



# PERCEIVED STRESS AND FATIGUE AMONG COLLEGE STUDENTS IN POST- COVID-19 ERA OF VADODARA DISTRICT: A CROSS-SECTIONAL STUDY.

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## INTRODUCTION

### COVID-19 Pandemic and the Lockdown

Since its emergence during the November of 2019, in China, as of February 2021, the COVID-19 disease has been reported to infect over 111 million people worldwide, claiming at least 2.4 million lives across a total of 215 countries or territories.<sup>[4]</sup> Among the most affected nations around the globe, were the United States of America, India, Brazil and Russia, together comprising nearly 30% of the total globally confirmed cases reported of the coronavirus.<sup>[4]</sup> As suggested by Marroquin and Morgan, COVID-19 a highly infectious viral disease and has been an intrinsically social phenomenon, the successful containment of which depended on effectively limiting social contact.<sup>[11]</sup> With the aggressively spreading pandemic, majority nations across the globe implemented various containment measures, including home confinements or lockdowns and social distancing, shutting down any social activity requiring human interactions and gathering. This extended to include a temporary yet indefinite closure of schools, colleges, temples, parks, malls, airports, offices and railway stations. The threat of infection of the SARS COVID-19 virus was thus accompanied by debilitating lifestyle changes,

due to containment measures- namely lockdown and social distancing- resulting in subsequent derangement of professional, social and personal routines.<sup>[2,6]</sup> The only exception to stay-at-home orders were the sectors of “frontline warriors” and essential workers.<sup>[8,4]</sup> In April 2020, observing the statistics of approximately 2.6 billion people across the globe experiencing some form of a lockdown, the World Economic Forum commented that the lockdown has been the world’s greatest psychological experiment ever conducted.<sup>[e]</sup>

### **Transition to online operations**

Due to implemented confinement protocols, many people shifted their personal and professional lives online.<sup>[2]</sup> These changes seeped across majority organizations and industries, ranging from education, business, public and social institutions, to the government bodies.<sup>[8]</sup> Albeit simple, the lockdown was nevertheless a blunt tool that brought the country to a standstill. It was essential and the only seemingly possible way of safeguarding thousands of people from the wildfire of the coronavirus pandemic as well as preventing the swamping of the health services.<sup>[3]</sup> By June 2020, Murphy claimed that when implemented, public health responses pertaining to individual behaviour changes and social containment strategies appeared to have been effective in slowing down the trajectory of COVID-19.<sup>[3]</sup> He pointed out that the lifting of the lockdown, meanwhile, would require a selective approach. Experts proposed easing of restrictions that were less likely to cause resurgence should precede the ones which were a riskier option, and that it would be conducted on the basis of data interpretation and common sense. This was followed across majority regions and many countries benefited from the cautious and selective relaxation of the measures originally implemented.

The educational community was one of the populations that was not fully relaxed in many areas for long, until very recently, in India. This industry has been a significant participant of the transition to the digital world and one of the much later sectors to be relaxed. Because of this, online education, virtual classrooms and e-learning prevailed for a substantial amount of time, reportedly impacting a vast majority of the students over the long period. Schools and non-healthcare domain colleges were shut since mid- march 2020, with remote teaching and learning environments implemented as a temporary solution, but uncertain with respect to the foreseen

duration.<sup>[4]</sup> In April 2020, the World Economic Forum reported that across the globe, over 186 countries were affected by closure of schools and educational institutes, with 1.2 billion children confined to e-learning. With a dramatic rise in e-learning ever since, up to recent relaxations, the world of academics and education has been significantly affected in terms of its quality, efficiency, impact on students and general outcome.<sup>[10]</sup> Incredibly essential for containing pandemics, while lockdown policies and online learning measures effectively mitigated the spread of the coronavirus disease, they adversely affected lifestyles, physical health as well as mental and social wellbeing of the students. These aspects may include disruption of day-to-day interaction, a general sense of belonging and companionship, availability of social support and inherently, the exhausting process of social coping itself.<sup>[19]</sup> The pandemic has had draining effects and serious consequences have been observed, with regard to mental and physical wellbeing, particularly among young people.<sup>[3,11,12]</sup> A mental and/or physical state of “fatigue” or tiredness, and a general sense of stress, is one of the most commonly reported consequences of the lockdown or home confinement measures during the COVID-19 pandemic.<sup>[4]</sup>

### **Fatigue in the student population**

Albeit effective in controlling the spread of infection, the globally implied social containment and predominant virtual connectivity brought along a baggage of other health problems, lying within the spectrum of what was recognized by many researchers as “lockdown fatigue”.<sup>[4]</sup> The Australian Psychological Society has described this fatigue as a state of exhaustion due to the overwhelming disturbances in one’s routine lifestyle and daily activities, social isolation, insecurity, looming health threat and uncertainty.<sup>[13]</sup> It may be reflected as a mix of mental, emotional and/or physical signs. Similarly, with the exponential increase in video conferencing platforms and other massive uses of digital technology, within the same spectrum of health issues, a new form of “online-fatigue” has also been discussed by a few researchers.<sup>[2]</sup> Fatigue is characteristically understood as abnormal exhaustion in response to routine or normal activity.<sup>[7]</sup> Though subjective, fatigue is generally described as an undesirable experience, which engulfs the individual with an overpowering sense of tiredness that cannot effectively be reduced by food intake or rest. Even then, the individual experiences an intense longing for rest, decreased physical and mental energy and reduced motivation and sense of pleasure.<sup>[4]</sup> Researches

establish that chronic fatigue is extremely problematic because of its impact on quality of life and duration.<sup>[12]</sup> Pandemic associated fatigue has been associated to chronicity and identified to comprise of physical exhaustion, myalgia, tiredness, sleep disturbances, anhedonia, fear, irritability, emotional outbursts, worry, anxiety, lack of motivation, uncertainty, loneliness and sadness.<sup>[4]</sup>

### **Stress in the student population**

Adding to this, the perceived impact of COVID-19 on daily lives, social interventions and frequent distressing news in the media contributed to a steep rise in mental ill- health including depression, anxiety, loneliness, and financial stress, globally, during the lockdown.<sup>[2]</sup> Researches on true quarantine or complete isolation in order to contain illnesses, vouch for extensive debilitating effects of social isolation on mental and emotional health. These can manifest as precipitation of generalized anxiety, depression, post-traumatic stress and insomnia.<sup>[20]</sup> Isolation, quarantine and distancing, as measures to break the infection cycle of COVID-19, resulted in an indefinite, long haul of reduced access to friends, family or extended families, peers and other social support systems.<sup>[3]</sup> With social distancing and isolation, psychological discomfort and frustration arises. Online fatigue adds on to emotional exhaustion, burnout and even counterproductive actions such as absenteeism.<sup>[2]</sup> Transition to online classrooms during the pandemic, entails a lot of factors which are psychosocially and psychosomatically harmful to students. These include information overload, persistent internet usage and constant connectivity and availability due to exclusive operation of electronic and social media for communication purposes.<sup>[8]</sup> Apart from decreased human interaction and adjusting to new patterns of education and learning, the “technostress” also entails increased physiological demand on the brain. This is because deprivation of conversational mutual gaze, lack of non-verbal cues and overexposure to one’s own image due to videoconferencing overload leads the brain to work more for restoring synchrony.<sup>[2]</sup> Additionally, blurring of lines between personal life and student life, academic challenges of new educational patterns, uncertainty regarding examinations and constant curriculum changes can contribute to student stress during the virtual learning era.

## Young-adult student population and persistent impairments

Evidence suggests that during the mandatory lockdown period, many young adults have reported symptoms consistent with pandemic associated fatigue. Since they engage in social activities significantly higher than other ages and greatly value social connectedness, they are highly susceptible to ill-effects of social derangements, changes in learning environments and home confinement measures, all of which were implemented during the lockdown.<sup>[4]</sup> Transition of educational patterns from online to offline modes of learning and vice-versa can become challenging for students to cope with. This can contribute to stress, burnout and fatigability. Decreased academic success due to inability to cope with learning patterns, psychological ill-health and prolonged reduction in quality of life can aggravate the precipitation of chronic stress and fatigue.<sup>[5]</sup>

Mental and physical state of being, when disturbed across a significantly long temporal association, has been linked to chronicity of fatigue and stress.<sup>[12]</sup> This undoubtedly suggests that during the stay-at-home practices - that lasted for many student populations (other than those within healthcare disciplines) for more than a year or in some cases two years - the mental disturbances following difficulties in online learning, economic, emotional and social derangement, drastic reduction in physical activity and the respiratory impairments due to the coronavirus infection itself, could all be potential causes to persistence of observed fatigue and stress among the population, even after the lockdown-era. With Murphy's claim that the population across the world was already transiting from acute to chronic stress by June 2020, specific attention to the fatigue, stress and mental health of the young academic population that is emerging from this prolonged containment, seems imperative, with innovation and implementation of effective coping measures and other required intervention strategies post-lockdown or in the post COVID-19 era.<sup>[3]</sup>

The present study aims to analyse the prevalence of perceived stress and fatigue during the post COVID-19 era, in students of select colleges of Vadodara, who transitioned from the online learning environment to offline classrooms within the last 6 months of this writing. With the same, we can understand the lingering impact of prolonged home

confinement and digital learning and its persistent influence on college going students, aiming to realize the required interventions, coping strategies, reforms and measures to overcome the hindrances thus posed and predicted for the future.

