

CONSEQUENCES OF STRESS ON ACADEMIC FRATERNITY: A META-ANALYTICAL REVIEW

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SUMMARY

Introduction: The modern lifestyle and the dynamic environment are progressively inducing stress among a wide range of individuals like students, healthcare professionals, bankers, engineers, businessmen, administrators and teachers. This vitriolic human psychiatric disorder has put the academic fraternity in a shabby state.

Methods: The methodology adopted in this article is comprised of three phases such as review planning, review conducting, and review reporting.

Results: The main emphasis of this extensive study is to highlight the major stressors and consequences of stress among the academic fraternity. Firstly, different categories of stress and their repercussions on the human body have been outlined. Additionally, the comprehensive publishing trend of the related manuscripts pertinent to stress among the academic fraternity has also been reported. The research implications and future directions have been also outlined.

Conclusion: Finally, some major research breaches are analyzed and it is witnessed that there is prospective scope in the diagnosis of stress among students and teachers using emerging soft computing and deep learning techniques.

Key words: stress - academic fraternity – student – teacher - mental-state - stressors

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INTRODUCTION

Stress is one of the common and most prevalent human psychological disorders these days. It reflects the difference between the physical/psychological needs and the availability of the biological and psychological resources for the same (Deb 2016). At a core level, stress can be categorized as physical and psychological stress that affects the physical and mental state of humans respectively (Turner et al. 2020). Nowadays, almost every individual independent of gender, age, race, financial status, physical fitness, name, fame is facing the venomous impacts of this human psychiatric disorder. The sharp pangs of this human psychological disorder have been enormously creeping across individuals and families. Despite mental state, it is also affecting the working potential, married life, relationships, and the physical health of the victims (Turney & Sugie 2020).

The environment, reaction and process are the three main inducers of stress. The demanding and target-based working environment, conflict with colleagues and authorities, nuclear family, physical and fitness problems, and a loss of family member are some of the major reasons for environmental stress (Habibie et al. 2020). Likewise, the reactions of an individual to a particular situation or person that affect the emotional, physical and mental state of the person reflect response-based stress. Researchers have stated that stress is not merely a stimulus or response, rather it presents the complete process that may influence the cognitive, behaviour and emotions of the victims (Lovallo & Buchanan 2017).

Prevalence

Nowadays, stress is escalating progressively in almost every professional sphere. Teachers, students, healthcare professionals, bankers, engineers, businessman, administrator are the major victims of this venomous psychiatric disorder. The venomous impact of stress has been affecting the daily routine and the long-term planning of the victims. The modern education system and the increasing competition is inducing a significant level of stress among two main pillars of academic fraternity i.e. teachers and students. As per the reports of the Ministry of Indian Human Resource Development (MHRD), approximately 3.50 Crores students admitted in higher education (<http://aishe.gov.in/MHRD>). This expansion in the enrolment of students in higher education has also witnessed a dramatic escalation in mental or psychological health issues (<https://www.ndtv.com/education>). The psychological fitness of the students is very important not only for their progress but also for the country's welfare. Worldwide, students have found to be stressed due to academic and non-academic stressors (Hwang & Goto 2008). The reasons for stress can be different for every student. Academic stress presents a lot of challenges for students as it hinders students from gaining full intellectual knowledge that is desired for growth and development. Despite this, non-academic stressors like financial conditions, career, environment, and family are also significantly affecting the lives of the students (Hwang & Goto 2008).

