Research Paper

Volume : 4 | Issue : 4 | April 2015 • ISSN No 2277 - 8179

Psychological Stress in Relation to Achievement Among Senior Secondary Science Students

Education

KEYWORDS : Psychological Stress, Senior Secondary Science Students, Achievement

Dr. Narendra Kumar Assistant Professor Department of Education, S.G.P.G. College, Sarurpurkhurd, Meerut

ABSTRACT

This study attempts to assess the psychological stress in relation to achievement among senior secondary science students. A sample of 631 students was randomly selected from different institutions of Meerut province. They were administered Psychological Stress Scale for Science Students (PSSSS) developed by the researcher himself. Mean, S.D. and Pearson Product Moment Coefficient of Correlation were used to analyze the data. Results show that the stress dimension examination and achievement has been emerged as the major factor causing stress, while health as the least causing factor for stress. Negative and significant correlation was observed between achievement and total psychological stress and its all dimensions.

Introduction

The present scenario is coming up with technological revolution, web technology and web culture. Naturally it is the achievement of people especially in the field of science besides humanities. It is well considered opinion proven rationally that science is the great potential factor for the development of country. Hence science education in every country occupies a significant emphasis. The very structured knowledge in science education demands good intellect people with scientific attitude and rationale mind. Even the very intelligent students find science comparatively a difficult subject of study as compared to humanities. Difficulty in understanding of science experienced by students in general, fear of science and underachievement in science subjects are the common problems due to which students used to suffer. The science curriculum requires enormous commitment and hard work by students. The school setup, teacher's expectations, infrastructure facilities, modalities of teaching etc. promote the feeling of pressure associated with being in the science stream. Most of the time, science students have complain of dwelling in between their efforts for better achievement and teacher's/ parent's expectations. Even investing time and efforts they find it difficult and get easily stressed. It is being experienced by the parents and teachers in schools that science students suffer from psychological stress which influence the achievement.

One study identified the major academic stressors among college students to be tests, grade competition, time demands, professors and classroom environment, and career and future success (Murphy & Archer, 1996). Most of the studies in different responses to stress have been carried out in dental, medical, nursing, university and college students (Sinha, et al 2000, Lee et al 2002, Kuruppuarachchi, et al 2002, Ellison, 2004, Polychronopoulou, Argy and Divaris, Kimon 2005, Hussain, et al 2008, Kumar and Singh 2004, Kaplan, et al 2005, Chapell, et al 2005, Vijayalakshmi and Lavanya 2006, Nicholson 2009, and Hasan 2009). The researcher found that there is noresearch conducted particularly in Western U.P pertaining to this issue Therefore, it was decided to conduct a research to examine this particular issue. In the present study, the researcher attempted to study the psychological stress in relation to achievement among senior secondary science students of Meerut province.

Objectives

1. To study the nature of psychological stress of senior secondary science students.

2. To study the nature of achievement of senior secondary science students.

3. To study the relationship between psychological stress and achievement of senior secondary science students.

Research Methodology

Method

Methods of research are generally determined by the theory of the topic under study, objectives of the study, resources of researchers etc. These considerations have led the investigator to use the descriptive survey method of research for the present study. In the present study all those steps and characteristics have been adopted which have described to be essential for the descriptive method of research by several authors.

Participants

For this study, science students officially enrolled in 12th standard were taken from seven types of institutions running in Meerut province. Using simple random sampling, 100 senior secondary science students were selected from each type of institutions. Out of 700 science students only 631 students were finally taken because 69 students did not fill the scale properly.

Material and Procedure

To achieve objectives of this study Psychological Stress Scale for Science Students (PSSSS) developed by the researcher was used to measure psychological stress of science students. It was structured around the 12 dimensions of psychological stress i.e. curriculum transaction in science, content of science, infrastructure for science, science teachers, peers, workload in science, examination and achievements, home and family environment, vocational aspiration, health, communication problems and society. There are 96 items in this scale. Each item was followed by five options, namely, 'Always', 'Often', 'Sometimes', 'Rarely', ans 'Never'. Reliability of the scale was determined by split half method and was found 0.96. Achievement in science of the students was considered as the marks obtained in science in 12th class board examination.

Data Analysis Techniques

To study the nature of psychological stress, its all dimensions and the achievement of all the science students (N = 631), mean, median, mode and standard deviation (S.D.) were calculated. To find out the relationship between psychological stress and achievement of science students, product moment correlation coefficients was calculated.

