Psychological Stress and its Relationship with Achievement of Science Students of Jawahar Navodaya Vidhyalayas

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Abstract

This study attempts to assess the psychological stress and its relationship with achievement among senior secondary science students of Jawahar Navodaya Vidhayalayas. A sample of students was randomly selected from different Jawahar Navodaya Vidhayalayas in Ghaziabad. They were administered Psychological Stress Scale for Science Students developed by researchers themselves which measures 12 dimensions of psychological stress. Results show that the examination and achievement have been emerged as the major factor causing stress, while health as the least causing factor for stress. Negative and significant correlation with achievement was observed for all dimensions of psychological stress except science teachers and society.

Introduction

Senior secondary school years should be a new and interesting experience, but many demands and rapid changes can make it one of the most stressful times of the life. Students of this stage face increasing amounts of schoolwork, a rapidly changing curriculum, assignment deadlines and

a series of exams. They worry about selecting careers and post schooling programmes. They have to balance their schoolwork with their hobbies, sports and daily life. They have conflicts with friends, siblings, parents and have to adjust themselves with other environmental demands. Further, Science students have many obstacles to overcome in order to achieve optimal academic performance as compared to humanities students. A number of researches have been done looking at the correlation of many stress factors that science students experience and the effects of stress on their academic performance. The studies carried out with medical students show that in the academic area, heavy work load, examinations and meeting deadlines for assignments were the most common causes of stress (Evans and Fitzgibbon, 1992; Kohn 85 Frazer, 1986). This is further supported by Ratana Saipanish (2003) who conducted a study on 686 medical students in the Faculty of Medicine; Ramathibodi Hospital, Thailand. Test or exam anxiety is one of the main causes to academic stress and most university students seem to be more emotionally vulnerable due to examinations. Anxiety from exams has a debilitating effect on students' performance (Fisher, 1994).

Most of the time, science students complain of dwelling in between their efforts for better achievement and teachers' and parents expectations. Most of the studies in different

responses to stress have been carried out in dental, medical, nursing, university and college students (l-Helmers, et al. l997, Henley 1998, Sinha et al. 2000, Kuruppuarachchi et al. 2002, Polychronopoulou, Argy and Divaris, Kimon 2005). Many scholars in the field of behavioural science have carried out extensive research on stress and its outcomes and concluded that the topic needed more attention (Ellison, 2004). The researcher has found out that there is not much research conducted in our local universities particularly in Western U.P. itself pertaining to this issue with regards to the students of remote areas studying in Jawahar Navodaya Vidhyalayas. Therefore, it is timely to conduct a research to examine this particular issue as findings from the present study would benefit various stakeholders in the country in planning and conducting necessary programmes for the students so that stress-related factors could be reduced and better academic performance could be achieved by the students. In the present study, the researchers have attempted to study psychological stress and its relationship with achievement of science students studying in Jawahar Navodaya Vidhyalayas in Ghaziabad province.

Objectives

l. To study the contribution of psychological stress on achievement of science students of Jawahar Navodaya Vidhyalayas.
2. To study the relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidhyalayas.

Hypotheses

1. There is no significant contribution of psychological stress on achievement of science students of Jawahar Navodaya Vidhyalayas.
2. There is no significant relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidhyalayas.

Method

The descriptive survey method has been used 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

In this study, science students officially enrolled in 12th standard were taken from Jawahar Navodaya Vidyalayas running in Ghaziabad province. Using simple random sampling, 100 science students were selected. Out of 100 science students only 82 students were finally taken because 18 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 researchers was used to measure psychological stress of science students. It was structured around 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. Thus, PSSSS is a 96 - items scale with a Likert type responses format (5 = Always, 4 I Oman, 3 = sometimes, 2 = rarely, and 1= 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.
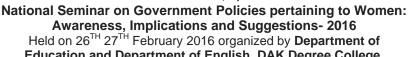
Results

To study the nature of psychological stress, its all dimensions and achievement of all science students (N = 82), mean, and standard deviation (S.D.) were calculated. To find out the contribution of psychological stress and its all dimensions on achievement, Simple and stepwise regression analysis was done. To find out the relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidyalayas, Pearson product moment correlation coefficients were calculated.