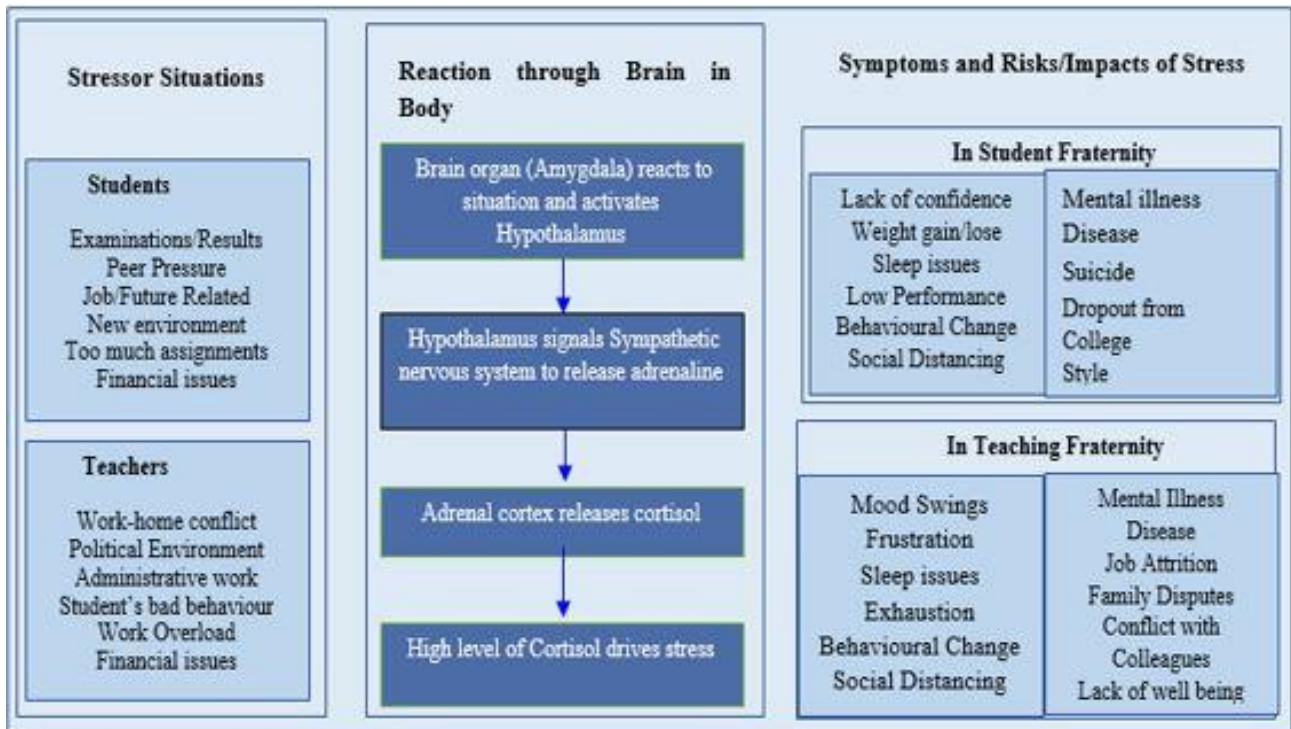


Figure 1. Stress Framework for Academic Fraternity

Likewise, as per the MHRD report, more than 1.4 million teachers have been working in higher education (<http://aishe.gov.in/MHRD>). Nowadays, the teaching profession is becoming more stressful. Some of the key stress inducers among teachers are adhocism, exploitation, low salary, more workload, overindulge in non-teaching activities, the pressure of research and publication, conflict with colleagues and authorities (Lukman et al. 2020). Additionally, the relationship between pupil and teacher has also been drastically changed and this change is also being one of the reasons for stress among teachers (Dolev-Cohen & Levkovich 2020). The stressed mind of a teacher is detrimental to teachers' well-being and may also indirectly harm the achievements of the students (Ronfeldt & Wyckoff 2013).

Anatomy

Based upon the scary and traumatic conditions the nerves of the individuals start producing a flood of stress hormones. Initially, the amygdala (brain organ) reacts to scary situations and sends an alert signal to the hypothalamus gland (command centre of the brain). Thereafter, the hypothalamus gland signals to the sympathetic component of the nervous system to release adrenaline and cortisol stress hormones (<https://www.avogel.co.uk>). The high value of cortisol boosts the rate of stress among the academic fraternity. Stress may affect all aspects of life with different symptoms such as behavioural, physical emotional and cognitive symptoms (Rana & Wadhwa 2019). However, different consequences or risk factors associated with stress among students are mental illness, physical illness, suicide, and a college dropout (Deb

2016). Also, job attrition, family disputes (divorce, child abuse), performance degradation, mental illness, physical illness, and social distancing are some major consequences of stress among the teaching fraternity (Newberry & Allsop 2017). Figure 1 presents a framework of academic fraternity.

Motivation

Stress is one of the most prevalent human psychiatric condition that is drastically affecting both the personal and professional life of the victims. Nowadays, student and teacher are being the most common victim of this human psychological condition. The late diagnosis of the stress among student and academic fraternity may affect their working potential, behaviour, academic performance, career, as well as their physical health. Additionally, chronic stress may induce several psychological and other human critical problems. Therefore, it is important to study the different stressors and their consequences among academic fraternity need to be explicitly identified. The research trend explored in the study has been explored to give clear insights and future directions to the researchers who are working in this domain.

Objectives

The present study aims to identify the key stressors and the consequences of stress among the academic fraternity. The main contributions of this study are to present a comprehensive survey of stressors and stress among the academic fraternity. The key stressors among college/university students and teachers have also identified. The

research trend for stress-related articles among the academic fraternity has highlighted. Finally, the impacts of stress among academic fraternity are accentuated.

The rest of the article is structured in five more sections. Related studies are presented in section 2. Research questions and article selection strategy are described in section 3. Section 4 evaluates and reports the review results for stress among the academic fraternity. Discussion with strength, limitation, and research implication of the study is presented in section 5. Lastly, the conclusion and future directions are presented in section 6.

RELATED STUDIES

Several survey studies related to stress and other psychiatric disorders have been carried out in recent years. Some of the key studies are presented in Table 1.

Table 1. Related Studies and Contribution of this work

Author/Year	Disease	Contribution
Rajkumar 2020	Mental Health	Authors carried out a comprehensive survey on the impacts of the pandemic (COVID19) on mental health among the population of affected countries. The authors have explored the PubMed database for literature search.
Kaur & Sharma 2019	Psychological Disorders	The role of supervised learning methods and nature-inspired techniques in the diagnosis of distinct human psychological disorders have been highlighted.
Panicker & Gayathri 2019	Mental Stress	A comprehensive survey of psychological data collection, the role of machine learning in stress and emotion detection system, challenges, measures and applications have been carried out. Additionally, links between biological features of humans with their mental and emotional stress is also explored.
Garcia et al. 2018	Mental Health	A Survey of the mental health monitoring system by using machine learning and sensor data was carried out. Authors also proposed a classification taxonomy to guide the review of related works.
Alzayyat & Gamal 2014	Stress	Authors critically reviewed the different type of stressors among nursing students. Further, coping strategies for the students were also suggested for the positive mental health of the students.
Salam et al. 2013	Stress	A survey on Malaysian medical students was performed. In a survey, authors found that the stress rate was high among medical students. Additionally, examination and academic stressors were noticed to be more prominent stressors among Malaysian students.

REVIEW METHODOLOGY

This research work covers the basic concept of stress with the types, symptoms, and effects of stress in the human body. As presented in Figure 2, the methodology adopted in this article is comprised of three phases such as review planning, review conducting, and review reporting. These phases are intended for finding out the admissible articles. Moreover, five distinct research questions have been devised for conducting the survey.

Research Questions

- What is stress? How it affects different organs of the human body?
- What are the key stressors among college/university students?

