	13	
	45.8%	54.2%	

In students having monthly pocket money between 5000-10000, 136(49.3%) do vigorous intensity sports or leisure activity for at least 10 minutes, the student having monthly pocket money between 10000-20000, 46(59%) do vigorous intensity sports or leisure activity for at least 10 minutes whereas the students having monthly pocket money >20000, 11 (45.8%) do vigorous intensity sports or leisure activity for at least 10 minutes. This difference was statistically insignificant. I.e. p-value=0.277.

Table 26 Comparison of" Vigorous intensity sports or leisure activity for at least 10 minutes" between type of institution

Type of Institution	Vigorous intensity sports or leisure activity for atleast 10 minutes?		p-value
	Yes	No	
Public	46	33	
	58.2%	41.8%	
Private	152	160	0.131
	48.7%	51.3%	
Total	198	193	
	50.6%	49.4%	

According to this study 46(58.2%) student from public institution do vigorous intensity sports or leisure activity for at least 10 minutes whereas 152(48.7%) students from private institution did vigorous intensity sports or leisure activity for at least 10 minutes? This difference was statistically insignificant. I.e. p-value=0.131.

Table 27 Comparison of "vigorous intensity sports or leisure activity for at least 10 minutes' between family types

Family Type	Yes	No	p-value
Nuclear	113	134	
	45.7%	54.3%	
Joint	85	59	0.011
	59.0%	41.0%	
Total	198	193	
	50.6%	49.4%	

According to this study 113(45.7%) student from nuclear family type do vigorous intensity sports or leisure activity for at least 10 minutes whereas 85(59%) students from joint family type do vigorous intensity sports or leisure activity for at least 10 minutes? This difference was statistically significant. I.e. **p-value=0.011.**

The comparison of vigorous intensity sports and leisure activity for at least 10 minutes between family types is statistically significant**.**

Table 28 Comparison of "Vigorous intensity sports or leisure activity for at least 10 minutes" between curriculum of study

Curriculum of Study	Vigorous intensity sports or leisure activity for at least 10 minutes		p-value
	Yes	No	
Healthcare	48	57	0.004
	45.7%	54.3%	
Engineering	46	34	
	57.5%	42.5%	
Science	88	66	
	57.1%	42.9%	
Other	16	36	
	30.8%	69.2%	

According to this study 48(45.7%) student from healthcare curriculum of study do vigorous intensity sports or leisure activity for at least 10 minutes. 46(57.5%) student from engineering curriculum of study do vigorous intensity sports or leisure activity for at least 10 minutes. 88(57.1%) student from science curriculum of study do vigorous intensity sports or leisure activity for at least 10 minutes, Whereas 16(30.8%) students from other curriculum of study do vigorous intensity sports or leisure activity for at least 10 minutes. This difference was statistically significant. I.e. **p-value=0.004.**

The comparison of vigorous intensity sports and leisure activity for at least 10 minutes between curriculums of study is statistically significant.

CHAPTER-V: DISCUSSION

A physically active way of life supports mental health (Coakley K, 2021). The current study clearly shows the effects of the Covid-19 post lockdown on university students' mental health and physical activity. According to our knowledge, this is the only study conducted in Pakistan that investigated the assessment of physical activity behavior and mental health in Covid-19 post lockdown among university students of the capital city.

Data from this study highlights several findings pertinent for the covid-19 post lockdown.

High mental stress among male students compared to female students. While, High mental stress among students living with persons diagnosed with the covid-19 lockdown. Female students do vigorous-intensity sports more than male. Students from the joint family type do more vigorous intensity sports than nuclear family type. Students having pocket money between 5000-10000 sufferings from high mental stress.

We found that 49.36% of university students do not do any vigorous-intensity sports or leisure activities for at least 10 minutes and 49.11% do not do moderate-intensity sports for at least 10 minutes. A study during the Covid-19 lockdown reported that 48.2% of students were physically inactive during the lockdown (Ullah, 2021) .Therefore, this study clearly shows the effect of covid-19 after the lockdown. Physical inactivity remains almost consistent during and after lockdown because students' behavior patterns are mostly affected by their living environment (Garcia J, 2019). According to Valenciano et al., nine out of the ten studies reported significant decreases in PA levels during the confinements. These results are in line with the findings from previous studies on both adults and children. Another study Reports substantial reductions in self-reported vigorous PA and walking

time of 16.8 and 58.2%, respectively, whereas time spent in sedentary behavior increased during the confinement in Spain.