## AIM AND OBJECTIVES

### AIM

To study perceived stress and fatigue among college students in the post COVID -19 era of Vadodara district.

### OBJECTIVES

- To study about the pandemic and its effect on college students.
- To analyse stress and fatigue among college students due to transition from online to offline mode of learning.
- To determine the effect of age, gender, stream of study on perceived stress and fatigue.

## REVIEW OF LITERATURE

1. **Anupama Kizhakkeveetil, et al (2017)** conducted a survey to quantify levels of “Perceived stress and fatigue among students in a doctor of chiropractic training program” with the goal to identify student coping mechanisms for perceived stress and fatigue and sources of the same. The study analysed the relationship between perceived stress and fatigue of chiropractic students studying in the second, fifth and eight semesters. The questionnaire consisted of the Perceived Stress Scale, the Piper Fatigue Scale and the Undergraduate Sources of Stress Survey. Through linear correlations, descriptive statistics and one-way analysis of variance, differences in levels of perceived stress and fatigue across various demographic variables and other factors were analysed. Coping strategies for fatigue and stress were also proposed, which were identified by them and most commonly exercised mechanisms were ascertained. Mean scores of fatigue and perceived stress among 140 students were 5.6 (SD 2.0) and 18.8 (SD 5.4), respectively, with higher scores observed in women than in men.

Additional factors and preferred coping mechanisms were also analysed and recorded. Overall, results depicted moderate to high levels of fatigue and stress in the surveyed students. The study suggests that fatigue and stress scores have discrepancies associated with gender among students and that various sources, coping mechanisms and factors account for alleviation of both, including each other.<sup>[5]</sup>

2. A systematic review of literature by **Giuseppe La, Torre, et al (2019)** titled "**Symptoms and risk of techno-stress: a systematic review**" for COVID-19 pandemic aimed to clarify the terminology, risk factors and symptoms of Techno-stress and to analyse differences between non-work-related and work-related sources of the same. 84 cross-sectional studies, 13 reviews (11 narrative and 2 systematic reviews) and 8 experimental studies were reviewed. 70 studies (67%) dealt with work- associations of TS, 26 (25%) addressed non-work-associated Techno-Stress, while 8 (8%) did not differentiate between work and non-work fields. The objective of the study was closely related to pervasive information and technological use in modern society, along with focusing on the differences between non-work-related and work-related sources of Techno-Stress. They concluded that TS affects both personal and lives. Furthermore, they reported that reduction in personal life and job satisfaction and/or productivity, and is closely linked to the psycho-behavioural disorders. This suggests that it is necessary to identify high-risk situations to technostress address them efficiently.<sup>[15]</sup>

3. The **Australian Psychological Society (2020)** published an article titled "**Handling lockdown fatigue.**" The goal of this was to identify lockdown fatigue and learn how it impacts the body physiologically and psychologically, as well as how to manage it. They reported that social and physical isolation, constraints, quarantining, self- isolation, and mandatory mask wearing were all common reasons among people. Depression, anxiety, and fear are common symptoms of lockdown fatigue, as are physical exhaustion, burnout, irritability, and a lack of motivation. The proposed techniques to deal with lockdown weariness in order to suppress the causes were to connect with family, friends, and co-workers, attempt to establish and maintain a routine, talk through your thoughts with someone you trust, and accept your feelings and behaviours rather than denying them.<sup>[13]</sup>

4. **Cathy Li and Farah Lalani (2020)** published an article on how education has changed due

to COVID-19 pandemic. The study mentions how the pandemic caused the shift of learning online via digital platforms . They also give examples of many online learning platforms and their facilities . For example - BYJU'S ,LARK,DINGTALK etc . They found that there were mixed beliefs on the future of learning . Some found the online mode of teaching and learning effective and efficient due to the availability of chat groups, voting ,video meetings and document sharing . Even the students found the communication easier. While some others had certain disadvantages like unreliable internet access ,technology struggle etc. For those who have reliable access to the internet, research shows that on an average, students retain 25-60% more information and material during online learning, compared to just 8-10% in offline classroom learning. They also found that e-learning requires less time than classroom learning (i.e. 40 -60% less learning time) . It was found that the effectiveness of online learning varied among different age groups . Younger children get distracted easily so a structured environment , learning games and other such methods make their online learning effective and easier . Some found online learning a hindrance to their goals whereas others who benefited from it took it as their “new normal” way of learning.<sup>[9]</sup>

5. A systematic review of literature by **Prateek Kumar Panda, et al (2020)** titled **“Psychological and Behavioural Impact of Lockdown and Quarantine Measures for COVID-19 Pandemic on Children, Adolescents and Caregivers: A Systematic Review and Meta-Analysis”** that primarily aimed to provide a collective estimate of prevalence of diverse behavioural and psychological symptoms/disorders in children and adolescents, with and without pre-existing behavioural disorders, as well as their caregivers, collated a vast spectra of reports portraying the possible effects of the pandemic and containment measures on mental health, behavioural profile and psychological wellbeing on adolescents and children. Three primary terminologies were focused on, namely, terms associated with the lockdown and coronavirus pandemic, the study population (neonates to adolescents) and the spectrum of psycho- behavioural symptoms, and researches across various electronic databases (MEDLINE, Web of Science, EMBASE, CENTRAL, bioRxiv and medRxiv) were explored. From a record of 219 selected articles, Various psycho-behavioural disorders and symptoms were calculated through a random-effect meta-analysis and out of a record of 219 selected articles, 15 researches described about 22,996 children/adolescents to suffer from



anxiety (34.5%), irritability (42.3%), depression (41.7%) and inattention (30.8%). Fear of COVID-19, sleep disturbances and boredom were also reported in significant numbers. This suggests that post-pandemic psychological derangement is an emerging trend especially in the young population, irrespective of pre-existence of behavioural disorders, with the latter further worsening with the pandemic.<sup>[21]</sup>

6. A cross sectional study by **Naina Wakode, et al (2020)** to examine “**Perceived stress and generalized anxiety in the Indian population due to lockdown during the COVID-19 pandemic**” examined stress levels and stressors among 300 participants, of ages 18 or above. Electronic survey forms based on the Generalised Anxiety Disorder and Perceived Stress Scale instruments examined the generalised anxiety and perceived stress scores along with delineating potential stressors through the questionnaire. Results revealed that 84% of the respondents depicted moderate to severe level stress scores while anxiety scores for 88% respondents fell under the moderate to severe category. Gender and employment differences in the scores of the sample were observed, with fear of COVID-19 infection, the future and inability to regularly exercise recorded as major stressors among the participants. The study accounts for the intensity of the psychological and social impact of Cov-19 and the containment measures on the population of India.<sup>[14]</sup>

7. **J.F.A Murphy (2020)** identified the COVID-19 pandemic as a triad of economic, psychological and medical crises. In his publication of the “**Pandemic Fatigue**” in the **Irish Medical Journal**, he stated that the approach to the pandemic had drifted from eagerness to tackle the crisis to “feelings of exhaustion”. The writing covered a range of symptoms and complaints observed in various populations during the lockdown, describing chronic stress, burnout, physical fatigue and mental strain. Social and personal derangements experienced within different environments such as hospitals and office workplaces were described, along with psychosomatic and physiological factors of behavioural adversities of online interaction, social isolation, technological overload, giving rise to uncertainty, anxiety, prolonged gaze duration, critical self-awareness and insomnia. With an overview of the necessities, benefits, risks and statistics of the lockdown and its effects, Murphy concluded by giving insight into the

prospective goals of coping with the lockdown, interventions necessary to control and recover from adverse effects of the pandemic and the lockdown in the era of emerging from the same.<sup>[3]</sup>