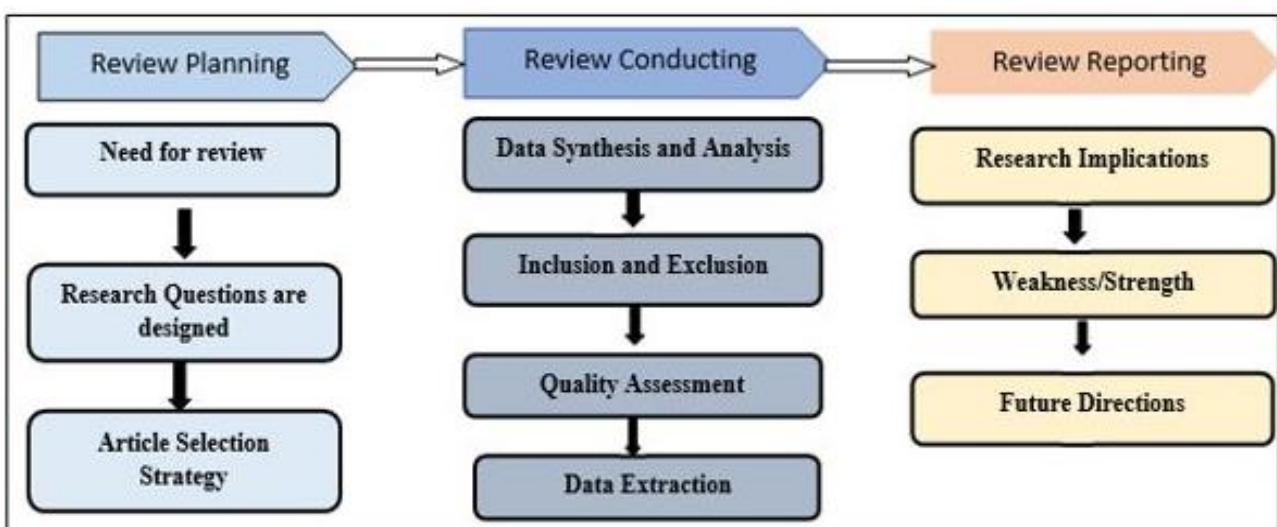


Figure 2. Research Strategy

- What are the key stressors among college/university Teachers?
- What is the research trend of stress-related articles for the academic fraternity?
- What are the impacts of stress on academic fraternity?

Research questions have been answered for identifying the objectives of the study.

Article Segregation Strategy

A detailed survey has been conducted for searching the relevant articles for answering the different research questions discussed in section 3. Search terms like stress, student, teacher, workplace stress, college, undergraduate, postgraduate, education, the dissatisfaction of job among teachers, academic performance, impacts of stress on health etc. were explored in Google Scholar to find relevant articles.

Inclusion and exclusion criterion

While collecting related studies, the language was restricted to English i.e. non-English articles published on different platforms have not been considered. Moreover, the emphasis has given to academic stress only.

Finally, 88 articles have been filtered out and explored in this study.

DATA SYNTHESIS AND ANALYSIS

This section will answer the research questions discussed in previous section.

Stress and its effects (RQ1)

Stress is a psychiatric disorder that adversely affects the nerve and immune system of the individual (Omurca & Ekinci 2015). Stress normally represents the difference between expectations and competencies. In general, the symptoms of human stress have been categorized as emotional (guilt, fear, anxiety, lack of motivation, irritation, depression), behavioural (Angry outburst, social detachment, intake of alcohol), cognitive (poor decision making, forgetfulness, racing thoughts) and physical (fatigue, disease, sleep issues) that are raised in the human body through environmental and traumatic events. Stress can be interpreted to mean eustress which represents positive responses to external stressors and it can be termed as distress which represented reactions to stressors that can affect the well-being of individuals. Table 2 depicts the different types of stress.

In general, stress may affect different parts of the human body such as hair, lungs, heart, brain, digestive system, muscles, and mouth, etc. (Çakmur 2020, Pandey 2020, Agnihotri & Aruoma 2020, Lee 2020) (Figure 3).

Table 2. Types of Stress

S. No	Type of Stress	Description
1	Acute	It is the most common type and short-lived stress. Acute stress is provoked by pressure and demands related to past and future. Acute stress may lift from different conditions such as an argument with a loved one, exam pressure and due to busy days.
2	Episodic Acute	It is the most serious form of acute stress. Due to episodic stress, a person may constantly feel stressed or over-burdened. Also, high frequency or long term acute stress elevates the situation of episodic acute stress. Too much self-imposed demands are the main reason of episodic acute stress.
3	Chronic	Chronic stress is a catastrophic type of stress. Untreated and prolonged acute stress generally takes the form of chronic stress. This chronic stress can deteriorate both the mental and physical state of the victims as well. Some major effects of chronic stress are suicide, cancer and heart attack etc.
4	Anticipatory	Anticipatory stress is associated with future events. Such as an upcoming meeting or presentation.
5	Situational	This type of stress occurs when a person faces any scary situation and does not have control over that situation such as conflict or loss of status.
6	Encounter	This stress revolves around people who worry about interaction with another person or social meetings. Encounter stress may also happen if the role of the person is involved around a lot of personal interaction with people if those people are in distress. Teachers, social workers and doctors are most vulnerable to this stress.
7	Physical	Physical stress demands that change the state of the human body. This may occur due to overexertion, injury, lack of nutritious diet and hormonal balance etc.
8	Environmental	Environmental stress is an aspect of some unavoidable surroundings such as air pollution, noise, crowded area, summer heat and floods etc.
9	Work	Work Stress or occupational stress is a state of psychological stress which arises when a person is unable to complete psychological demands in the workplace.
10	Psychological	It is self-generated stress in human minds and unique to every person. Frustration, conflicts are some internal sources of psychological stress.