In our study, 61.9% of female students do vigorous-intensity sports for at least 10 minutes compared to 45.8% of male students. Similarly, 4.9% of female students have high mental stress compared to 13.7% of male students. These findings show that female students having vigorous activity in sports have low-stress levels while male students have a high-stress levels because of insufficient physical activity. Our findings differ from previous studies as males suffer more from mental stress because of the Covid-19 lockdown as they have a financial burden and are bread earners of the family; the reason behind this is the economic crisis in a country that has directly impacted mental health According to Coakley et al., individuals with more stress reported lower moderate or vigorous exercise. A similar relationship presents in Norway among 1281 adults aged 19-90 (Havnen A, january 2021).

Mental health outcomes included stress and anxiety. The stress assessed using the 10-item Perceived Stress Scale (PSS). Participants were assessed about their feelings and thoughts in the last two weeks, including the day the participant completed the survey on a 5-point Likert- type scale (0 = Never; 1 = Rarely; 2 = Sometimes; 3 = Fairly often; 4 = Very often). After reverse-coding responses to the four positively stated items, I obtained PSS scores by adding across all scale items, with higher scores reflecting higher levels of perceived stress (range = 0 to 40). Reliability for this scale was very good (Chronbach's alpha = 0.89, 95% CI = 0.88–0.90). (Duncan et al., 2020). In our study 11.06% students are suffering from high mental stress, low stress is 8.85% and moderate stress is 80.10%.

Our study found high mental stress in 17% of students living with persons diagnosed with covid-19. A cross-sectional web-based survey of 324 college students in India between

November and December 2020 suggested that 68.8% had high fear of COVID-19, 28.7% had moderate to severe depression, and 51.5% had mild to severe anxiety, with having family members infected with COVID-19 significantly associates with anxiety and depression (Chen T, 2022).

According to our 11.8% of students suffering from high mental stress have pocket money between 5000-10000, while 9.9% and 8% of students have high mental pressure who has pocket money" Between" 10000-20000 or above, respectively. It is also likely that cultural factors are at play. Cultural beliefs and values also represent a vital factor in mental illness. Indeed, a student's cultural background and beliefs influence their perspective of mental illness and dictate how they describe their mental health (Satcher, 2001). Factors imperative to preventing mental illness, such as familial support, value orientations, help-seeking behaviors, media consumption, and mental health resources, depend on culture (germani A, 2020). University students' cultural backgrounds can likely help prevent mental illness or generate mental illness during the Covid-19 pandemic and beyond. These factors significantly impair their ability to cover academic and living costs and are a pivotal risk factor for mental distress. Feeling like losing control over your health risk management can produce considerable mental pain (Mazza C, 2020). So, a substantial rise in psychological distress among university students is unsurprising considering the nature of a global health pandemic.

In previous study, more than half of the young adults living with one or two siblings resided with their grandparents. Siblings may promote the engagement of PA among children and young; however, the negative influence of grandparents' traditional thoughts on PA may result in insignificant differences in PA time between the sample of young

adults living with one or two siblings and those residing with two parents only (Wang L, 2016). Students living with joint family type have more intensity of doing physical activity in our study about 59% students belong to joint family do vigorous exercises.

Many studies report that people are less active most of the day and spend their time mainly sitting (Bauman et al., 2011; Sigmundová et al., 2015; Chau et al., 2012; Andrade-Gómez et al., 2017; Gardner et al., 2015; Rosenberg et al., 2008). Such a sedentary lifestyle is associated with a more significant risk of cardiovascular, metabolic, and cancer diseases, leading to increased overall mortality (Katzmarzyk et al., 2009). In our study mean sitting time of students is 526 minutes which is relatively high.

The problem of the decrease in the level of physical activity while increasing the time spent sitting is global and affects people of all ages (Bauman et al., 2011; Matthews et al., 2008; Caspersen et al., 2000; Hallal et al., 2012; Sousa & Silva, 2017). Research studies highlight that this problem is particularly characteristic for young people (Bauman et al., 2011) (Piccinno & Colella, 2016), especially university students.

