Academic stress reduction by Jacobson's progressive muscle relaxation: A quasi experimental study

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Abstract

Adolescents are the most dramatic phase, undergoing academic and social pressure which subjects them to negative emotional stress. The present study was conducted to evaluate the effectiveness of Jacobson's progressive muscle relaxation (JPMR) technique on Academic stress among adolescents of selected schools at Mangalore. A Quasi Experimental, Non-randomized control group design was used for the study. 100 adolescents of 15- 16 yrs of age were selected using Purposive sampling technique. Academic stress rating scale was used to assess academic stress. The results showed that all adolescents had moderate pre – test level of stress in both experimental and control groups whereas in post-test level there was marked reduction in academic stress scores (40.20) when compared to mean pre-test score (90.44) in the experimental group. In the control group pre-test academic stress score was 90.30 and the post-test academic stress score was 88.94. There was a significant difference between the mean post-test academic stress scores of the adolescents in the experimental and control group. (t_{98}= 36.53, $p<0.005$). There was no association in pre-test academic stress scores and selected demographic variables among both the experimental and control group. The findings of the study showed that JPMR was effective in reducing academic stress.

Keywords: Effectiveness, Jacobson's Progressive Muscle Relaxation Technique, Academic Stress, Adolescents.

Introduction

Stress is the usual result of any rapid change and rapid change is what adolescence is all about.(1) Adolescence is a period of high stress and storm for teenagers and parents alike. Academic problems have been reported to be the most sources of stress.(2) Academic stresses are the most important source of chronic and sporadic stress for young people in both Western and Asian countries, and it may lead to low self esteem[3]. Academic stress is a product of combination of academic related demands that exceed the adaptive resources available to individual. For instance, overloaded home work and examination often resulting in effects on student's mental & physical health as well as their school performance.(4,5)

The life time prevalence of stress among adolescents around the world is approximately 5-70%.(6) In this context in India particularly, adolescents are put under pressure to perform well in school examination. For some students the experience of stress leads to sense of distress, which is generally manifested in a variety of psychological and behavioural problems.(7) It is relevant to mention here that in India in the year 2015 alone, 8934 children or more than 6.5 children per day committed suicide because of failure in examination.(8)

Adolescence experience a spectrum of stress ranging from catastrophic or traumatic persistent strain and daily hassles especially in teenage or college age, from the family or among their peer-students, ride the roller coaster every day.(3,9,10) Academic stress is one among them which is an unavoidable phenomenon often seen in adolescents due to scientific and technological advancement all over the globe. School students in India undergo heavy academic and social pressure which subjects them to negative emotional stress and several problems like deliberate self harm.(7) A survey was conducted to find out the level of stress among 350 adolescents studying in government and government aided higher secondary school in Madurai district. Samples were selected by random sampling technique and stress questionnaire was the tool used for the study. The results showed that out of 350 students, 9.7% had low level of stress, 82.58% had moderate level of stress and 7.7% of adolescent learners had high level of stress.(11)

Identification of adolescents stress and stressors is very important and helpful for planning and implementing health promotion as well as prevention programmes in the natural setting of the school. Intervention to manage stress include relaxation technique like progressive muscle relaxation, guided imagery, biofeedback, self hypnosis, deep breathing exercises etc. Jacobson's Progressive Muscle Relaxation Technique is helpful for students whose stress is strongly associated with muscle tension and it also helps overcome stress and improve self-esteem.

Hence the investigators conducted the study to find the effectiveness of Jacobson's Progressive Muscle Relaxation Technique on academic stress among adolescents of selected schools at Mangalore.

Materials & Methods

Evaluative research approach with a quasi experimental, non randomized control group design was considered for the study. The study was conducted

among 100 adolescents studying in 10th standard from selected schools at Mangalore. The samples were selected by purposive sampling technique and were assigned equally in experimental and control group. After the approval from the institutional ethical committee permission was obtained from the concerned authorities, the data was collected using self administered academic stress rating scale. The tool consisted of **Section A**: which included the baseline proforma, **Section B**: Self-administered academic stress rating scale with 30 items which was subdivided into under 3 domains: college related factors (90%), faculty related factors (30%) and parents related factors (30%).Academic stress rating scale were categorised as: 0-50 Mild academic stress (33.3%), 51-100 Moderate academic stress (33.3%), and 101-150 severe academic stress (33.3% , Not under study)

Results & Discussion

The results revealed following findings:

As per the table 1, the baseline data reveals that majority of the adolescents in both experimental (94%) and control group (80%) were in the age group of 15 yrs. Gender-wise distribution of adolescents was almost equal. Males represented 52% in the experimental group and 54% in the control group whereas 48% of them in the experimental group and 46% in the control group were females. Majority of adolescents in experimental (44%) and control group (42%) had one sibling. Majority of the adolescents in the experimental (42%) and control group (32%) had monthly income of Rs. 15,001-20,000. Highest percentage of subjects in the experimental (96%) and control group (74%) belonged to nuclear families, while 4% in the experimental group and 18% in the control group lived in joint families.