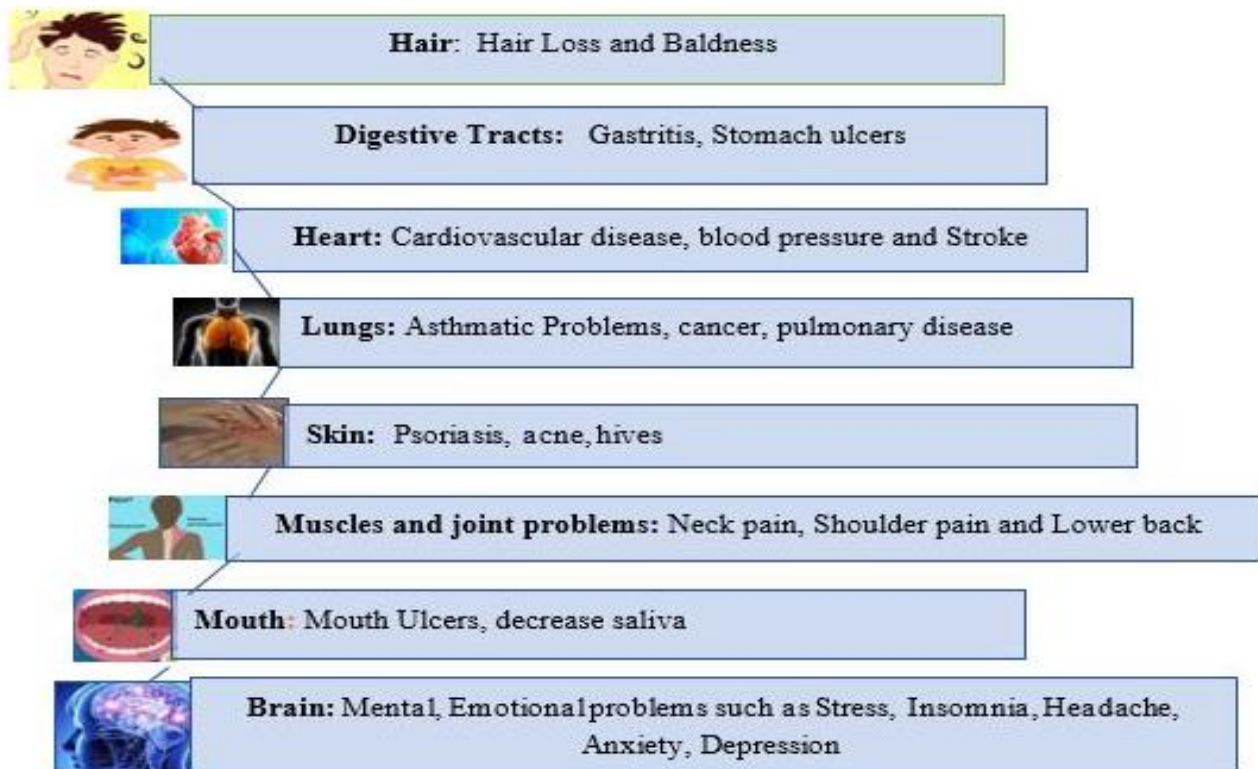


Figure 3. Impact of stress on the human body

Key stressors among college/university students (RQ2)

Stressors are the stimuli or events that bring momentous changes to the psychological or physical reactions of a human being. Students face different psychological changes due to extensive academic and social demands for the strengthening of their careers (Pedersen & Jodin 2016). Apart from homesickness, the pressure of studies, time constraints, academic performance, financial strain, career, parents, and teacher's expectations related to studies are primary sources of academic stress. Due to a lack of social support and coping skills, all these stressors can dominate the students and can increase the risk of stress, depression, and even suicide (Deb 2016). Furthermore, bad sleeping habits, new responsibilities, and heavy workload are also major stressors that are causing stress among students (Aafreen 2018). Additionally, first-year students found to be vulnerable to stress in comparison to other students (Cooke 2006). Moreover, female students found to be more stressed as compared to male students (Van 2010). Furthermore, it is found that family dysfunction and poverty have been heavily associated with psychological distress among college students (Jaisooriya 2017). The major student-related stressor comprises of different categories such as Academic (Attending Exams, studying for examination, presentations, assignments, coursework Load, lab work and final Year project, Fear of failure, Academic expectations, Daily schedules Class structures, program requirements, more study content, results, class discussions and assignments Submission Deadline), Interpersonal

(relationship, management, meeting expectations, peer competition, less support from friends, personal relationship issues, bad behaviour of peers), Time (lack of time for family and friends, lack of free/leisure time, time pressures/deadlines, academic workload, vague work directions, long study hours and handling multiple jobs), Self (financial issues, fear of failure, self-discipline problems, self-laziness), Environment (lack of resources, restrictions and monitoring), Teacher (result's delay, Inappropriate study content, live up to the teacher's expectations, less Support of teacher's. lack of occupational guidance, teacher's negative attitude and inappropriate knowledge to teacher) and psychological (Inferiority feeling, lack of vision, incompetence feeling low self-concept, poor concentration in studies and lack of motivation) stressors are shown in Figure 4.

Some of the key studies related to student's stress are presented here. Yeo & Yap (2020). conducted a cross-sectional study involving one hundred forty-seven undergraduates' students of a Malaysian University. The authors concluded that first-year students were more stressed as compared to other year students. The authors also suggested that the university should develop positive learning environments for students to help to cope with stress. Kristina et al. (2020). presented a questionnaire-based survey for three hundred thirty final year pharmacy students. The authors analyzed the academic stressors (national examination, coursework overload, individual assignments, practicum and lab work, and final year projects) as well as non-academic stressors (financial, family, career, social relationship,