5.1. Strengths:

The previous researches related to physical activity and mental health assessment during the Covid-19 lockdown was shown in many countries. But a limited study is available regarding evaluating physical activity behavior and mental health after the Covid-19 lockdown, specifically in young adults. To our knowledge this study is first in Pakistan which assess both physical activity and mental health in young adults after the Covid-19 lockdown.

Previous studies had collected data regarding physical activity and mental health in pandemics through online surveys, which can create biases in data.

This study was conducted in universities in the capital city of Islamabad, targeting young adults assessing physical activity and psychological health together and also explored sociodemographic factors. This will provide valuable information to healthcare providers regarding physical and mental health and assist in formulating awareness programs for young adults.

5.2. Limitations:

The present study has some significant limitations to address. Firstly, the cross-sectional research recruited relatively small samples using the convenient sampling technique and only included students from Islamabad. Therefore results cannot be generalized to whole university students in Pakistan.

Secondly, our results do not show the students' physical activity level and mental health during a covid-19 lockdown. Therefore it is challenging to evaluate the study's outcomes and draw a clear inference on university students' physical activity and mental health. In the future, analysis can occur using situations during and after lockdown.

CHAPTER VI: CONCLUSION

This study is one of the first to objectively measure young adults' physical activity and mental health after the Covid-19 post-lockdown. According to this study, most students are physically inactive, and because of less physical activity, they suffer from moderate to high stress. The contributing factors after the covid-19 lockdown is students living with a family member suffering from covid-19 during the lockdown, students living with joint family structure and have low socioeconomic background suffer more stress and perform less physical activity. In addition, according to the study, female students do more physical activity and suffer less stress after lockdown than male students.

There is a need to encourage physical activities in the future among young adults so that they can fight ongoing Covid-19 and other diseases. It is necessary since university students are the future of Pakistan.

CHAPTER VII: RECOMMENDATION

From the findings of this study, it recommends that:

Must initiate programs for awareness and knowledge of students about their physical and mental health.

Sports, exercises and physical activity are well positioned to facilitate many of the issues arising from Covid-19 lockdowns, particularly those related to mental health.

National governments should adequately consider the importance of sport, exercise, and physical activity and support people to be more active, particularly in protecting mental health.

Research funders to better acknowledge the vital role physical activity can play on a macro and micro level post-Covid-19 lockdown through investments that reflect the acute and longer-term mental health implications of Covid-19 lockdown.

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Annexure A

Performa

The following study has no potential harm to participants. All data collected from you will be coded in order to protect your identity and should not be disclosed to anyone. Any additional information about the study results will be provided to you at its conclusion, upon your request. Your participation indicates that you have read and understood the nature of the study, and that all your inquiries concerning the activities have been answered to your satisfaction.

Participant signature: …………………………….

Section-A

Independent (predictor) variables:

1.   Gender:

o   Male

o   Female

2.   Age_____

3.   Expected pocket money (Monthly):

o   5,000- 10,000 Rs/-

o   10,000-20,000 Rs/-

o   Above 20,000 Rs/-

4.   Participation in extra-curricular activities:

o   Yes

o   No

5.   Institute:

o   Public

o   Private

6.   Family type:

o   Nuclear

o   Joint

7.   Curriculum of study:

o   Healthcare

o   Engineering

o   Science

o   other_____

8.   Academic year of study:

o   1

o   2

o   3

o   4

9.	Have you been diagnosed with Covid-19 ?

o	Yes

o	No

10.	Have you been living with a person diagnosed with Covid-19?

o	Yes

o	No

Annexure- B

Dependent (outcome) variables:

Section-B

Physical Activity Assessment

1.   Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?

o   Yes

o   No   if No go to Q-4

2. In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?

o   Days _____

3.   How much do you spend walking or bicycling for travel on a typical day?

o   Hours_____Minutes_____

4.   Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously?

o   Yes

o   No   if No go to Q-7

5.   In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?

o   Days_____

6.   How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?

o   Hours_____Minutes_____

7.   Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, and volleyball] for at least 10 minutes continuously?

o   Yes

o   No   if No go to Q-10

8.   In a typical week, on how many days do you do moderate- intensity sports, fitness or recreational (leisure) activities?