Table 1

Statistics showing the nature of distribution of psychological stress and achievement of science students of JNV (N= 82)

Psychological Stress Dimensions	Mean	S.D.
Curriculum Transaction in Science	24.268	5.808
Content of Science	22.122	6.187
Infrastructure for Science	23.512	7.745
Science Teachers	25.927	6.974
Peers	22.756	6.856
Workload in Science	22.866	7.168
Examination and Achievement	26.415	6.532
Home and Family Environment	23.366	7.441
Vocational Aspiration	24.610	7.575
Health	21.439	8.579
Communication Problems	22.488	7.671
Society	23.646	7.426
Total Psychological Stress	283.415	61.700

Table 2

Statistics showing the nature of achievement of science students of JIW (N= 82)

Variable	Mean	S.D.
Achievement	120.573	24.816

It is evident from Tab1e-1 that means of the different dimensions of psychological stress were found to vary from 21.439 to 26.415 which is of moderate level. It is also depicted from Table-1 that mean of total psychological stress score of all students was found to be 283.415 which was of moderate level. Further mean stress score of the students was found to be greater on the psychological stress dimension-examination and achievement in comparison to all the other dimensions, where as the lowest mean stress score of science students was on the psychological stress dimension- health. It means that science students of Jawahar Navodaya Vidhyalayas were found to be more stressed due to examination and achievement in comparison of other dimensions and least stress due to its dimension health. Table-2 shows that mean of Achievement scores of science students of Jawahar Navodaya Vidhyalayas was found to be 120.573.

Table 3

Summary of regression analysis for contribution of dimensions of psychological stress on achievement of science students of JNV

Step	Constant	Variable Contributed	Beta	Adjusted R^2	Percentage Contribution
1.	160.145	Content of Science	-0.4460	0.1889	18.89**
2.		Content of Science	-0.3138	0.2309	23.09**
		Vocational Aspiration	-0.2617		

** $p < 0.01$

It is evident from Table 3 that the contribution of psychological stress dimension content of science on achievement in science was 18.89%. Combined contribution of stress dimensions content of science and vocational aspiration was 23.09%. All contributions were significant at 0.01 level. Contribution of other dimensions of psychological stress on achievement was not significant at 0.05 level.

Table 4

Correlation between psychological stress and achievement of Jnwnhnr Navodayn Vidyalnyns students (N = 82)

Variables	Mean	S.D.	Product	Correlation
Achievement	120.573	24.816	----------	----------
Total Psychological Stress	283.415	61.700	2747749	-0.433**

Curriculum Transaction in Science	24.268	5.808	236196	-0.317**
Content of Science	22.122	6.187	213173	-0.441**
Infrastructure for Science	23.512	7.745	226425	-0.383**
Science Teachers	25.927	6.974	253330	-0.212
Peers	22.756	6.856	221277	-0.266*
Workload in Science	22.866	7.168	220717	-0.367**
Examination and Achievement	26.415	6.532	256450	-0.354**
Home and Family Environment	23.366	7.441	226291	-0312**
Vocational Aspiration	24.610	7.575	236919	0.4l5**
Health	21.439	8.579	205926	-0.346**
Communication Problems	22.488	7.671	218858	0.223*
Society	23.646	7.426	232187	0.l06

Table 4 clearly indicates that achievement of JNV science students was negatively and significantly correlated with total psychological stress and its dimensions' curriculum transaction in science, content of science, infrastructure for science, workload in science, examination and achievements, home and family environment, vocational aspiration, health at 0.01 level. Negative and significant correlation was also found with stress dimensions' peers and communication problems at 0.05 level.

But achievement was not significantly correlated with psychological stress dimensions' science teachers and society at 0.05 level. It means that achievement of JNV students is significantly and inversely correlated with total psychological stress and its all dimensions except science teachers and society.

Conclusion

It is apparent from the findings of this study that science students of Jawahar Navodaya Vidhyalayas were found to be under stress in the process of studying science. Out of the 12 dimensions that have been considered for taking as factors responsible for causing psychological stress, the dimension examination and achievement has been emerged as the major factor causing stress. The reason behind this is

that Science students as compared to arts students are always pre-occupied with their performance in examination because science subject is comparatively difficult to grasp and understand. There is a consistent pressure on students mind to secure maximum possible marks in exam. This is seen by the general perception where even if a student achieves 90% marks, it is not considered good enough. Janet et al. (1994) found that 86% of the

subjects reported their top stressors to be examination, 62% subjects said that stress they experienced strengthened their commitment to their professional education. Science teachers, Infra structure for science, curriculum transaction in science, workload in science and society have also been emerged as major causing factors of stress among science students. The stress resulting due to the dimension health is the lowest out of the twelve dimensions. The senior secondary stage is developmentally characterizes as late adolescence. Their developmental needs at this stage needs for greater autonomy and independence. Contribution of stress dimensions- content of science and vocational aspiration was found to be significant, while all other stress dimensions were not found to have significant contribution. Negative and significant correlation with achievement has come out for all dimensions of psychological stress except two dimensions science teachers and society. These finding may be understood in the context of the fact that psychological stress always depress the memory of a person which results in poor concentration and poor learning. This finding is supported by the earlier findings of Crystal (1994), Singh and Broota (1995), and El-Anzi and Ohayed (2005).

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