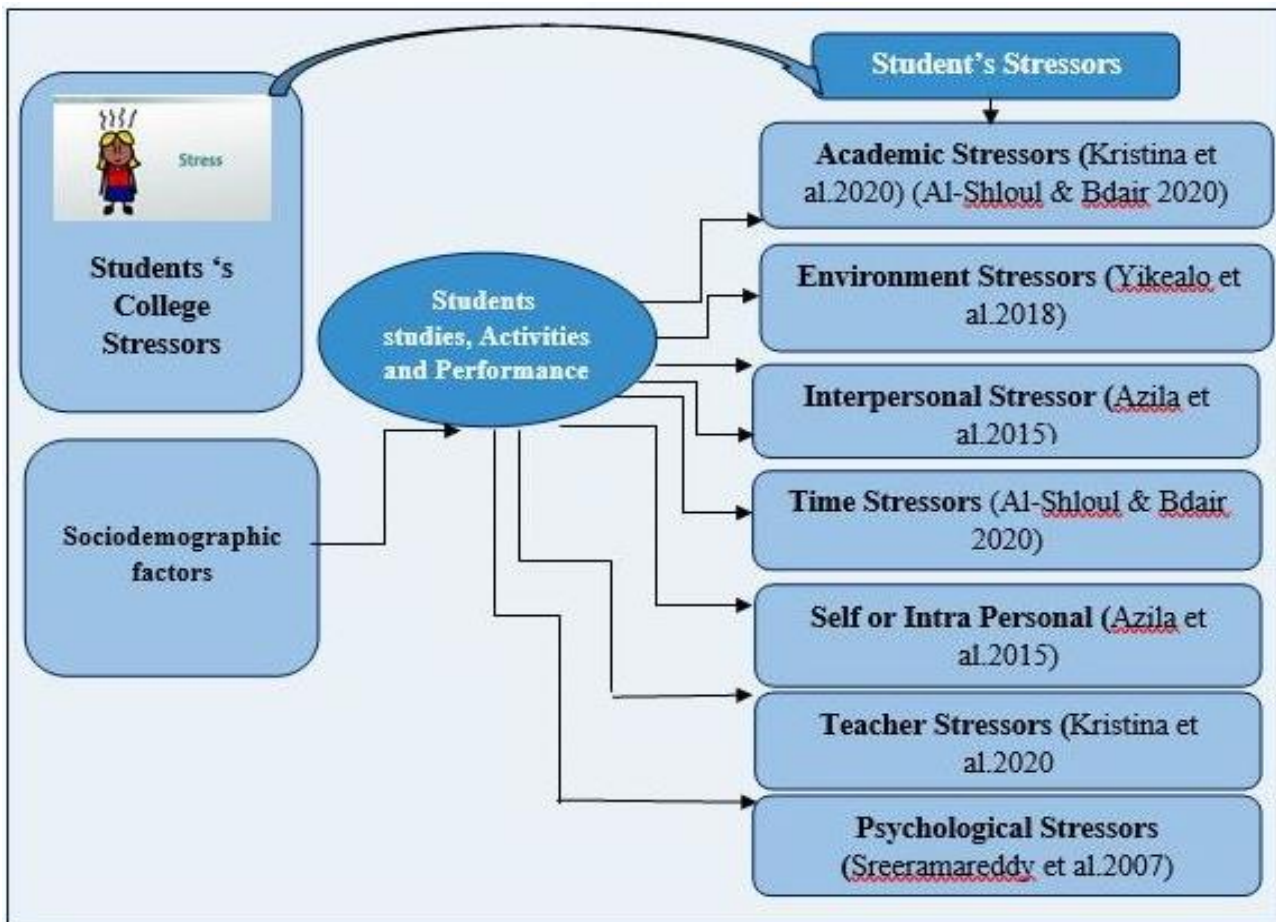


Figure 4. Student Stressors

and self-health problems. Academic stressors such as the national pharmacy examination and final year project found to be the highest-ranked stressors among pharmacy students (Al-Shloul et al. 2020). conducted a descriptive study on one hundred twenty-three medical students for finding out the significant psychological stressors among students. ANOVA and t-test were applied to different stressors like academic-related, time related, social environment stressors. The study explored four major stressors that have affected the performance of students most like studying for examination and waiting for the results/grades (academic stressors), thinking about future and financial expenses (Social environment-related stressors). Authors also suggested that students should adopt some coping strategies for handling stress such as religious thinking, positive growth, and reinterpretation, etc. (Atwa et al. 2019) presented a cross-sectional study for finding out the prominent stressors among medical students. The study has been performed using univariate analysis, Chi-square, correlational analysis, and t-test on four hundred and thirty-nine sample size. Results confirmed that stress level was high in males as compared to females' students. Also, financial problems, lower GPA, and fear of exams found to be most prevalent stressors among medical students. (Musabiq & Karimah 2020) analyzed

that intrapersonal stressor i.e. financial conditions and responsibility in campus organization were noticed to be prominent stressors among the students.

Key stressors among college/university teachers (RQ3)

The periodic and prolonged stress may deteriorate the physical and psychological health of the teachers. Researchers have identified different categories of teacher's stressors such as Work (less cooperation from students, inadequate promotional opportunities, more administrative tasks, less management support, teaching advanced subjects, less time for research work and home assignments), Interpersonal (no mutual understanding with colleagues and less interaction with colleagues), Family and self (no professional growth, discipline issues in the classroom), Classroom (insufficient faculty members in the department, more students in the class, students discipline, non-attending students, student's accountability, conjunctive lectures, frequent change in the time table and advanced teaching Pedagogy) and Work-life conflict (non-attending of social occasions and less time for family, professional and personal life's conflict, insufficient time for rest and recreation) stressors are depicted in Figure 5.

