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Occupational stress and psychological wellbeing is a function of virtual teaching and faculty performance during COVID-19 pandemic: An empirical study with reference to higher academic faculty in around Hyderabad city

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***Abstract*---**The author reports the results of an empirical study on Occupational Stress and Psychological Wellbeing on the Faculty of Higher Education, and its effect on Virtual Teaching and performance. The data gathered using google forms from the Engineering and Management faculty in and around Hyderabad Higher educational institutes. The research instrument, a structured questionnaire, completed by 400 faculty members of the Engineering and Management faculty of Higher Educational Institutes in and around Hyderabad. The data was gathered using a 5-point Likert Type scale to measure the faculty performance, occupational stress, and virtual teaching factors, whereas the psychological well-being of the faculty is measured using a 7-point scale. The response from the 7-point psychological well-being scale was converted into a 5-point Likert-type scale using linear transformations. The research instrument maintained its reliability and internal consistency as assessed by Cronbach Alpha (0.83). The logistic regression analysis indicated autonomy, the purpose of life the psychological well-being factors, and

work load, remote working, role conflict are statistically significant and influencing the faculty performance and virtual teaching.

Keywords---Occupational stress. Psychological well-being, virtual teaching, Faculty, Performance.

Introduction

Occupational stress is the stress from a job irrespective of the type of employment, whereas psychological wellbeing is a positive mental state, happiness, and satisfaction. Virtual teaching is a way of teaching the students online in totality digitally transmitting course contents to the students. Virtual learning has become the new order of learning for students and teaching for faulty during Covid-19 Pandemic. Massively Open Online Courses (MOOCs), e-learning modules, simulated classrooms similar to the traditional classrooms, use of audiovisuals, web-based interactions, extensive use of the internet, feedback tools are some of the characteristics of virtual learning. Effect role-playing of the student is needed to create awareness on various issues in virtual learning. Most of the virtual learnings are web-based, and interaction with students and faculty is made possible in real-time, where teacher and student can engage questions-answers like a traditional classroom.

Several studies reported occupational stress and its effect on psychological well-being and employee performance. Learning is a social process and before the start of the virtual learning certain issues need to be addressed. The subject-specific expertise, professional culture adoption, is more important than electronically delivering the courses. Appropriate virtual learning tools, learning environment-based web resources, dedicating information systems are the prime factors for the successful implementation of virtual learning (Styles, 2000). Britain and Liber (2004) developed a framework for instructive evaluation of virtual learning systems exploring two different models one from systems modeling and the other is from education. The authors suggested the need of a coherent framework for effectively implementing a virtual learning environment. The authors suggested the parallel interaction with the available system.

Prasad et al. (2016) carried out a comparative study to find the causes of stress and its effect on performance in the workplaces of the International Agricultural Research Institute and IT sector and reported a moderate level of stress in both sectors. However, women employees experienced more stress than men because of the role conflict as mother, wife, and employee. Prasad et al. (2020) in their study on information technology industry and IT-enabled service industry using General Linear Model analysis reported organization communication, organizational climate, policies, job satisfaction and employee psychosomatic factors are significantly influencing the psychological well-being of the employees.

Prasad et al. (2015) in their study on employees of the International Agricultural Research Institute in Hyderabad city reported that employees experience moderate level of stress with performance being negatively effected at moderate level, while women employees experience high stress than men. A study on

teacher's performance in Hyderabad city using multinomial logistic regression analysis on the school teachers of CBSE affiliated schools in Hyderabad reported that occupational stress and coping will impact teacher performance. The authors suggested some coping strategies to mitigate the stress and enhance the teacher performance Prasad et al. 2016.