Results

Analysis and interpretation of results are given objective wise in following sub headings-

I. Nature of Psychological Stress among Senior Secondary Science Students

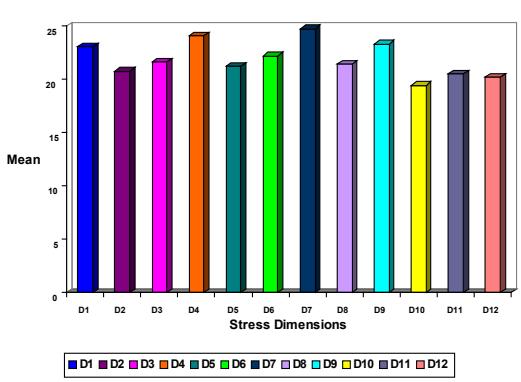
Table – 1

Statistics showing the nature of distribution of psychological stress (N = 631)

Stress Dimensions	Mean	Median	Mode	S.D.
Curriculum Transaction in Science	23.097	23	23	5.704
Content of Science	20.781	21	21	5.810
Infrastructure for Science	21.594	21	20	7.660
Science Teachers	24.071	24	25	7.318
Peers	21.204	21	21	6.591
Workload in Science	22.179	22	22	6.752
Examination and Achievement	24.727	25	25	6.639
Home and Family Environment	21.471	21	21	7.201
Vocational Aspiration	23.273	23	23	6.914
Health	19.488	19	18	7.335
Communication Problems	20.515	20	19	6.879
Society	20.187	20	19	6.903
Total Psy. Stress	262.362	262	262	58.154

It is evident from Table-1, that means of the different dimensions of psychological stress were found to vary from 19.448 to 24.716 , whereas median and mode were found to vary from 19 to 25 and 18 to 25, respectively. It is also depicted from Table 1 that mean of total psychological stress score of all students was found to be 262.362 which was of moderate level. Further, mean stress score (24.727) of all the students was found to be greater on the psychological stress dimension Examination and achievement followed by the dimensions Science teachers (24.071),Vocational aspirations (23.273), Curriculum transaction in science (23.097) and workload in science (22.179) in comparison to all the other dimensions, where as the lowest mean stress score (19.488) of science students was found due to psychological stress dimension health followed by society and communication problem. It means that science students were found to be more stressed due to Examination and achievement in comparison of other dimensions and least stressed due to its health. It is also depicted from Table -1 that mean stress score of science students was greater on the psychological stress dimension examination and achievement in comparison to all the other dimensions. It means that science students were found to be more stressed due to examination and achievement in comparison of other dimensions, where as the lowest mean stress score of science students was on the psychological stress dimension health. The above results for more comprehensibility are presented in the form of bar diagram in figure –1.

Figure-1: Bar diagram for means of stress dimensions



II. Nature of Achievement of Senior Secondary Science Students

Table - 2

Statistics showing the nature of achievement of science students (N= 631)

Variable	Mean	S.D.
Achievement	117.586	26.498

Table 2 shows that mean of Achievement scores of senior secondary science students was found to be 117.586 followed by the S.D. value 26.498.

III. Relationship between Psychological Stress and Achievement of Science Students

Table - 3

Correlation between Psychological Stress and Achievement (N = 631)

Variables	Mean	S.D.	Product	Correlation
Achievement	117.586	26.498	------	.....
Total Psychological Stress	262.362	58.154	19179884	-0.295**
Curriculum Transaction in Science	23.097	5.704	1691671	-0.187**
Content of science	20.781	5.810	1512739	-0.292**
Infrastructure For Science	21.594	7.660	1578389	-0.186**
Science Teachers	24.071	7.318	1773112	-0.105*
Peers	21.204	6.591	1545490	-0.243**
Workload in Science	22.179	6.752	1620438	-0.204**
Examination and Achievement	24.727	6.639	1805948	-0.252**
Home and Family Environment	21.471	7.201	1562840	-0.208**
Vocational Aspiration	23.273	6.914	1700914	-0.234**
Health	19.488	7.335	1411660	-0.249**
Communication Problems	20.515	6.879	1494742	-0.239**
Society	20.187	6.903	1481941	-0.128**

It is evident from Table - 3 that achievement of science students was found to be negatively and significantly correlated with total psychological stress and its all dimensions except the dimension peers at 0.01 level, relationship with peers was also negative and significant at 0.05 level. It means that achievement of science students is significantly and negativelty correlated with total psychological stress and its all dimensions. It leads to the conclusion that achievement and psychological stress are inversely correlated. If psychological stress among the students increases their achievement decreases.