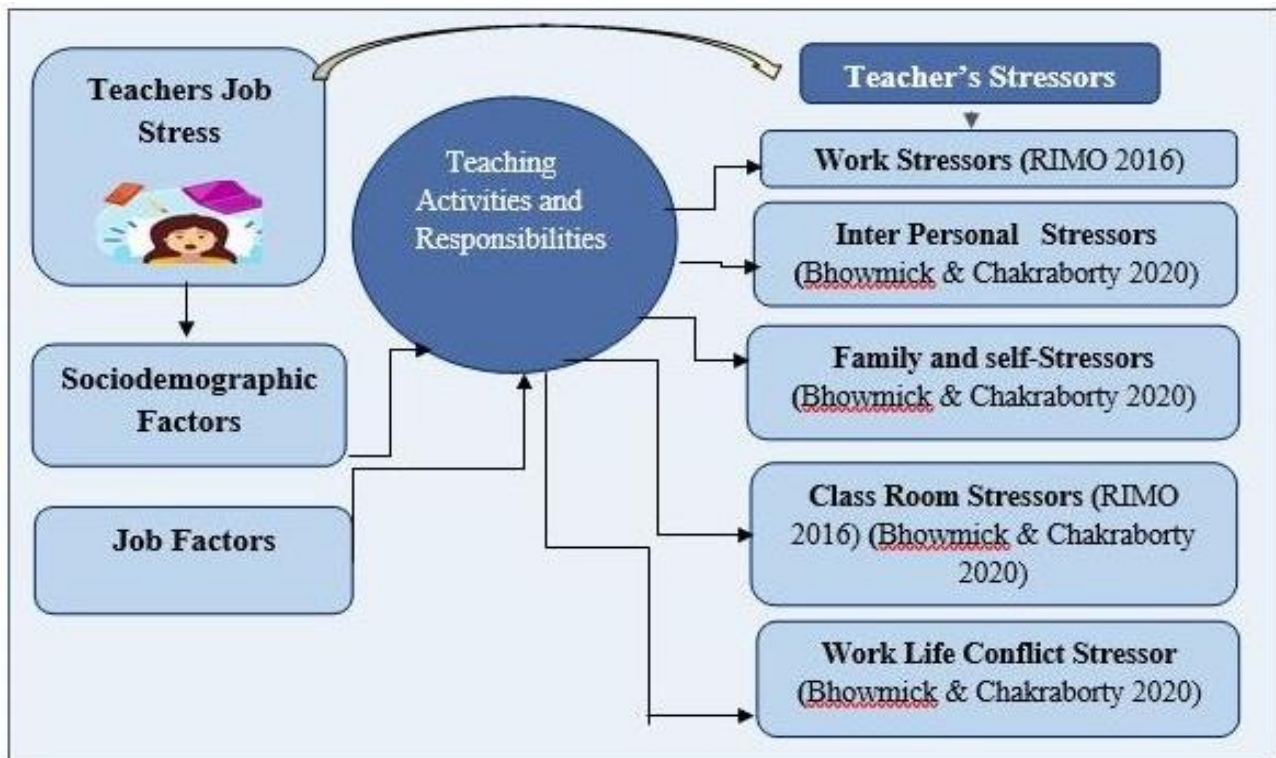


Figure 5. Teaching Fraternity Stressors

Suganya & Dunstan (2016) identified the factors like work overload, poor infrastructural facilities, conflict with peer and management, student interaction, and inadequate salary are the primary causes of stress among teachers. Sliskovic & Sersic (2011) carried out a study for finding out the major stressors among university teachers (teaching and non-teaching) in Croatia. In the study, females found to be more stressed than men. The authors designed a questionnaire based on six different stressors such as workload, relationship with colleagues at work material, work with the students, social recognition and status, technical conditions at work, and work organization. Relationship with the colleagues, material, and technical conditions of work and work organization found to be major stressors affecting the performance of teachers. (Bhowmick & Chakraborty 2020) reported insufficient remuneration as a major stressor at the workplace among contractual college teachers of Assam. Authors performed their studies with seven different stressors as personal factors, work-life conflict, classroom-related stressors, job insecurity, workload, and interpersonal relations. The authors also pointed out; efficiency level of employees was decreasing due to job insecurity. (Singh & Rani 2015) performed a study on work stress among teachers of self-financed colleges. Authors observed that job insecurity, bad behaviour of students and their negative attitude toward study, lack of motivation, ineffective leadership at management level, lack of research and personal growth opportunities, excessive workload, negative attitude of collea-

gues, work-home conflicts and too much non-teaching duties have also been affecting the mental state of the self-financed college teachers. The authors also suggested that mediation and a positive attitude can cooperate with the teachers to cope up with any kind of stress. Varadaraj & Jabeen (2020) performed an analysis of 146 lady teachers of arts and science college. The authors adopted a simple random sampling and found that lady teachers were more stressed. The prime reason for their stress is uncertainty in their career. Furthermore, the role in the organization, organization culture and relationships at work negatively affected the performance of the teachers. The summary of key studies related to student and teacher stress is mentioned in Table 3 and Table 4 respectively.

Table 3 summarizes the different key stressors vulnerable to stress among college/university student fraternity with their scope of the study and sample size. It has been noticed that authors have explored more their research among UG students as compared to PG students. From the study, it has been noticed that students have endured many stressors like academic, interpersonal, family, self-related, teacher-related, environment-related stressors. Among all stressors, academic-related stressors such as academic year specifically first and final year, examination fear, results, fear of failure found to be more prominent factors of stress among the students. Also, financial strain, parents' expectations, staying away from home, and campus environment analyzed as important stressors responsible for stress among the students.

Table 3. Past Studies related to stress among college/university students

Author/Year	Scope of the Study		Key Stressors																							
	PG	UG	Sample Size	City/Country	Grades	Staying away from home	Poor Quality food in mess	Campus Life	Lack of time for relaxation	Bullying	Peer Competition	Parents Expectations	Teachers Expectations	New Semester Starting	Relation and Support from teachers	Teaching Quality	Fear of Future	Frequency of Exams	Vastness of academic curricula	Fear of inability to complete graduation Requirements	Fear of Exams	Fear of Failure	Academic Overload	Final Year Projects	Financial Strain	
Andreou et al. 2020	Y	Y	400	Greek	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Peltz et al. 2020	Y	Y	792	New York	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Kristina et al. 2020	Y	Y	330	Indonesia	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Saha 2020	Y	Y	600	West Bengal	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adegboye et al. 2020	Y	Y	300	Nigeria	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Abdullah et al. 2020	Y	Y	284	Indian	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alharbi 2020	Y	Y	95	Qassim	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Srivastava et al. 2020	Y	Y	380	Kanpur	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Tariq et al. 2020	Y	Y	514	Pakistan	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Dhanalakshmi & Murty 2020	Y	Y	150	Dindigu	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Griffiths et al. 2019	Y	Y	629	Bangladesh	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Yeo & Yap 2019	Y	Y	147	Malaysian	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Al-Shloul & Bdair 2019	Y	Y	123	Kingdom Saudi Arabia	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
Atwa et al. 2019	Y	Y	439	Saudi Arabia	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Chen et al. 2020	Y	Y	30,000	China	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Tran et al. 2018	Y	Y	304	USA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Yikealo et al. 2018	Y	Y	123	Eritrea	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Deb 2016	Y	Y	717	India	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Bedewy & Adel Gabriel 2015	Y	Y	100	Egypt	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Azila-Gbetteor et al. 2015	Y	Y	275	Ghana	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Heckman et al. 2014	Y	Y	5729	Ohio	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Elias et al. 2019	Y	Y	376	Malaysia	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pillay & Ngcobo 2010	Y	Y	243	South Africa	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sreeramreddy et al. 2007	Y	Y	525	Nepal	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 4. Past studies Related to Teaching Fraternity's Stressors

Author/Year	Scope of the Study		Key Stressors																				
	College	University	Job Satisfaction	Lack of Infrastructure	Lack of Resources	Poor Pay	Ineffective leadership of Management	Politics/Work Environment	Excessive Additional Duties	Students Performance	Work-Life balance	Frequent Change in Timetable	Long Working hours	Violent Behaviour of Students	Dealing with Students Discipline	Negative Attitude of students towards study	Undesirable Students Quality	Financial Inadequacy	Workload	Interpersonal Relationships	Job Insecurity	Work-Home Conflict	
Rodrigues et al. 2020	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Bhowmick & Chakraborty 2020	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y
Varadaraj & Jabeen 2020	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Kabito et al. 2020	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
Yin et al. 2020	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Joshi & Pandit. 2019	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	Y	N	N	N	N	N	N	N	N
Johari et al. 2018	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
Devi & Sumitha 2016	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Veena et al. 2016	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Zaheer et al. 2016	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
Sukumar & Kanagarathina 2016	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
Singh & Rani 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N	Y	N	N
Sharma & Nair 2015	Y	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	Y	N	N
Sabherwal et al. 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Saeed & Farooqi 2014	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Kaur et al. 2013	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
Aslam 2013	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fatima & Sahibzada 2012	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sliskovic & Sersic 2011	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 4 presents the most frequently occurring factors vulnerable to stress among teaching fraternity. Many stressors responsible for stress among teachers have been identified in the above study such as classroom related, job-related, interpersonal, self, family-related, and work-home conflict, etc. Furthermore, stressors such as heavy workload, inadequate salary, deadline of work completion, long working hours, job insecurity, paper, and lecture work found to be more prominent stressors. Also, the poor behaviour of students and relationships with colleagues analyzed as major affecting the performance of the teachers.