Review of Literature

Pierre Dillenbourg and Daniel Schneider (2002) developed the concept of a virtual learning environment' with several interesting characteristics that convert the potential themes into actual outcomes for the students. Zhigeng Pan et al. (2006) emphasized the issues related to learning, training, and development and carried out a critical analysis of virtual and augmented realities. The authors provided some simulation examples for enhancing the motivation of learners to understand specific events why virtual learning is different from traditional learning, and the learning is quick in virtual environments. Chris et al. (2018) analyzed the relationship between engagement in a virtual learning environment and course grades. The authors suggested the high virtual learning activity is associated with high grades. The science-based subjects will have a higher dependency and cross-questioning in the virtual classroom. Young et al. (2020) proposed facial recognition to identify the students for emotional recognition, a three-stage model. The results indicate the student expression and emotions are similar to that of classroom learning. The feasibility of faction emotions and student learning status in real-time will help the teachers to evolve teaching strategies in a virtual learning environment based on student's emotions.

Prasad et al. (2020) identified several factors like employee communication, lack of supervision, employee emotions, organizational environment, job satisfaction that affect employee performance and psychological well-being. Prasad et al. (2020) carried out a study during the Covid-19 Pandemic to test the effect of occupational stress and remote working on the psychological wellbeing of Information Technology employees using the Ryff model. The results reported that factors like a peer, role ambiguity, organization climate, and job satisfaction are influencing the psychological well-being of employees.

Dolan (2011) reported in a qualitative study on virtual teaching and the performance of 28 adjunct faculty members. The study reported that inadequate frequency and depth communication, lack of recognition of adjunct faculty by the management, lack of encouragement for skill development are the factors that significantly influence the faculty performance. Ali and Elfessi (2004) in a study using conventional and virtual learnings, reported on student performance and approach towards the use of information technology in virtual and conventional settings. The analysis of covariance results indicated no statistically significant performance and attitude differences among the two groups. Giddens et al. (2012) studied the impact of virtual learning on student engagement and academic performance among nursing students. There were similarities in the ratings of virtual and conventional academic staff performance. The study suggested that virtual teaching can be used for nursing educators with theory and practice.

Prasad et al. (2018) in their study on Association between Occupational Stress factors and Performance at workplace among Agricultural Research Sector Employees at Hyderabad, reported a significant association between occupational stress components like working hours, job insecurity, social support which are affecting the performance. In another study on the association among Covid-19 parameters, occupational stress and employee performance workplace isolation, limited communication, family distractions, role conflict, career, job control, lack of peer advice are statistically significant and affect employee performance (Prasad et al. 2020). Gutshall et al. (2017) in their study on police officers on the effect of occupational stress and cognitive performance indicated that deficit in working memory is an impact of occupational stress.

Methodology

The primary data collected from the academic faculty of higher education colleges in and around Hyderabad. A total of 426 responses were received, 26 were removed because of some incomplete responses. A total of 400 responses were used in the analysis. The data collected on 5 occupational stress factors, 6 psychological well-being factors, 5 virtual teaching factors, and 6 faculty performance factors.

Data Collection Instruments

The data collected using a structured questionnaire using a 5-point Likert-type scale and the values ranged from Strongly disagree 1 to Strongly agree for three study factors occupational stress, performance and virtual learning. The psychological well-being measured using 7-point Ryff (1995) scale and the factors ranging from 1 Strongly agree to 7 Strongly disagree. The psychological well-being scale was transformed into a 5 point scale using the linear transformation method (IBM SPSS). The overall Cronbach alpha value was measured at 0.83 indicating good internal consistency and reliability. The description of study variables and assessed Cronbach alpha values for the study variables are presented in Table 2.

Table 1.

Demographic characteristics of study variables

Gender	Male	300
	Female	100
Age (Years)	20-29	60
	30-39	120
	40-49	134
	50 and above	86
Total		400

Table 2.