**8. Brett Marroquin, et al (2020)** examined the associations among social distancing, social support, insomnia, acute stress and general mental health during the COVID-19 pandemic, via the study “**Mental health during the COVID-19 pandemic: Effects of stay-at-home policies, social distancing behaviour, and social resources**” The study

focused on generalized anxiety disorder, depression, insomnia, intrusive thoughts, and acute stress. A subsample of 118 participants who had completed symptom measures earlier in the outbreak (February 2020) showed increases in depression and GAD between February and March, and personal distancing behaviour was associated with these increases. Findings suggested that 38.4% of the participants were experiencing mild depression and 27.4% were clinically depressed. Furthermore, 22.8% respondents were reported to have mild symptoms of generalized anxiety disorder, while 15.6% and 9% of them categorized under moderate and severe symptoms, respectively. Adding to this, 38.6% of the population was found to suffer from clinical insomnia. The findings clearly vouched for the negative mental health impact of social distancing and its association with age, gender, social support and other demographic variables.<sup>[11]</sup>

**9.** To understand the “**Impacts of Working from Home During COVID-19 Pandemic on Physical and Mental Well-Being of Office Workstation Users**” researcher **Yijing Xiao, et al (2021)** conducted an electronic survey by deploying anonymous, online questionnaire shared to participants invited through emails, newsletters and social media platforms. Information regarding demographics, occupational environment, home environment and home workstation, mental and physical well-being, lifestyle and work performance was collected, through 32 categorical and open response Likert-type questions. Individuals who transitioned from long office desk hours to work-from-home schedules were screened and their responses were analysed. Results revealed a decrease in average mental and physical well-being ratings, as compared to the pre-work-from-home practice. Peer communication was found to be drastically decreased while distractions, work expectations and workstation time to be increased significantly. The researchers reported how food intake, family dynamics and presence, peer

socialization, work hours and design, workplace environment and physical exercise are all contributory to physical and mental well-being, the prolonged derangement of which can adversely impact the same. The essentiality of supporting a positive work-from-home experience was highlighted in the study.<sup>[16]</sup>

**10. Amidst the 6-month of lockdown in Philippines, Leodoro J. Labrague and Cherry Ann Ballad (2021)** conducted an online cross-sectional study titled **“Lockdown fatigue among college students during the COVID-19 pandemic: Predictive role of personal resilience, coping behaviours, and health”** involving 243 college students. The objective of the study was to investigate and evaluate lockdown-induced fatigue and association of coping skills, personal resilience and health with the same, in full-time college students in Western Samar, Philippines. A lockdown-inclusive questionnaire was circulated using the Brief Resilience Scale, Coping Behaviours Questionnaire, Lockdown Fatigue Scale and a single-item measure of perceived general health. Correlation, variance and other statistical analysis reported that the students experienced moderate levels of fatigue during the lockdown, and that lower levels of lockdown fatigue were associated with personal resilience and coping behaviours. An implication of this could be that interventions to enhance the same, could be key in reducing lockdown-fatigue.<sup>[4]</sup>

**11. Abdulkadir Haktanir, et al (2021)** conducted a survey involving 500 adults (aged 18-68) to study their experience of Pandemic Fatigue. In the study, titled **“Do we experience pandemic fatigue? current state, predictors, and prevention”**, the participants were asked to fill an online questionnaire involving the Intolerance of Uncertainty Scale, the COVID-19 Burnout Scale, the Fear of COVID-19 Scale, the Apathy Evaluation Scale, and the Exercise of Self-Care Agency Scale, along with relevant demographic details and the obtained data was transferred to SPSS and analysed for distribution and significant findings. To determine the values of each variable (fear of coronavirus, apathy, intolerance of uncertainty, and self-care) and their relationship with pandemic fatigue as well as each other, correlational, descriptive and structural equation modelling was carried out. Their model examining the role of said variables as interceded by self-care foreseeing fatigue by virtue of the pandemic, portrayed satisfactory to excellent indices of goodness-of-fit. One in every three participants was found to be exercising fewer precautions which posed a threat to the public health and to their own well-being as well. The researchers suggested a need for greater attention to the biopsychosocial nature

of people while implementing restrictions and required precautions.<sup>[1]</sup>

12. In a study titled “**Impact of digital surge during COVID-19 pandemic: A viewpoint on research and practice**”, researchers **Rahul De, Neena Pandey and Abhipsa Pal (2021)** examined the impact of the coronavirus pandemic and containment implementations, on surging use of digital technologies, possible scenarios of the post- pandemic era and research issues of were discussed. The scenarios and research aspects of the digital surge, proposed in the pandemic induced post-lockdown era, were reported to be increasing digitalization, issues faced by virtual gig workers and service providers, online scams and frauds, internet access and digital divide, internet governance burden including heavy data requirement, portal shutdowns, increase in digital currency usage and development requirements in surveillance and privacy. Researchers identified the occurring and potential political, economic, psychological and social crises due to this checklist of issues. The research provided an insight into the potential of these factors as contributory to pandemic fatigue and post-pandemic stress. The study also provides with the future scope and implications in the process of addressing these issues.<sup>[8]</sup>

13. **Shou Liu, et al (2021)** conducted a research to examine the “**Prevalence of Fatigue among Chinese nursing students in post-COVID-19 era**”. In this cross-sectional, multi centred study, Nursing students from 5 Chinese universities were asked to participate. Using the Numeric Fatigue Scale for fatigue and overall body pain intensity, Generalized Anxiety Disorder-7 scale for symptoms of anxiety, Patient Health Questionnaire for depressive symptoms and WHO Quality of Life – brief version for quality of life scoring, the data were obtained and analysed. The prevalence of fatigue in the study was found to be 67.3% among 1070 respondents, with substantial differences between no fatigue and fatigue groups in terms of age, gender, year of study, financial perception, health perception, economic loss during COVID-19 pandemic and the GAD-7, PHQ-2 and pain total scores. They concluded that fatigue was commonly reported among nursing students in the post-COVID-19 era. The team also proposed execution of effective stress-reduction strategies to help cope with fatigue and restore optimal health and functioning.<sup>[7]</sup>

14. **Andrea Bonanomi, et al (2021)** conducted a survey titled “**Prevalence and health correlates of Online Fatigue: A cross-sectional study on the Italian academic community**

during the COVID-19 pandemic”, to examine Online Fatigue among Italian academics. A novel tool called the “Online Fatigue Scale” was developed which consisted of validated measures and other questions focusing on psychological well-being, techno stressors, health-status, COVID-19 associated stress and other socio- demographic factors. Two subscales were also identified, namely Virtual Relations Fatigue and Off-Balance. 27.4% of the respondents reported a low level, 38.4% a medium level, and 34.2% a high level of Off-Balance Fatigue. Virtual Relations Fatigue was recorded low in 61.9% of the academics and high in 38.1% of them. High levels of scores on both scales were found to be associated with the female gender, increased technological use and presence of minor children. Adding to this, the high-scoring respondents reported higher frequency of psychobiological symptoms, poorer mental, faulty lifestyle and unhealthy habits and a high COVID-associated perceived stress.<sup>[2]</sup>

## MATERIALS AND METHODOLOGY

**Study Site:** 1. Drs. Kiran & Pallavi Patel Global University (KPGU), Vadodara

2. Maharaja Sayajirao University of Baroda (MSU), Vadodara

**Study Population:** College going students in Vadodara district

**Sample size:** Proposed 207; Obtained 210

The proposed sample was 207, decided on the basis of a study conducted by Naina Wakode, et al (2020)<sup>[14]</sup> and calculated using the “Statulator Sample Size Calculator tool”, at confidence level 95%. Considering the non-response rate, the form was circulated to a total of 250 students, from colleges of Drs. Kiran & Pallavi Patel Global University (KPGU), Vadodara and Maharaja Sayajirao University (MSU), Vadodara, combined, following the inclusion and exclusion criterion. Out of 250, we received responses from 210 students, i.e., response rate was about 84%.

**Type of Sampling:** Convenient, Purposive sampling

**Study Duration:** December 2022 – April 2022

- Step 1: Data Collection (February 1, 2022 – February 14, 2022)
- Step 2: Data Analysis
- Step 3: Thesis Writing

**Study Design:** Cross-sectional survey (prevalence study)

**Selection criterion:**

**Inclusion criterion**

- Students of KPGU / MSU only, who were willing to participate in the survey.
- Students currently pursuing an undergraduate or postgraduate programme that were ongoing on an online platform for at least a year since before the last 6 months of data collection of this study, and transitioned offline only within the last 6 months of the study.
- Students aged between 17 to 26 years.
- Students who could be reached through electronic and social media communication.
- Students who could understand, respond and communicate in elementary level English.