Research trend of stress-related articles for academic fraternity (RQ4)

To find the publication trend of stress-related articles for the academic fraternity, several queries have been devised and fired on Google Scholar. The number of articles related to stress among academic fraternity which is indexed in Google Scholar is presented in Figure 6. Positive growth in the articles related to stress among students has been observed. Whereas, no such

enhancement is seen for articles related to stress among teachers. The different databases such as Science Direct, Pub Med, Wiley, IEEE explores, Springer Link has also been scrutinized for searching the articles related to stress among the academic fraternity. Table 5 depicts the last ten years' number of articles related to stress in college students and teachers.

Table 5. Number of articles indexed (2010-2020) in different indexing databases

Database	Stress among Students	Stress among Teachers
Science Direct	96	109
Springer Link	27	1
Wiley	49	1
PubMed	133	26
IEEE Explore	18	5

To further explore, different queries have been fired for finding out the country-wise research related to the same. Figure 7 presents the rate of county wise research related to stress among academic fraternity.

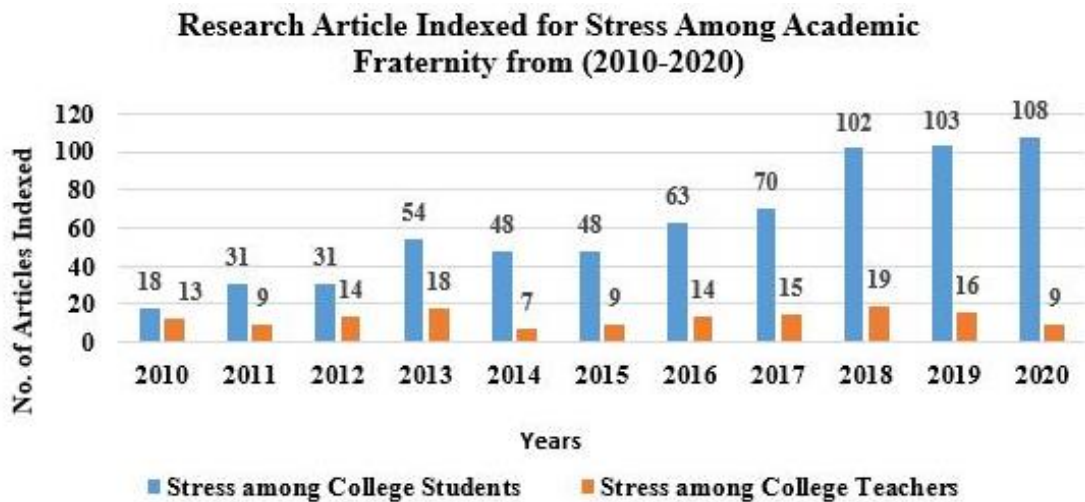


Figure 6. Articles published in Google Scholar Database (2010-2020)

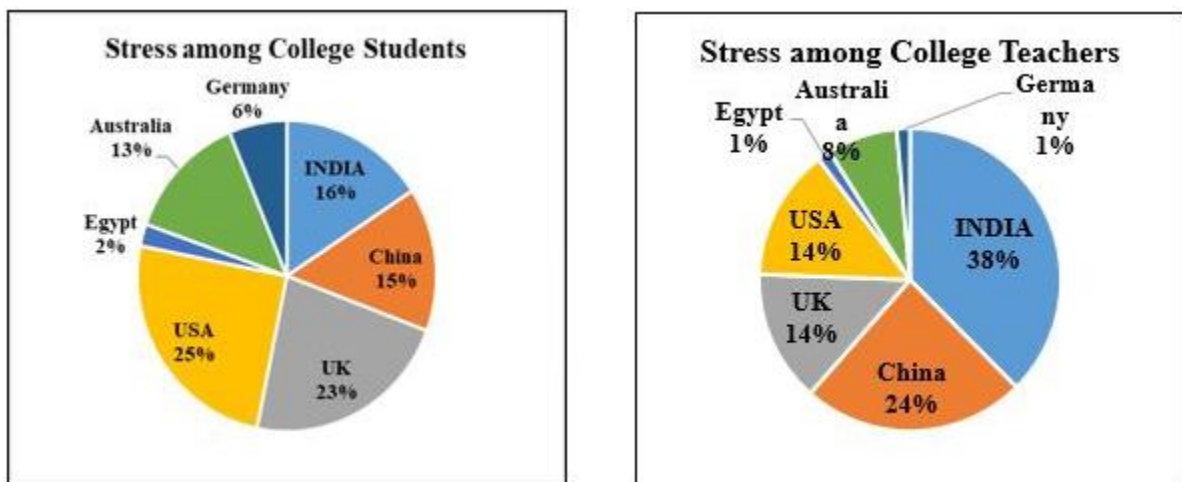


Figure 7. Work was done on stress among academic fraternity in different countries

From Figure 7, it has been analyzed that maximum work related to stress among college students has been explored by USA researchers. Likewise, maximum work related to stress among college teaching fraternity has been carried out by Indian researchers. The participation of countries like Australia, Egypt, and Germany related to stress among students and teachers is nearly low.