Description of study variables and reliability values

Factor	Description	Number of Items	Reliability
Occupational Stress	Work load	4	0.73
	Remote working	5	0.67
	Role Conflict	5	0.71
	Student Group	5	0.80
	Physiological factors	6	0.87
Performance	Motivation	4	0.81
	Task Competence	5	0.82
	Commitment	4	0.84
	Non Job-assignments	5	0.83
	Integrity	5	0.76
	Efficient Technology use	5	0.81
Virtual Teaching	High-Speed Internet	4	0.71
	High-Quality Devices	4	0.72
	Quality Digital Content and Resources	4	0.76
	Data Privacy and Security	4	0.80
	Home Internet access	4	0.87
Psychological well-being	Environment Mastery	3	0.71
	Positive Growth	3	0.68
	Positive Relations	3	0.81
	Self-Acceptance	3	0.67
	Autonomy	3	0.64
	Purpose of Life	3	0.69

Findings

Multivariate analysis

The multivariate analysis was carried out to explore the simultaneous impact of individual factors on occupational stress, virtual teaching, psychological well-being, and performance. The multivariate model was used to dissect the underlying reasons for the effect of certain characteristics on stress, virtual teaching, psychological well-being, and performance.

Table 3

Factors influencing the Faculty stress – Multilevel Logistic Regression Model

Factor	Model 1	Model 2	Model 3	Model 4	Model 5
Work load	-0.187	0.429*	0.333*	0.373*	0.317

Remote working		0.156	0.087	0.126	-0.362*
Role Conflict		-0.422	-0.401*	-0.397*	-0.116
Student Group		-0.264	-0.197	-0.218	-0.197
Physiological factors		0.337	-0.206	-0.232	-0.217
*significant at P<0.05 level					

Table 3 represents the results from multilevel logistic regression on the factors influencing faculty stress. The stress variable indicates how a faculty is stressed, highly stressed, stressed, neither stressed nor not stressed, minimum stressed, and no stressed. These values were converted into very stressed to very fairly stressed removing neutral values merging strongly agree and agreed to very stressed and disagree and Strongly disagree to fairly stressed. Another reason for carrying out multilevel logistic regression is faculty in the same higher educational institute resemble each other in many characteristics. In the model results, positive coefficients indicate that factor is associated with a high chance of faculty stressed whereas negative coefficients indicate less change of faculty being stressed. Model one presents the difference between the higher education institutions. Model 1 (Table 7) indicates the difference between the factors and between faculty-higher education variance is statistically significant, indicating faculty from some higher education institutes have higher levels of stress. in Model 2 to 5 impact of stress factors on faculty. Remote working and World load are statistically significant and causing a lot of stress in faculty.

Table 4.
Factors influencing Virtual Teaching - Multilevel Logistic Regression Model

Factor	Model 1	Model 2	Model 3	Model 4	Model 5
High-Speed Internet	0.364	0.421	-1.361	-2.037	-2.219
High-Quality Devices		0.335*	0.330*	0.367*	0.457*
Quality Digital Content and Resources		0.057	0.090	0.096	0.141
Data Privacy and Security		-0.476*	-0.301*	-0.411*	-0.747*
Home Internet access		-0.487*	-0.578*	-0.747*	-0.687*
*significant at P<0.05 level					

Table 4 explores the factors that influence virtual teaching. High speed internet, high quality devices, data privacy and home internet access are statistically significant and influencing the outcome of virtual teachings.

Table 5.
Factors influencing Psychological well-being - Multilevel Logistic Regression Model

Factor	Model 1	Model 2	Model 3	Model 4	Model 5
Environment Mastery	0.809	1.451	0.270	0.270	0.267
Positive Growth	-0.018	-0.041	-0.071	0.046	0.076
Positive Relations	0.367	0.526*	0.490	0.456	0.356
Self-Acceptance	0.300	0.435	-0.670**	0.590**	0.567**
Autonomy	-0.615**	-0.703**	-0.274	-0.145	-0.143
Purpose of Life	-0.612**	-0.365**	-0.518**	-0.326**	0.590**
*significant at P<0.01 level					

From the results of Table 5 it was indicated that autonomy, the purpose of life are statistically significant and influencing the psychological wellbeing of the faculty in higher education. The results indicate some higher educational institutions have higher psychological well-being as indicated in the table values.