**Exclusion criterion**

- Students who had not participated in online learning through their university before and/or during the period of 6 months prior to this study.
- Students who transitioned to offline learning before a period of 6 months prior to this study.
- Students who have currently not transitioned from online to offline learning pattern of classes.

**Outcome Measures:**

The questionnaire consisted of socio-demographic data including specific medical and personal history as well as individual standardized instruments for measuring perceived stress and fatigue.

The scales used were:

- **Perceived Stress Scale (PSS-10) for measuring perceived stress**<sup>[16]</sup>

The Perceived Stress Scale (PSS) is a well-known ten-point stress assessment tool for determining how various events affect feelings and perceived stress. The scale's questions inquire about the respondent's moods and thoughts throughout the previous month. Participants must indicate how often they felt or thought a certain way in each scenario. To get the PSS score, reverse the results for questions 4, 5, 7, and 8 (0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0), then combine the scores for each item to produce a total. Individual PSS scores range from 0 to 40, with higher values suggesting greater stress perception. Low stress is defined as a score between 0 and 13. Moderate stress is defined as a score between 14 and 26. High perceived stress is defined as a score between 27 and 40.

- **Fatigue Assessment Scale (FAS) for measuring fatigue**<sup>[17]</sup>

The FAS is a 10-item general fatigue questionnaire that is used to evaluate fatigue. Physical exhaustion is represented by five questions, whereas mental fatigue is represented by five questions (questions 3 and 6-9). Even if the person does not have any problems at the time, every question must be answered. The responses to questions 4 and 10 (1=5, 2=4, 3=3, 4=2, 5=1) are to be re-coded. The overall FAS score can then be computed by adding the scores on all of the questions (re-coded scores for questions 4 and 10). The overall score varies between 10 and 50. Categorisation of fatigue levels is done as: FAS scores 10 - 21 indicate no fatigue (normal). FAS scores 22-34 indicate moderate fatigue; and FAS scores  $\geq 35$  indicate extreme fatigue.

### **Method:**

The present study was conducted through an online survey. A Questionnaire was drafted with Google forms and distributed among the participants of the purposive sample, within students of KPGU and MSU. Student representatives of selected classes of the studied colleges were forwarded the form via WhatsApp, who were asked to circulate the same in their respective classes, for obtaining student responses. Respondents willing to participate filled the form and

the data were recorded. The perceived stress and fatigue scores were assessed by instruments PSS-10 and FAS scales.

#### **Materials used:**

1. Consent form and assessment form
2. Patient information sheet

### **Statistical Analysis**

- Data was collected using standardized scales PSS-10 and FAS
- Data was recorded and entered in Microsoft Office Excel sheet and access was limited to researchers and guides only
- Data was cross-checked for any data entry error
- Descriptive Statistics are presented as Qualitative data as Frequency/Percentage and Quantitative data as Frequency Distribution, Mean Distribution and Standard Deviation (SD) with 95% confidence level (CI) for normative distribution.

## **RESULT**

#### **Age Distribution:**

**Table 1: Mean distribution of Age among college students of selected sample**

<b>Total No. of Participants</b>	<b>Mean Age</b>	<b>SD</b>
210	19.94	1.59

Table 1 shows the statistics of age distribution of the 210 participants. Among the 210 participants, the mean age was 19.94 with a standard deviation (SD) of 1.59.

**Table 2: Frequency distribution (grouped) of Age among participants**



Age Group	No. of Students	Percentage of frequency
<19	36	17.1%
19-20	107	51.0%
21-22	57	27.1%
>22	10	4.8%
<b>Total</b>	<b>210</b>	<b>100%</b>

**Figure 1: Percentage of Age groups among college students of selected sample**

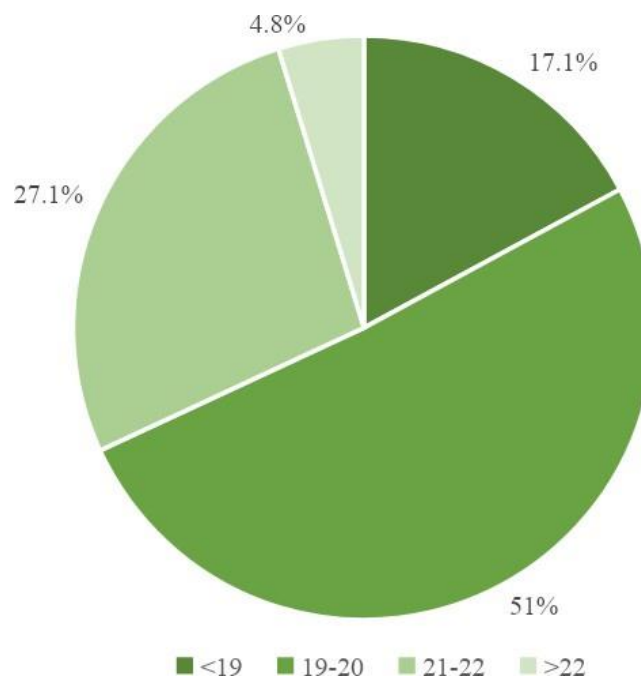


Table 2 and Figure 1 show the percentage displays the frequency distribution of age of the 210 participants, when categorised into grouped intervals. 17.1% students were aged under 19 years, 51% were aged between 19-20 years, 27.1% were aged between 21-22 years and 4.8% were above the age of 22 years.

#### **Gender Distribution:**

**Table 3: Gender distribution among college students of selected sample**

Gender	No. of Students	Percentage of frequency
Male	102	48.6%
Female	108	51.4%
<b>Total</b>	<b>210</b>	<b>100%</b>

**Figure 2: Gender distribution among college students of selected sample**

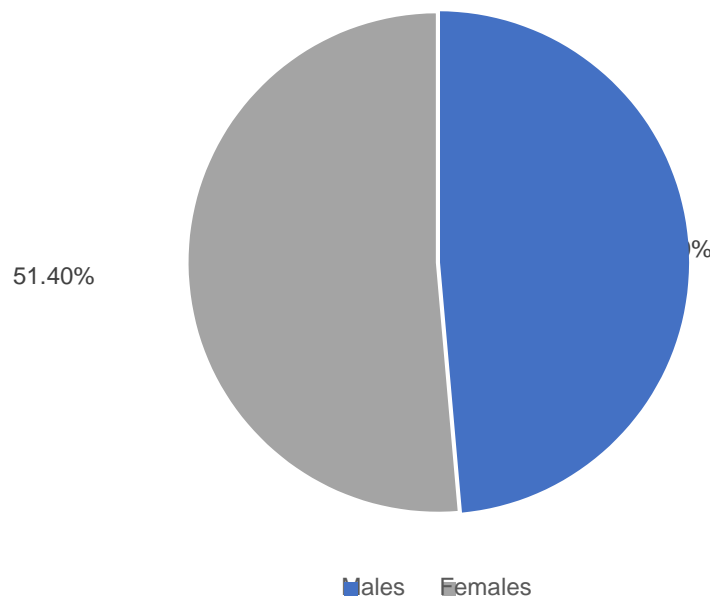


Table 3 and Figure 2 display the gender distribution among participants. Out of the 210 participants, 102 were males and 108 were females.

#### **Distribution of Stream of Study:**

**Table 4: Distribution of stream of study among students of selected sample**

Stream of Study	No. of Students	Percentage of frequency
Science	48	22.9%
Commerce	48	22.9%
Engineering	48	22.9%

Humanities	66	31.4%
<b>Total</b>	<b>210</b>	<b>100%</b>

**Figure 3: Percentage of streams of study among college students of participants**

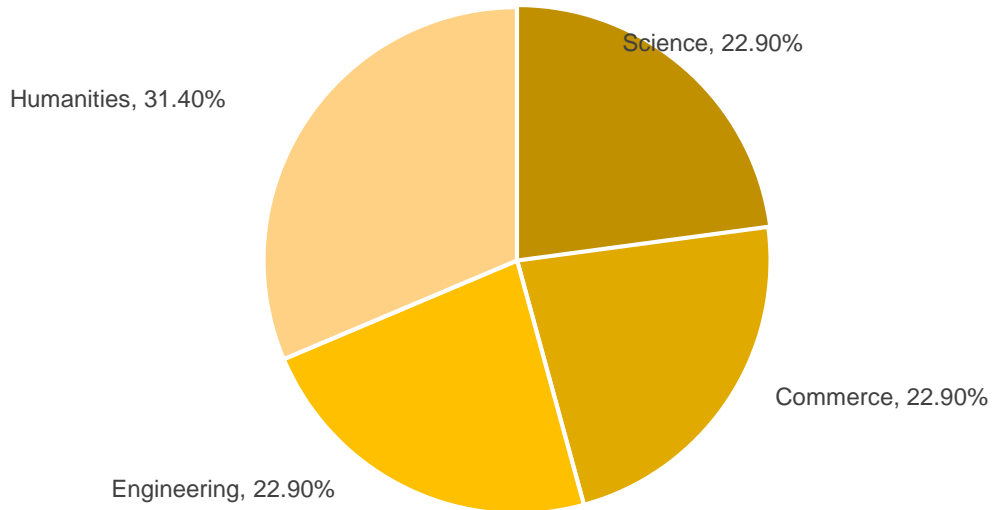


Table 4 and Figure 3 display the frequency distribution of the stream of study among the 210 participants. 48 students belonged to Science, Commerce and Engineering streams of study, each, and 66 belonged to the Humanities stream of study.

