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AN INVESTIGATION IN TO THE CORRELATION BETWEEN ACADEMIC ACHIEVEMENT IN CHEMISTRY AND MENTAL HEALTH OF HIGHER SECONDARY SCHOOL STUDENTS

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Abstract

In this study, an attempt has been made to study the correlation between academic achievement in chemistry and mental health of higher secondary school students. The Academic achievement in chemistry Test (AACT) and Mental Health Scale (MHS)are constructed and validated by the investigator, were used to collect the data from a sample of 600 higher secondary school students studying in Cuddalore District of Tamilnadu State in India. The survey method had been followed and simple random sampling technique was used in administration of the research tools. The result of the analysis reveals that the average level of academic achievement in chemistry and mental health of higher secondary school students, there is significant difference in the gender and medium of instruction of higher secondary school students with respect to their academic achievement in chemistry and mental health , there is significant and positive relationship between academic achievement in chemistry and mental health of higher secondary school students.

***Key Words**: Academic Achievement in Chemistry, Mental Health and Higher Secondary School Students.*

1. Introduction

Academic achievement is the important end-product of academic endeavours at all levels of education. The academic achievement of higher secondary students includes their achievement in all subjects such as Languages, Science, Mathematics, Social Studies, etc. Research studies on academic achievement indicate the influence of students socio-personal factors, family and parental characteristics, nature and type of school or educational institution, cognitive aspects, affective factors, learning style, personality characteristics, etc.

In the present study, Academic achievement in chemistry is being described as the learning outcome of higher secondary students, in Chemistry as a part of academic achievement.

According to Caplan, defined mental health as the potential of a person to solve his/ her problems in a reality based way within the framework of his/ her tradition and culture. Good mental health and wellbeing makes a vital contribution to the overall health and wellbeing of individuals and our communities. It also influences social and economic outcomes for individuals of all ages and cultural backgrounds, affecting lives of many people in our community, their families and friends. The impacts of poor mental health on individuals, cares, families and the wider community can be significant.

2. Need and Importance of the Study

In the present Indian education academic achievement seems to be the focuses. This is the main factor that decides the future of the student. In view of its great importance, a large number of studies were conducted on the factors which are influence the academic achievement of the students.

In this rapid changing society, due to technology and scientific advancement it is very difficult to remain mentally healthy. Therefore it has become challenge for the education system to maintain mental health of students. In this study the different aspects of school i.e. classroom, institution, individual attention, disciplines, teacher and examination and its adverse effect on mental health have been discussed. Concrete suggestions have been provided for schools to adopt, so that students can be free from all types of maladjustments.

3. Review of Literature

Pramila Tanwar (2020) conducted a study compasses on achievement of students in studying Chemistry in higher secondary schools of Delhi NCR. The sample consists of 200 students of Government and private schools. “Chemistry Achievement Test” has been used for the study developed by Dr. Pramila Tanwar. The researcher used 2 sample t-test to analyse the data. Major cant difference between the finding of the study corroborates a significant difference between the Achievement test in chemistry among the students of government and private schools.

Nangaiyarkarasi (2019) examine the relationship between mental health and academic achievement among high and higher secondary students. The result shows that there is significant difference between mental health and sample sub groups. More over the result reveals that the positive correlation between mental health and academic achievement of high and higher secondary students. Early detection for indications of mental health problems and understanding factors contributing to stress among students would promote better understanding of mental health in future.

4. Operational Definitions of the Study

Academic achievement in chemistry

For the present study Academic achievement in chemistry is considered as the total scores obtained by an individual in the test conducted by the investigator in chemistry from the selected units of chemistry text book prescribed for standard XI covering the category of objectives.

Mental Health

Mental health scale constructed by the investigator, this mental health scale used by him higher secondary school students.

5. Objectives of the Study

1. To study the level of academic achievement in chemistry of higher secondary school students.
2. To study the level of mental health of higher secondary school students.
3. To study the significant difference, if any in the academic achievement in chemistry of higher secondary school students based on gender.
4. To study the significant difference, if any in the academic achievement in chemistry of higher secondary school students based on medium of instruction.
5. To study the significant difference, if any in the mental health of higher secondary school students based on gender.
6. To study the significant difference, if any in the mental health of higher secondary school students based on medium of instruction.
7. To study the relationship between academic achievement in chemistry and mental health of higher secondary school students.

6. Hypotheses of the Study

1. The level of academic achievement in chemistry of higher secondary school students is low.
2. The level of mental health of higher secondary school students is low.
3. There is no significant difference in the academic achievement in chemistry of higher secondary school students based on gender.
4. There is no significant difference in the academic achievement in chemistry of higher secondary school students based on medium of instruction.
5. There is no significant difference in the mental health of higher secondary school students based on gender.
6. There is no significant difference in the mental health of higher secondary school students based on medium of instruction.
7. There is no significant relationship between academic achievement in chemistry and mental health of higher secondary school students.

7 Method of the Study and Sample Used

The normative survey method was adopted in the present study. In order to collect the required data, Academic achievement in chemistry Test (AACT) and Mental Health Scale (MHS) are constructed and validated by the investigator. Simple random sampling technique has been employed to collect the data from 600 higher secondary school students studying in government, aided and private schools of Cuddalore district.

8. Analysis of Data and Interpretation

The data collected were descriptively analyzed by employing the following statistical techniques:

1. Descriptive Analyses

i. Measures of central tendency (Mean)

ii. Measures of variability (Standard Deviation)

2. Differential Analyses ('t' test and 'F' test) and

3. Co-relational Analyses (Karl Pearson Product Moment Correlation)

Descriptive Analysis

Result of Hypothesis 1

The level of academic achievement in chemistry of higher secondary school students is low.