Table 6.
Factors influencing performance - Multilevel Logistic Regression Model

Factor	Model 1	Model 2	Model 3	Model 4	Model 5
Motivation	0.817	1.45	0.209	0.27	0.274
Task Competence	-0.012	-0.042	-0.07	0.06	0.06
Commitment	0.366*	0.524*	0.490*	0.451*	0.354**
Non Job-assignments	0.309	0.450	-0.607**	0.490**	0.467**
Integrity	-0.615**	-0.733**	-0.240	-0.156	-0.13
Efficient Technology use	-0.620**	-0.350**	-0.501**	-0.302**	0.507**
*significant at P<0.05 level Independent variables					

Table 6 indicates the influence of the factors on the outcome of performance. Commitment, Integrity, and Efficient Technology used by the faculty are statistically significant and more important in faculty performance.

Table 7.
Factors influencing the performance (results from logistic regression)

Factor	Description	Significant
Occupational Stress	Work load	-0.403*
	Remote working	0.587**
	Role Conflict	0.561*
	Student Group	0.057**
	Physiological factors	-0.251
Psychological well-being	Environment Mastery	0.02
	Positive Growth	0.013
	Positive Relations	-0.231*
	Self-Acceptance	0.032
	Autonomy	0.563**
	Purpose of Life	0.017**
Dependent variable Performance		

From Table 7 you can find that workload, remote working, role conflict, and student group occupational stress factors are statistically significant, influencing the outcome of faculty performance whereas positive relations, autonomy, the purpose of life the psychological well-being factors are statistically significant influencing the performance.

Table 8.
Factors influencing the Virtual Teaching (results from logistic regression)

Factor	Description	Significant
Occupational Stress	Work load	0.512*
	Remote working	-0.203
	Role Conflict	0.067
	Student Group	-0.037*
	Physiological factors	-0.617**
Psychological well-being	Environment Mastery	0.17
	Positive Growth	0.033
	Positive Relations	-0.331
	Self-Acceptance	0.082
	Autonomy	0.630**
	Purpose of Life	0.017**
Dependent variable: Virtual Teaching		

From Table 7 you can find that workload, student group, physiological factors the occupational stress factors are statistically significant, influencing the outcome of virtual teaching whereas positive relations, autonomy, the purpose of life the psychological well-being factors are statistically significant influencing the virtual teaching of the faculty

Discussion and Conclusion

The author carried out this study during Covid-19 pandemic period during May 2020-March 2021 gathering the responses from the various faculties from the higher education cities across and around Hyderabad, India Metro. The faculty stress has both personal and economic implications, may lead to absenteeism and burnout (Kyriacou, 1987). Student group behaviors identified as the most important factors that course stress irrespective of education and faculty ((Borg et. el., 1991 Chaplain, 1995). Overall our results indicated that several of the studied factors cause teaching faculty stressful and are in line with the study carried out by Falzon (1989). The teachers who have less experienced in virtual teaching will have more stress than experienced faculty. The absence of virtual teaching technologies like high-speed internet, Wi-Fi, data security, and privacy will have lots of impact on faculty teaching outcome stress. Student-faculty interaction also causes a lot of stress as indicated by the logistic regression coefficients and the results in line with the one studied by Abel and Sewell, 1999. Autonomy to the faculty, purpose of teaching will have a positive effect on the psychological well-being of the faculty and the results are in line with the study carried out by Prasad et al. (2020). Workplace conditions, speed of the internet, the available infrastructure will have an impact on teaching faculty outcome. Virtual Teaching is mainly dependent on the availability of the five components High-Speed Internet, High-Quality Devices, Quality Digital Content and Resources, Data Privacy and Security, Home Internet access and there may be other resources needed as the list is not exhaustive. The survey questionnaire maintained internal consistency and reliability as assessed by reliability statistic Cronbach alpha, and data maintained normality as indicated by the Shapiro Wilk test values for all the variables ($p>0.5$). Therefore, we carried out an appropriate analysis and interpreted the results.

Suggestions

There is a need to carry out more similar studies with larger samples across India as virtual learning and virtual teaching as new normal during Covid-19 pandemic and similar type of situations.

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