#### **Frequency Distribution of Stress Scores:**

**Table 5: Frequency distribution of Perceived Stress category of participants**

Perceived Stress Score Category (PSS)	No. of Students	Percentage of frequency (%)
Low	45	21.4%
Moderate	126	60.0%
High	39	18.6%
<b>Total</b>	<b>210</b>	<b>100%</b>

**Figure 4: Percentages of Perceived Stress levels among the participants**

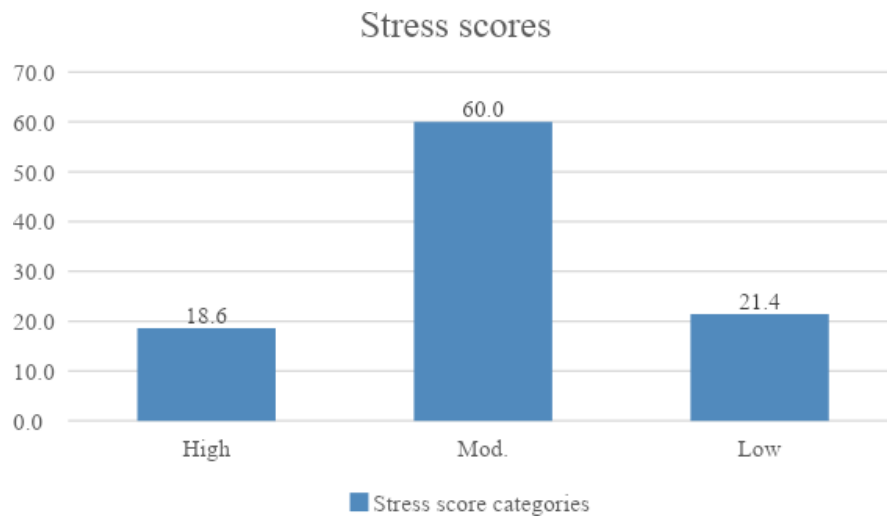


Table 5 and Figure 4 display the frequency distribution of Perceived Stress Score categories (via PSS-10) among the 210 participants. 21.4% (48) students reported low stress scores, 60% (126) students reported moderate stress scores and 18.6% (39) students reported high perceived stress scores. Thus, in the given sample, 78.6% students have reported moderate-to-high levels of perceived stress according to PSS-10 outcome measure.

#### Frequency Distribution of Fatigue Scores:

**Table 6: Frequency distribution of Fatigue Score Category of the participants**

Fatigue Score Category (FAS)	No. of Students	Percentage of frequency (%)
No/Low	4	1.9%
Moderate	158	75.2%
Extreme	48	22.9%
<b>Total</b>	<b>210</b>	<b>100%</b>

**Figure 5: Percentages of Fatigue levels among the participants**

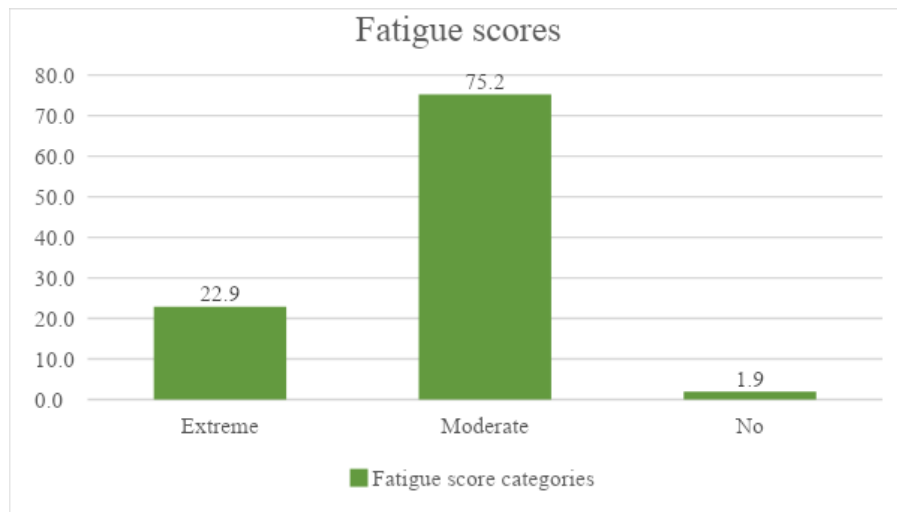


Table 6 and Figure 5 display the frequency distribution of Fatigue Score categories (via FAS) among the 210 participants. Only 1.9% (4) students reported low fatigue scores, while 75.2% (158) students reported moderate fatigue scores and 22.9% (48) students reported extreme fatigue scores. Thus, in the given sample, 98.1% students have reported moderate-to-high levels of fatigue according to FAS outcome measure.

#### Comparison of Distribution of Stress and Fatigue Scores:

**Table 7: Comparison of Mean values of Fatigue & Stress Scores of participants**

Fatigue Score (FAS)		Perceived Stress Score (PSS)	
Mean	SD	Mean	SD
31.08	±3.97	±18.50	6.41

**Figure 6: Comparison of Mean values of Fatigue & Stress Scores of participants**

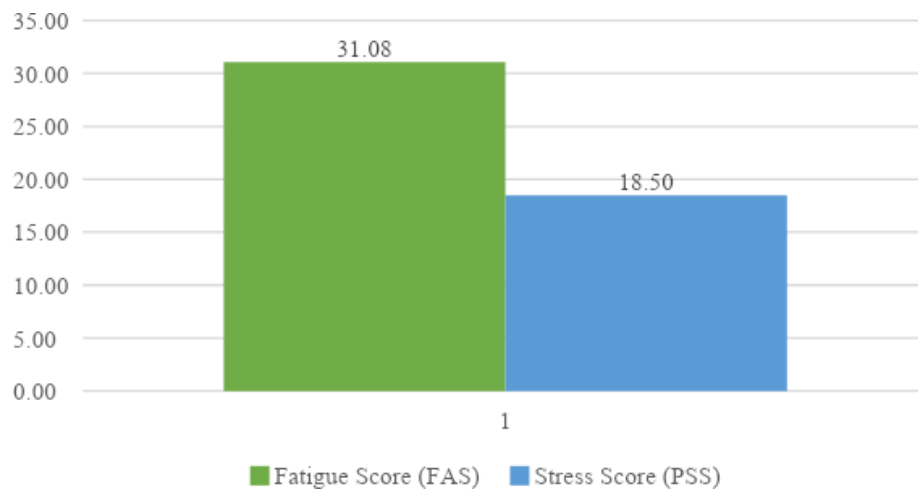
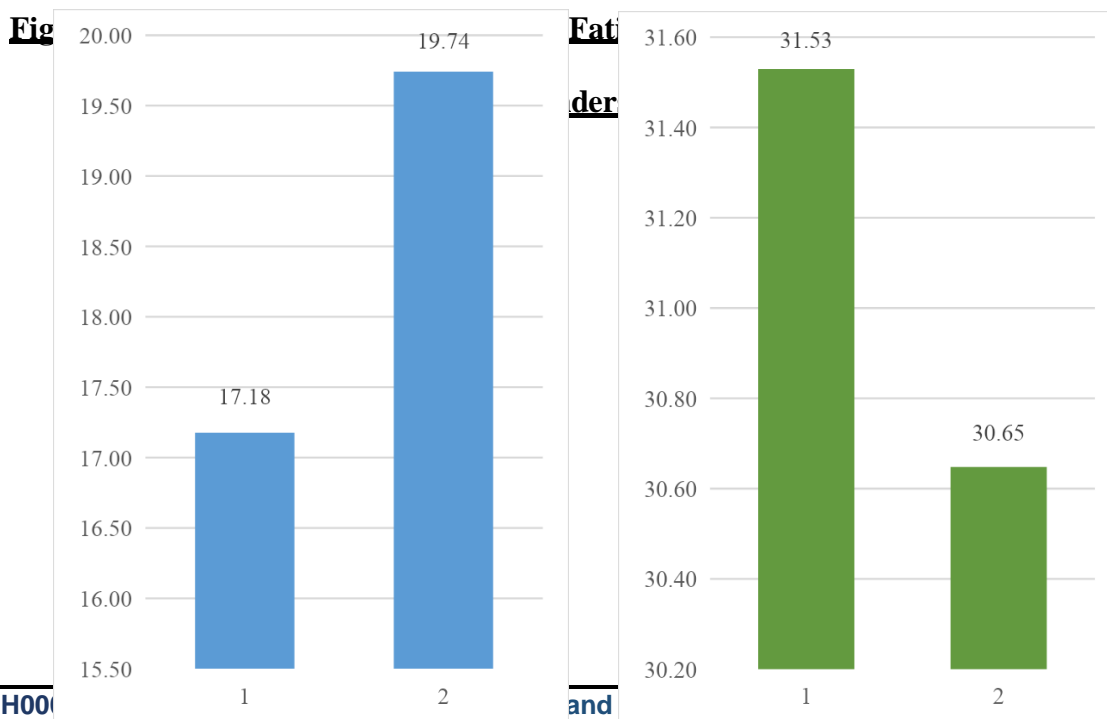