Table 1

Mean and Standard Deviation for the Academic achievement in chemistry Scores of Higher Secondary School Students

Variable	N	Mean	SD
Academic achievement in chemistry	600	23.48	5.59

From table-1, it is observed that the calculated mean and standard deviation for the academic achievement in chemistry scores of the entire sample were found to be 23.48 and 5.59 respectively. One can get a maximum score of 30 on academic achievement in chemistry tool. The mean score lies between the average value range (19-28), so the framed hypothesis (1) is rejected and it is concluded that the level of higher secondary school students academic achievement in chemistry is average.

Result of Hypothesis 2

The level of mental health of higher secondary school students is low.

Table 2

Mean and Standard Deviation for the Mental Health Scores of Higher Secondary School Students

Variable	N	Mean	SD
Mental Health	600	163.01	25.07

From table-2, it is observed that the calculated mean and standard deviation for the mental health scores of the entire sample were found to be 163.01 and 25.07 respectively. One can get a maximum score of 210 on mental health scale. The mean score lies between the average value range (138-187), so the framed hypothesis (2) is rejected and it is concluded that the level of mental health of higher secondary school students is average.

Differential Analysis

Result of Hypothesis 3

There is no significant difference in the academic achievement in chemistry of higher secondary school students based on gender.

Table 4

Mean Difference of Academic achievement in chemistry Scores of Higher Secondary School Students with regard to Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Academic achievement in chemistry	Male	304	22.94	5.98	4.74	Significant
	Female	296	27.04	6.94		

Table-4 shows that the computed't' value for the mean academic achievement in chemistry scores between male and female higher secondary school students [$t_{(600)} = 4.74 > p$] is significant. Hence, the framed null hypothesis 3 is rejected and it is concluded that there is a significant difference in the academic achievement in chemistry based on gender of higher secondary school students. It is also inferred that female students are having more academic achievement in chemistry than the male students.

Result of Hypothesis 4

There is no significant difference in the academic achievement in chemistry of higher secondary school students based medium of instruction.

Table 4

Mean Difference of Academic achievement in chemistry Scores of Higher Secondary School Students with regard to Medium of Instruction

Variable	Medium of Instruction	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Academic achievement in chemistry	Tamil Medium	280	21.89	5.82	5.17	Significant
	English Medium	320	24.83	6.93		

Table-4 shows that the computed't' value for the mean academic achievement in chemistry scores between Tamil medium and English medium higher secondary school students [$t_{(600)} = 5.17 > p$] is significant. Hence, the framed null hypothesis 4 is rejected and it is concluded that there is significant difference in the academic achievement in chemistry based on medium of instruction of higher secondary school students. It is also inferred that English medium students are having more academic achievement in chemistry than the Tamil medium students.

Result of Hypothesis 5

There is no significant difference in the mental health of higher secondary school students based on gender.

Table 5

Mean Difference of Mental Health Scores of Higher Secondary School Students with regard to Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Mental Health	Male	304	162.26	24.56	2.00	Significant
	Female	296	166.65	26.74		

Table-5 shows that the computed't' value for the mean mental health scores between male and female higher secondary school students [$t_{(600)} = 2.00 > p$] is significant. Hence, the framed null hypothesis 5is rejected and it is concluded that there is a significant difference in the mental health based on gender of higher secondary school students. It is also inferred that female students are having more mental health than the male students.

Result of Hypothesis 6

There is no significant difference in the mental health of higher secondary school students based medium of instruction.

Table 6

Mean Difference of Mental Health Scores of Higher Secondary School Students with regard to Medium of Instruction

Variable	Medium of Instruction	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Mental Health	Tamil Medium	280	162.19	24.06	2.37	Significant
	English Medium	320	165.42	26.71		

Table-6 shows that the computed't' value for the mean mental health scores between Tamil medium and English medium higher secondary school students [$t_{(600)} = 2.37 > p$] is significant. Hence, the framed null hypothesis 6 is rejected and it is concluded that there is significant difference in the mental health based on medium of instruction of higher secondary school students. It is also inferred that English medium students are having more mental health than the Tamil medium students.

Correlation Analysis

Result of Hypothesis 7

There is no significant relationship between academic achievement in chemistry and mental health of higher secondary school students.

Table 7

Showing the Correlation Values between Academic achievement in chemistry and Mental Health of Higher Secondary School Students based on Entire Sample

Variables	N	'r' value	Level of Significance
Academic achievement in chemistry and Mental Health	600	0.658**	Significant

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table-7 shows that, the co-efficient of correlation between academic achievement in chemistry and mental health is found to be [N=600, r=0.658 at 0.01 level] which indicates that there is a positive correlation between academic achievement in chemistry and mental health. Therefore, hypothesis 7 is rejected and it is concluded that there is positive and significant relationship between academic achievement in chemistry and mental health of higher secondary school students.

9. Findings of the Study

- The level of higher secondary school students academic achievement in chemistry is average.
- The level of higher secondary school students mental health is average.
- There is a significant difference in the academic achievement in chemistry based on gender of higher secondary school students.
- There is a significant difference in the academic achievement in chemistry based on medium of instruction of higher secondary school students.
- There is a significant difference in the mental health based on gender of higher secondary school students.
- There is a significant difference in the mental health based on medium of instruction of higher secondary school students.
- There is positive and significant relationship between academic achievement in chemistry and mental health of higher secondary school students.

10. Conclusion

In the present study of the correlation between academic achievement in chemistry and mental health of higher secondary school students, findings revealed that the average level of academic achievement in chemistry and metal health, there is significant difference in the gender and medium of instruction of higher secondary school students with respect to their academic achievement in chemistry and mental health , there is significant and positive relationship between academic achievement in chemistry and mental health of higher secondary school students.

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