o   Days

9.   How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?

o   Hours   Minutes

10.   How much time do you usually spend sitting or reclining on a typical day?

o   Hours   Minutes

Mental Health Assessment

For each question choose from the following alternatives: 0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

1. In the post covid-19 lockdown, how often have you been upset because of something that happened unexpectedly? _____

0- Never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

2.	In the post covid-19 lockdown, how often have you felt that you were unable to control the important things in your life? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

3.	In the post covid-19 lockdown, how often have you felt nervous and stressed? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

4.	In the post covid-19 lockdown, how often have you felt confident about your ability to handle your personal problems? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

5.	In the post covid-19 lockdown, how often have you felt that things were going your way? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

6.	In the post covid-19 lockdown, how often have you found that you could not cope with all the things that you had to do? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

7.   In the post covid-19 lockdown, how often have you been able to control irritations in your life? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

8.   In the post covid-19 lockdown, how often have you felt that you were on top of things? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

9.   In the post covid-19 lockdown, how often have you been angered because of things that happened that were outside of your control? _____

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

10.   In the post covid-19 lockdown, how often have you felt difficulties were piling up so high that you could not overcome them?

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often.

Figuring Your PSS Score You can determine your PSS score by following these directions:

• First, reverse your scores for questions 4, 5, 7, and 8. On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.

• Now add up your scores for each item to get a total. My total score is _____.

• Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

► Scores ranging from 0-13 would be considered low stress.

► Scores ranging from 14-26 would be considered moderate stress.

► Scores ranging from 27-40 would be considered high perceived stress.

Annexure C

<u>CONSENT FORM</u>

Al-Shifa Trust Eye Hospital,

School Of Public Health.

Dear Participant,

My name is Ayesha Nisar .I am a student of MSPH in Alshifa School of Public Health. I am here to collect information for my thesis to assess physical activity behavior and mental health in Covid-19 post-lockdown among University students of Capital city .You can help me by completing the attached questionnaire; you will find it quite interesting. I appreciate your participation in my study and I assure that your responses will be held confidential and will only be used for education purposes.

Sincerely,   Participant Signature

Ayesha Nisar

MSPH 13

AL-SHIFA SCHOOL OF PUBLIC HEALTH
PAKISTAN INSTITUTE OF OPHTHALMOLOGY
AL-SHIFA TRUST, RAWALPINDI

TO WHOM IT MAY CONCERN

This is to certify that **Ayesha Nisar** D/O **Nisar Ahmad** is a student of Master of Science in Public Health (MSPH) final semester at Al-Shifa School of Public Health, PIO, Al-Shifa Trust Rawalpindi. He/she has to conduct a research project as part of curriculum & compulsory requirement for the award of degree by the Quaid-i-Azam University, Islamabad. His/her research topic which has already been approved by the Institutional Review Board (IRB) is **"Assessment of physical activity behavior and mental health in Covid-19 post lockdown among University students of Capital city-Islamabad, Pakistan"**.

Please provide his/her necessary help and support in completion of the research project. Thank you.

Sincerely,

Dr. Ayesha Babar Kawish
Head
School of Public Health, PIO
Al-Shifa Trust, Rawalpindi

GANTT CHART

Research Activities	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022
Literature Review	■	■	■	■	■			
Proposal submission	■							
Proposal Defense IRB		■						
Pilot Study		■						
Data collection		■	■	■				
Data Analysis					■			
Thesis writing			■	■	■			
Thesis draft submission						■		
Thesis defense						■	■	
Final thesis defense								■

BUDGET

Sr. No	Item	Resource	Unit	Cost unit	Total amount
01	Literature search	Internet	01	1000/-	
		Library	01	500/-	1500/-
		Supervisor discussions			
02	IRB	Transport	01	300/-	300/-
03	Field visit	Transport	8 visits	1000/-	1000/-
04	Pilot study	Questionnaire Printing	40	40/-	800/-
		Transport	2 visits	800/-	1600/-
05	Data collection	Questionnaire Printing	367	30/-	11010/-
		Transport	6 visits	800/-	4,800/-
06	Data analysis	Internet		1500/-	1500/-
07	Thesis printing	Paper	3 copies	2000/-	6000/-
08	Thesis binding	Hardcover	3 copies	2500/-	7500/-
09	Miscellaneous	Food expenses		5000/-	5000/-
		Stationary			
10	Total amount				41,010/-