Table 7 and Figure 6 show the comparison of mean values of fatigue scores (31.08, SD ±3.97) and PSS-10 (18.50, SD ±6.41) scores of the participants.

**Comparison of mean values of scores between genders:**

**Table 8: Comparison of Mean values of Fatigue & Stress Scores between genders**

Fatigue Score (FAS)				Perceived Stress Score (PSS)			
Gender	Mean	Gender	Mean	Gender	Mean	Gender	Mean
Male	31.53	Female	30.65	Male	17.18	Female	19.74



**Figure 8: Comparison of Mean values of Fatigue & Stress Scores between genders (ii)**

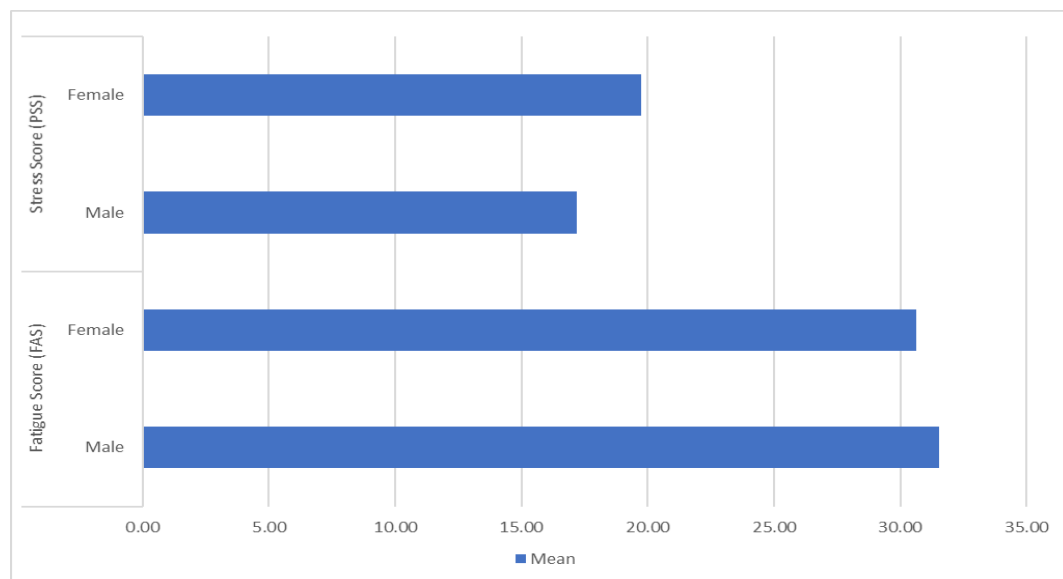


Table 8 and Figures 7 and 8 display the comparison of mean values of fatigue and stress scores between male population and female population of the given data set. Male population from the participants of this study reported higher mean fatigue than females. Female population from the participants of this study reported higher mean stress than females.

**Table 9: Fatigue Scores across Age, Gender and Stream demographics**

Variable	Categories	Total Sample (N)	Prevalence of Fatigue (In Percentage)					
			No		Moderate		Extreme	
			No.	%	No.	%	No.	%
Age Group	<19 Years	36	0	0.0	25	69.4	11	30.6
	19-20 Years	107	2	1.9	85	79.4	20	18.7
	21-22 Years	57	1	1.8	42	73.7	14	24.6
	>22 Years	10	1	10.0	6	60.0	3	30.0
	Total	210	4	1.9	158	75.2	48	22.9

Gender	Male	102	2	2.0	70	68.6	30	29.4
	Female	108	2	1.9	88	81.5	18	16.7
	Total	210	4	1.9	158	75.2	48	22.9
Stream	Science	48	1	2.1	37	77.1	10	20.8
	Commerce	48	2	4.2	33	68.8	13	27.1
	Engineering	48	0	0.0	37	77.1	11	22.9
	Humanities	66	1	1.5	51	77.3	14	21.2
	Total	210	4	1.9	158	75.2	48	22.9

Table 9 shows percentages of low, moderate or extreme fatigue scores reported across subgroups of three assessed demographics, namely, Age, Gender and Stream of Study.

**Table 10: Stress Scores across Age, Gender and Stream demographics**

Variables	Categories	Total Sample (N)	Prevalence of Stress Level (In Percentage)					
			Low		Medium		High	
			No.	%	No.	%	No.	%
Age Group	<19 Years	36	8	22.2	21	58.3	7	19.4
	19-20 Years	107	27	25.2	65	60.7	15	14.0
	21-22 Years	57	9	15.8	34	59.6	14	24.6
	>22 Years	10	1	10.0	6	60.0	3	30.0
	Total	210	45	21.4	126	60.0	39	18.6
Gender	Male	102	24	23.5	66	64.7	12	11.8
	Female	108	21	19.4	60	55.6	27	25.0
	Total	210	45	21.4	126	60.0	39	18.6



Stream	Science	48	9	18.8	28	58.3	11	22.9
	Commerce	48	7	14.6	36	75.0	5	10.4
	Engineering	48	14	29.2	25	52.1	9	18.8
	Humanities	66	15	22.7	37	56.1	14	21.2
	Total	210	45	21.4	126	60.0	39	18.6

Table 10 shows percentages of low, moderate or high stress scores reported across subgroups of three assessed demographics, namely, Age, Gender and Stream of Study.

## DISCUSSION

The results of the cross-sectional prevalence study “Perceived stress and fatigue among college students in post-COVID-19 era of Vadodara district” are discussed here.

Among the 210 student participants from colleges of KPGU and MSU, 48.6% were males and 51.4% were females, with the mean age of 19.94 years and standard deviation of 1.59.

**Fatigue among college going students using Fatigue Assessment Scale (FAS):** Fatigue scores were evaluated among the selected sample using Fatigue Assessment Scale. Scores obtained were measured to be high (extreme fatigue) among 22.9% college students and moderate for 75.2% of college students. Only 1.9% of students were measured to have low fatigue scores. Thus, we obtained 98.1% of moderate-to- extreme fatigue levels in the given sample, according to the FAS outcome measure.