Conclusions

It is apparent from the findings of this study that science students were found to be under stress in the process of studying science. Out of the12 dimensions that have been considered responsible for causing psychological stress, the dimension examination and achievement has been emerged as the major factor causing stress. Science teachers, Vocational aspirations and Curriculum transaction in science and workload in science have also been emerged as causing factors of stress. Science students as compared to arts students always have much workload. Science students feel stressed due to additional practical and assignments. These findings are supported by the findings of Saipanish (2003), who found that heavy work load, examinations and meeting deadlines for assignments were the most common causes of stress. Vocational aspiration has been emerged as another area causing stress among science students. This finding is supported by the results of Kadapatti and Khadi (2006) and Huan, et al (2008). Kadapatti and Khadi (2006) suggested that high aspiration as the factor that significantly influenced

Volume : 4 | Issue : 4 | April 2015 • ISSN No 2277 - 8179

academic stress. The stress resulting due to the dimension health was found to be the lowest out of the twelve dimensions. When the relationship of achievement and psychological stress was studied, the findings illustrate that negative and significant correlation was observed between achievement and total psychological stress and its all dimensions. It means that more psychological stress results in poor achievement. This finding is supported by the earlier findings of Kumar and Singh (2004), Kaplan, et al. (2005), Chapell et al. (2005), Vijayalakshmi and Lavanya (2006), Nicholson (2009), Hasan (2009). Khalid and Hasan (2009) found that students with high academic achievement have low test anxiety scores and vice versa. Kumar and Singh (2004) indicated that the level of stress among the students interfered with the performance in examination, test etc. Vijayalakshmi and Lavanya (2006) showed that students who achieved more in mathematics felt less stress. There exists negative relationship between stress and mathematics achievement. In the end, it can be concluded that science students have been found experiencing stress. The highly competitive education and the learning processes are the key factors of science student's mental state.

REFERENCE

Ellison, K.W. (2004). Stress and the Police Officer, 2nd ed., Charles C. Thomas Publishers, Springfield, IL. | Huan, V.S., See, Y.L., Ang, R.P. and Har, C.W., (2008). The impact of adolescent concerns on their academic stress. Educ. Rev., 60(2): 169-178. | Hudd, S., Dumlao, J., Erdmann-Sager, D., Murray, D., Phan, E., Soukas, N., & Yokozuka, N. (2000). Stress at college: Effects on health habits, health status and self-esteem. College Student Journal, 34(2), 217-227. | Hussain A, Kumar A, (2008). Academic stress and adjustment among high school students. J Indian Acad Appl Psychol; 34 (Special Issue): 70-3. | Kadapatti, M. and Khadi, P.B. (2006). Factors influencing for academic stress among preuniversity students. Indian Psychol. Rev., 66(2): 83-88. | Khalid, R., & Hasan, S. S. (2009). Test anxiety in high and low achievers. Pakistan Journal of Psychological Research, 24 (3-4). | Kumar, S. and Singh, A.P., (2004). Stress state and its relationship with academic performance among students. Recent Trends in Human Stress Management, pp. 55-66. | Kuruppuarachchi, K. A. (2002). Psychological distress among students from five universities in Sri Lanka: Ceylon. Med. J., March, 47 (1), 13-5. | Lee, R. M., Keough, K. A., & Sexton, J. D. (2002). Social connectedness, social appraisal, and perceived stress in college women and men: Journal of Counseling and Development, 80 (3), 355-361. | Nicholson, A. M. (2009). Effects of test anxiety on student achievement (ACT) for college bound students. Dissertation Abstract International. DAI-A-70/07. | Polychronopoulou, A. and Divaris, K. (2005). Perceived Sources of Stress Among Greek Dental Students. J Dent Educ. 69(6): 687-692. | Sulaiman, T., Hassan, A., Sapian V.M and Abdullah S .K. (2009). European journal of social sciences, 10(2), 179-184. | Vijaylakshmi, G. and Lavanya, P. (2006), Relationship between stress and mathematics achievement among intermediate students. Edutracks, 7(7): 34-37. |