Impacts of stress on academic fraternity (RQ5)

This narrative review highlights some major impacts of stress on the mental as well as physical health of the academic fraternity. (Downs et al. 2017) found that over fifty per cent of students are facing moderate to severe anxiety and depression problems. (Chapell et al. 2005) stated that the undergraduate (UG) students are having highly stressed and anxious symptoms. Thus the high rate of stress is affecting their academic performance. (Stults-Kolehmainen & Sinha 2014) analyzed that due to lack of physical activity and the stress has been triggering the health issues during exams in the students. Stress is also inducing problem of non-communicable diseases such as metabolic syndrome and obesity. Pervanidou and Chrousos (2012) presented a study of 456 undergraduate medical students with different categories of stressors. They found that students are more worried due to academics. (Kotter et al. 2017) analyzed that due to long working hours and financial strain college students are more prone to depression and sleep disturbance patterns. (Lardier et al. 2020) found that students were facing the problem of a psychological disorder such as attention deficit hyperactivity disorder and depression due to academic failure. Also, the suicide rate was high among the students who were facing lower performance in their studies. (Wu et al. 2020) conducted a study among 11,954 college students from different cities of China. The authors concluded that uncertainty stress upsurges the prevalence of mental disorders among students.

Liu & Yan (2020) found that that rash behaviour, emotional explosions, taking medicines, restlessness, excessive drinking/smoking, extreme eating, loss of hunger, and non-appearance in work are some major negative effects of stress among teachers. (Shernoff et al. 2011) analyzed that work-related stress impacts emotional well-being, physical health, work performance, relationship with students, and personal relationships of the teaching fraternity. Also, workplace stress has raised the level of depression among teachers. (Han et al. 2020) have performed a survey among 2758 university teachers and analyzed that challenging job demands have reduced job satisfaction among the teachers. (Newberry & Allsop 2017) found that due to stress, some of the teachers even decided to resign from their job. This affects the overall well-being of the teachers. (Shrivastava 2020) revealed that the excessive workload due to inadequate staff induces a moderate level of stress among staff members.

DISCUSSION

Stress is the most common and predominant human psychological condition these days. Youngsters, old-aged people and even children are becoming a victim of this psychological problem. It is affecting both the personal and professional life of the individuals and therefore, need to be diagnosed at an early stage.

This study is specific to the stress among students and teachers only. All other professions like a bank, healthcare, businesses and police jobs have not been considered in this study. The languages restriction also adhered only English language publications have been considered. The parameters like heavy workload, inadequate salary, deadlines, long working hours, job insecurity, and examination found to be more prominent key stressors for the teachers.

Cognitive appraisal is a bi-objective assessment process that generally assists in finding the rate of the threat of the demand for physical and mental well-being (b) availability of the resources to cope up with demand. The rate of stress is directly related to the appraisal outcome that means if the availability of the resources is greater than the demand then there is no stress (Tement et al. 2020). In the converse situation, based upon the difference in demand and resources, one can suffer from mild or acute stress. Likewise, there are three main dimensions of human stress viz. frequency, intensity, and duration (Ardelt & Bruya 2020). The rate of human stress is based upon the commutative values of stressors frequency, intensity and duration. The higher values of frequency, intensity, and duration of stressor will induce acute strain on the victim and vice versa.

Strength

In this study, a total of eight- eight research articles from journals, conferences, and books for the same have been explored. Based on five different research questions, a systematic review has been carried out. Moreover, the research work of different researchers related to the same is also explored. The effects of stressors among students and teachers have been studied. Furthermore, the publishing trend of stress-related articles among the academic fraternity is also presented. Lastly, future research directions are also outlined.

Weakness

This study is constrained by some limitations. First, this survey has not accounted for non-sociodemographic factors such as age, gender, qualification etc. for identifying the stress factors among the academic fraternity. Second, this study has its limitations as it relies only on negative stress among students and teachers. Constrained by these limitations, still, there is hope that the findings of this study can give a better understanding of stress factors or stressors among college students and teachers.

Research Implications

Particularly, our findings suggested some key stressors contributing to stress among students and teachers. Based on these stressors, the universities and colleges, can identify potential risk factors of stress among teachers and students and promote protective measures such as mental health awareness workshops, psychological counselling etc. Appropriate counselling Strategies should be formulated for helping the students and teachers to maintain psychological and physical health during their study at college and university.

Future Directions

The finding of the study witnessed that there is more scope to explore the use of different artificial intelligent techniques (machine learning, soft computing, and deep learning techniques) in designing an innovative stress diagnostic system for students and the teaching fraternity. The performance of the variants of swarm-intelligence, deep learning techniques and their hybrid models designed by combining distinct swarm-intelligence, deep learning techniques along with other computing methods viz. transfer learning, fuzzy, rough set and chaos theory.

CONCLUDING REMARKS AND FUTURE DIRECTIONS

Stress among the academic fraternity is up-surg-ing day by day and its far-reaching impacts continue to unfold worldwide. This study aims to describe a comprehensive analysis of different types of stress and their consequences on academic fraternity. Specifically, the survey focused on different stressors impacting the performance and health (mental and physical) of students and teachers. For this, five segments of research questions have been framed for extensive analysis of stress factors among college/university students and teachers. Consequently, different types of stress, symptoms, and its repercussions in the human body are scrutinized in this study. While comparing different stressors of students, examination fear, financial strain, parents' expectations found to be the most extensive stressors among the students. Also, more workload, work-life balance, job insecurity, interpersonal relationships, poor behaviour of students analysed as the most frequently occurring stress factors among the teaching fraternity. It has been also analyzed that more stress-related studies among undergraduate students have been done as compared to post-graduate (PG) students. A detailed publication trend analysis pertaining to stress-related articles among the academic fraternity has also been revealed. From publication analysis, it has been observed that authors have not yet explored computing techniques such as machine learning, soft computing, and deep learning techniques

for stress analysis among students and teachers. So, there is a dare need to explore computing techniques for stress diagnosis among the academic fraternity.

From the literature survey, it has been also noticed that due to stress, level of anger, anxiety, fear, attention deficit hyperactivity disorder and depression is rapidly looming among the students and teachers. Moreover, the attrition rate of teachers, dropout and suicide rate among students in colleges has been also increased. Therefore, more attention is needed.

CONCLUSION

The findings on this study indicate that no specific research related to the diagnosis of stress among academic fraternity using emerging swarm intelligence computing techniques (ant colony optimization, butterfly optimization, crow search algorithm, dragonfly, eagle strategy, monkey search algorithm etc.) and deep learning techniques such as convolutional neural network, deep belief network, Recurrent neural network has been done. Hence, there is a need to use and explore the performance of these individual computing techniques and their variants (binary, chaotic, and hybrid) for the diagnosis of stress among the academic fraternity.

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