These findings are consistent with several studies conducted among college students in the pandemic and post-pandemic era. A study conducted by Shou Liu, et al (2021) concluded that fatigue was commonly reported in the post-COVID-19 era among the students. The team observed 67.3% of moderate fatigue among the college students. This was attributed to academic curriculum derangement.<sup>[7]</sup> Another such study after 6 months of lockdown in the Philippines, done by Leodoro J. Labrague and Cherry Ann Ballad (2021) on Lockdown fatigue among college students during the COVID-19 pandemic, reported that students reported an

average of moderate levels of fatigue.<sup>[4]</sup> The reasons for these findings can be attributed to home confinement and extent of personal resilience as a coping mechanism, as discussed by Labrague and Ballard. Sudden transitions from offline to online can disrupt the academic comfort and coping ability of the students. This is followed by poor academic results and decline in performance, which further leads to stress and fatigue. Online learning environments coupled with sudden lack of physical activity and precipitation of a sedentary lifestyle, can aggravate the fatigue in the student. Furthermore, literature suggests that the extensive, exclusive and consistent usage of electronic and virtual communication, social media overload and internet connectivity for a prolonged time can cause postural, psychobiological and psychosocial damage, which is described as (journal pone) “Online Fatigue”. Based on our questionnaire, anhedonia, tiredness, and mental and physical fatigue are commonly reported symptoms that are consistent with pandemic and online fatigue studies done and articles on Lockdown Fatigue and Pandemic Fatigue, respectively.<sup>[2,1,13,3]</sup>

When compared across various demographics, our results displayed differences in fatigue scores across differences in gender, age and educational pursuit. We observe that the male population of our sample reported slightly higher mean fatigue score than the female population. This is consistent with previous literature which also reported that male college students were more likely to report fatigue than females.<sup>[7]</sup> This is attributed to social, personal and educational factors. Males are likely to be subjected to more heavier tasks in terms of social expectations since a long time in the country. Traditional roles encourage them to “step-up” for imposed challenges, ranging from economic crises to social issues. This can seep in as an innate behaviour and aggravate in response to sudden social stressors. Besides this, as suggested by Voyer et al academic adaptation and performances in many streams is observed, usually, to be better in female students than male students.<sup>[18]</sup> These factors combined, can precipitate disposition of the male gender to fatigue as compared to females.

The current obtained data depicts that students aged between 19-22 years reported higher fatigue scores than others. This can be correlated with different studies which also observed discrepancies in fatigue measures across the students in different years of their academic

programmes.<sup>[4,5]</sup> Their studies observed that students in later years of graduation report lower fatigue scores than in the intermediary years. This is possibly because they learn adaptability and coping behaviours over time and by the time, they reach the final years of the programme, develop greater resilience.<sup>[4]</sup> Another reason associated with this can be the nature of curriculum.<sup>[5]</sup> While these are valid and significant analyses, the findings can vary with the time of administration of the questionnaires and variations in academic patterns.

The findings and analyses of fatigue scores suggest that the containment measures, social distancing protocols, thereby entailing a prolonged online and e-learning educational bubble, as well as the direct effects of the COVID-19 pandemic itself, has had a huge debilitating impact on students, globally. The lingering persistence of the fatigue reported suggests that the stay-at-home lifestyle has had a chronic impact on the lives of the young-adult population. It is therefore crucial to practise efficient coping strategies, behavioural interventions and rehabilitation methods to restore health and general wellbeing.

**Perceived Stress in college going students using Perceived Stress Scale (PSS-10):** Perceived Stress scores were recorded amongst the participants using the PSS-10 to be high among 18.6% respondent students and moderate among 60% respondent students. Only 21.4% of students reported low scores of perceived stresses. This means that in the given sample, 78.6% students have reported moderate-to-high levels of perceived stress according to PSS-10 outcome measure.

Our findings are similar to those obtained by Wakode, et al in their study on “Perceived stress and generalized anxiety in the Indian population due to lockdown during the COVID-19 pandemic” who reported 84% of the respondents to have moderate-to- severe levels of perceived stress and 88% of the participants to have moderate-to-severe anxiety.<sup>[14]</sup> Another study by Marroquin et al, on mental health analyses during the lockdown and effect of stay-at-home measures revealed, based on their findings associated with early pandemic studies, for the globally mandated containment implementations to be harmful to mental health and psychological well-being, subsequently significant in precipitating stress and anxiety.<sup>[11]</sup>

When studied across the demographics, mean stress levels of women in our research were significantly higher than mean stress levels of men. This is consistent with multiple stress-based

studies, but more specifically, even so with those conducted with reference to the pandemic. Researches conducted on studying the stress and anxiety during the COVID-19 pandemic, women reported greater levels of stress and anxiety.<sup>[14]</sup> This has been largely attributed to socio-cultural factors. In another study women were found to be more prone to and affected by psychosomatic disorders as compared to men, supposedly because of their psychobiological sensitivity to expressing emotions, perception of pain and bodily discomfort.<sup>[4]</sup> Adding to this, they also reported higher inclination of women towards anxiety, panic disorders, depression and other stress disorders. Apart from this, previous correlation of stress and gender has been established as a significant finding in many studies, where women tend to be more susceptible to stress and anxiety disorders. Kizhakkeveetil and team, established association of women to stress disorders and justified the same, by psychosocial and psychobiological make-up of the female population.<sup>[5]</sup> Perception differences, reduced resilience and coping resources, increased stressors have been supportive arguments for this frequently obtained gender variations along with a possible reporting bias of the survey.

## **Limitations**

The current study has certain limitations:

- The sampling was non-random and hence, obtaining purely unbiased statistics is not possible.
- Study was conducted within a short duration and hence, long-term follow-up for verification and tracking of result scores is lacking.
- The study was a passive survey, hence environment and stressors around the respondent were unchecked, which could contaminate the data focused on the mental and emotional state of the individual.
- Medical demographics obtained were not enough to propose or reject correlation between medical history and the current state of the participant.
- Patients that are suffering from or have suffered from asymptomatic effects of Long-COVID will have biased fatigue scores, without identification.

**Future Scope:**

- Future studies can be performed covering a larger sample size for better distribution and more significant results.
- Chronicity of post-pandemic impairments can be selectively recorded with regular and prolonged intervals of data collection, to observe progression.
- Intervention studies to study efficiency of coping measures for stress and fatigue in the post-lockdown era can be implemented, as it is the need of the hour.
- Inter-relationship of the two outcomes, fatigue and perceived stress, can be examined for mutual effect on each other.

**Clinical Implications:**

The current study provides an insight into the mental and physical well-being of college students in the post-COVID-19 era. The negative impact on their health can be addressed only with empathetic understanding and careful planning. Clinical protocols, classroom schedules, campus activities and peer environment can all be modified to facilitate psycho-social rehabilitation of the individual suffering from chronic fatigue and stress on emerging from online learning and stay-at-home lifestyle.

Education on recognising impaired lifestyle patterns and symptoms should be encouraged, in order to identify impairments or difficulties in functioning early and imply required interventions in time.

Mental health advocacy, counselling and awareness for therapy should be encouraged as the huge rise in mental health problems can pose a huge demand for clinical counselling and interventions.

Physical therapy is a routine for the patient and the therapist, where regularity and rapport are both important. Young patients can be incorporated into the routine with the therapist keeping the effects of post-pandemic fatigue and stress considerations in mind.

## CONCLUSION

The current study found significant persistence of fatigue and perceived stress among college students of Vadodara. Majority of the population reported having moderate-to- high levels of fatigue and/or stress. Female students share a disposition to greater stress while male students seem to be more receptive to fatigability. Furthermore, youngsters in the middle years of their degree programme displayed more signs of stress and fatigue than those fresh in the curriculum or the ones completing their final years. The experience of persistent and chronic stress or fatigue, or both, can render the student constantly tired and emotionally overwhelmed. Chronic stress and fatigue are linked with insomnia, psychological disorders, cognitive impairments and lethargy. A general lack of pleasure or encouragement to do anything, along with decreased stamina, adds to a vicious circle of sedentary living followed by lowered motivation, thereby lowering the quality of physical and mental well-being. Emerging from a prolonged disruption of daily life, students transitioning from online learning to offline learning have to cope with a lot of changes again, since the pandemic. Effectively planned rehabilitation and cautious interventions during this transition from online to offline learning is imperative. As the professionals of tomorrow, fundamental ages of the young population have to be responsibly addressed in order to promote healthier practices, effective productivity and a harmonious personal and professional lifestyle.

## SUMMARY

The present research was conducted to study the prevalence of perceived stress and fatigue among college students, in post-COVID-19 era, of Vadodara district. The study was a cross-sectional, prevalence survey. 250 participants were invited for the survey out of which 210 respondents were obtained. The sample was verified using Statulator Calculator. Electronic forms were circulated to obtain participant responses. The questionnaire contained the purpose and description of the survey and instructions to fill the form, for the respondent's understanding. It comprised demographic details, questions from the PSS-10 scale for perceived

stress score and questions from the FAS scale for fatigue score. The 210 respondents included in the study were fulfilling the inclusion criteria of the study, including willingness to participate. Perceived stress scores were assessed using PSS-10 and fatigue scores were assessed using FAS. Results were recorded and analysed using Microsoft Excel. Results of the study suggested that out of the participants, 78.6% students were suffering from perceived stress and 98.1% students were suffering from moderate-to-high fatigue. Also, women were reported to have greater stress while men recorded more fatigue than the opposite gender. Students aged between 19-22 years reported were more affected than others. Variations were observed across streams of study of the students. From the present study it was concluded that students transitioning from online to offline learning have experienced severe impacts of the pandemic and lockdown, resulting in substantial stress and fatigue among them. Structured intervention methods should be designed to help facilitate the resuming of offline education programmes and the conventional social life of students, thereby improving their quality of life and restoring mental and physical health.

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## ANNEXURE – 1

### **Informed Consent Notice**

#### **Perceived Stress and Fatigue Among College Students in Post-COVID-19 Era of Vadodara District**

##### **Informed Consent of Participant**

You are invited to participate in a research study conducted by students of BITS Institute of Physiotherapy, Varnama, Vadodara. This is a survey being conducted as a part of an Internship Thesis Project. Please note that all and any data that you willingly submit while participating this survey will be used purely for research and academic purposes and no other. Your confidentiality will be strictly maintained.

This short survey is constructed in order to understand your stress and fatigue levels, having returned to offline classes after a long period of online learning. If you have resumed offline learning within the last 6 months, after an earlier routine of online classes, you are eligible to participate in the study. All questions, apart from your personal information, are based on standardized questionnaires and scales. You may find some of the questions to be upsetting, in which case you may end the interview any time, although we expect you will find these questions to be fairly familiar to experience and easily answerable. Please try to answer as honestly as possible.

Please note: By continuing further and completing the survey, you are consenting to participate in the study. Your consent extends to and includes acceptance of encountering potential discomforts while answering, voluntary and non-remunerated participation, authorization to publish results.

## ANNEXURE – 2

### Personal Details Form

#### **Personal information:**

Name-

Age-

Gender- M/F/Other/Prefer not to say

Mobile no.-

Email ID-

College- KPGU/MSU

Stream of Study-

#### **History:**

- Did you have COVID infection in the last 6 months? Yes/No
- Did you get vaccinated for COVID-19 in the last 6 months? Yes/No
- Are you currently suffering or did you suffer from any of these in the last 6 months? (Please tick

all correct answers-)

- Respiratory infection or disorder
- Cardiac (Heart related) disorder
- Asthma
- Head, Chest or Abdominal surgery
- Not applicable

- Do you consume any of the following regularly? (Please tick all correct answers-)

- Cigarettes/Beedi/Other recreational smoking
- Alcohol
- Tobacco
- Not applicable

## ANNEXURE – 3

### Perceived Stress Scale (PSS-10)

## PERCEIVED STRESS SCALE

### Sheldon Cohen

The *Perceived Stress Scale* (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way.

**Evidence for Validity:** Higher PSS scores were associated with (for example):

- failure to quit smoking
- failure among diabetics to control blood sugar levels
- greater vulnerability to stressful life-event-elicited depressive symptoms
- more colds

**Health status relationship to PSS:** Cohen et al. (1988) show correlations with PSS and: Stress Measures, Self- Reported Health and Health Services Measures, Health Behavior Measures, Smoking Status, Help Seeking Behavior.

**Temporal Nature:** Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to eight weeks.

**Scoring:** PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

**Norm Groups:** L. Harris Poll gathered information on 2,387 respondents in the U.S.

**Norm Table for the PSS 10 item inventory**

Category	N	Mean	S.D.
<b>Gender</b>			
Male	926	12.1	5.9
Female	1406	13.7	6.6
<b>Age</b>			
18-29	645	14.2	6.2
30-44	750	13.0	6.2
45-54	285	12.6	6.1
55-64	282	11.9	6.9
65 & older	296	12.0	6.3
<b>Race</b>			
white	1924	12.8	6.2
Hispanic	98	14.0	6.9
black	176	14.7	7.2
other minority	50	14.1	5.0

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## Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Name \_\_\_\_\_ Date \_\_\_\_\_ Age \_\_\_\_\_  
 \_\_\_\_\_ Gender (Circle): **M** **F** Other \_\_\_\_\_

**0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often**

1. In the last month, how often have you been upset because of something that happened unexpectedly?..... **0 1 2 3 4**
2. In the last month, how often have you felt that you were unable to control the important things in your life? ..... **0 1 2 3 4**
3. In the last month, how often have you felt nervous and "stressed"? ..... **0 1 2 3 4**
4. In the last month, how often have you felt confident about your ability to handle your personal problems? ..... **0 1 2 3 4**
5. In the last month, how often have you felt that things were going your way?..... **0 1 2 3 4**
6. In the last month, how often have you found that you could not cope with all the things that you had to do? ..... **0 1 2 3 4**
7. In the last month, how often have you been able to control irritations in your life?..... **0 1 2 3 4**
8. In the last month, how often have you felt that you were on top of things?.. **0 1 2 3 4**
9. In the last month, how often have you been angered because of things that were outside of your control?..... **0 1 2 3 4**
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? ..... **0 1 2 3 4**

Please feel free to use the *Perceived Stress Scale* for your research.

### Mind Garden, Inc.

info@mindgarden.com  
 www.mindgarden.com

**References**

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.  
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## ANNEXURE – 4

**Fatigue Assessment Scale (FAS)**

**Purpose** The FAS is a 10-item scale evaluating symptoms of chronic fatigue. In contrast to other similar measures (e.g., the Multidimensional Fatigue Inventory Chap. 57), the FAS treats fatigue as a uni-dimensional construct and does not separate its measurement into different factors. However, in order to ensure that the scale would evaluate all aspects of fatigue, developers chose items to represent both physical and mental symptoms.

**Population for Testing** The scale has been validated in a population of both male and female respondents with mean ages of  $45 \pm 8.4$  years and  $43 \pm 9.5$  years, respectively.

**Administration** The FAS is a self-report, paper-and-pencil measure requiring approximately 2 min for administration.

**Reliability and Validity** Developers Michielsen and colleagues [1] analyzed the scale's psychometric properties and found an internal consistency of .90. Results on the scale also correlated highly with the fatigue-related subscales of other measures like the Checklist Individual

Strength. In subsequent analyses, four of the scale's ten items were shown to possess a gender bias – women tended to score significantly higher than men [2]. However, when adjusted scores were calculated, researchers found that this bias had only a negligible effect on each individual's total score, indicating that the scale's original simplified scoring method is still appropriate.

**Obtaining a Copy** A copy of the scale can be found in the original article published by developers [1].

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**Scoring** Each item of the FAS is answered using a five-point, Likert-type scale ranging from 1 (“never”) to 5 (“always”). Items 4 and 10 are reverse-scored. Total scores can range from 10, indicating the lowest level of fatigue, to 50, denoting the highest.

### Fatigue Assessment Scale (FAS)

The following 10 statements refer to how you usually feel. For each statement you can choose one out of five answer categories, varying from *never* to *always*. 1 = *never*; 2 = *sometimes*; 3 = *regularly*; 4 = *often*; 5 = *always*.

	Never	Sometimes	Regularly	Often	Always
1. I am bothered by fatigue (WHOQOL)	1	2	3	4	5
2. I get tired very quickly (CIS)	1	2	3	4	5
3. I don't do much during the day (CIS)	1	2	3	4	5
4. I have enough energy for everyday life (WHOQOL)	1	2	3	4	5
5. Physically, I feel exhausted (CIS)	1	2	3	4	5
6. I have problems starting things (FS)	1	2	3	4	5
7. I have problems thinking clearly (FS)	1	2	3	4	5
8. I feel no desire to do anything (CIS)	1	2	3	4	5
9. Mentally, I feel exhausted	1	2	3	4	5
10. When I am doing something, I can concentrate quite well (CIS)	1	2	3	4	5

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Note: The abbreviations after the items indicate the scale from which the items has been abstracted. The following are the scales:  
 CIS - Checklist Individual Strength  
 WHOQOL - World Health Organization Quality of Life assessment instrument FS - Fatigue Scale

### References

1. Michielsen, H. J., De Vries, J., & Van Heck, G. L. (2003). Psychometric qualities of a brief self-rated fatigue measure the fatigue assessment scale. *Journal of Psychosomatic Research*, 54, 345–352.
2. De Vries, J., Michielsen, H. J., Van Heck, G. L., & Drent, M. (2004). Measuring fatigue in sarcoidosis: the fatigue assessment scale (FAS). *British Journal of Health Psychology*, 9(3), 279–291.

### Representative Studies Using Scale

- Michielsen, H. J., Drent, M., Peros-Golubicic, T., & De Vries, J. (2006). Fatigue is associated with quality of life in sarcoidosis patients. *Chest*, 130(4), 989–994.
- Smith, O. R. F., Michielsen, H. J., Pelle, A. J., Schiffer, A. A., Winter, J. B., & Denollet, J. (2007). Symptoms of chronic fatigue in chronic heart failure patients: clinical and psychological predictors. *European Journal of Heart Failure*, 9(9), 922–927.