Table 1: Frequency and percentage distribution of baseline variables as per age, gender, birth order, number of siblings, monthly family income, and type of family

Sl. No.	Variables	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1.	Age in years				
a.	14 years	47	94.00	40	80.00
b.	15 years	3	6.00	10	20.00
2.	Gender				
a.	Male	26	52.00	27	54.00
b.	Female	24	48.00	23	46.00
3.	Birth order				
a.	First	20	40.00	29	58.00
b.	Second	24	48.00	15	30.00
c.	Third	6	12.00	6	12.00
4.	No of siblings				
a.	0	6	12.00	12	24.00
b.	1	22	44.00	21	42.00
c.	2	13	26.00	15	30.00
d.	> 2	9	18.00	2	4.00
5.	Monthly family income (Rs.)				
a.	< 10,000	2	4.00	16	32.00
b.	10,001-15,000	11	22.00	8	16.00
c.	15,001-20,000	21	42.00	16	32.00
d.	> 20,000	16	32.00	10	20.00
6.	Type of family				
a.	Nuclear	48	96.00	37	74.00
b.	Joint	2	4.00	9	18.00
c.	Extended	0	0.00	4	8.00

N=50+50

As per table 2, the data depicts that highest percentage of parents of adolescents in the experimental (56%) and control group 70%) were private employees. All subjects in the experimental (96%) and control group (98%) stayed at home. Adolescents in the experimental and control group (100%) had no exposure to Jacobson's Progressive Muscle Relaxation. Adolescents in the experimental (100%) and control group (100%) were not practising relaxation technique. That equal percentage of adolescents (38%) in the experimental group and control group had obtained the grades of C+ to C and A+ to A respectively.

Table 2: Frequency and percentage distribution of baseline variables as per occupation of parents, place of residence, previous exposure to JPMRT, practice of any relaxation technique, and grades obtained in the last sessional

Sl. No.	Variables	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1.	Occupation of parent				
a.	Unemployed	0	0.00	3	6.00
b.	Government employee	6	12.00	9	18.00
c.	Private employee	28	56.00	35	70.00
d.	Other	16	32.00	3	6.00
2.	Place of residence				
a.	Hostel	1	2.00	1	2.00
b.	Home	49	98.00	48	96.00
c.	Other	0	0.00	1	2.00
3.	Previous exposure to Jacobson's Progressive Muscle Relaxation				
a.	Yes	0	0	0	0
b.	No	50	100.0	50	100.0
4.	Practice of relaxation technique				
a.	Yes	0	0	0	0
b.	No	50	100.0	50	100.0
5.	Grade obtained in the last sessionals				
a.	A+ to A	17	34.00	19	38.00
b.	B+ to B	14	28.00	17	34.00
c.	C+ to C	19	38.00	11	22.00
d.	D+ to D	0	0.00	3	6.00

N=50+50

Table 3: Frequency and percentage distribution of pre-test academic stress of adolescents

Grading	Level of academic stress	Percentage	Experimental		Control	
			f	%	f	%
Moderate	51-100	33.3	50	100	50	100

N=50+50
Maximum score: 150

The data presented in Table 3 shows that in the pre-test all the adolescents in the experimental and control group had moderate level of academic stress and none were found with mild level of academic stress.

Table 4: Frequency and percentage distribution of post-test academic stress scores of adolescents

Grading	Level of academic stress	Percentage	Experimental		Control	
			f	%	f	%
Mild	0-50	33.3	44	88	0	0
Moderate	51-100	33.3	6	12	50	100

N=50+50
Maximum score: 150

The data presented in Table 4 depicts that in the post-test most of the adolescents in the experimental (88%) had mild level of academic stress whereas in the control group (100%) had moderate level of academic stress.

Table 5: Range, mean, mean percentage scores, SD of pre-test and post-test academic stress level

Area	Experimental group				Control group			
	Range	Mean	SD	Mean%	Range	Mean	SD	Mean%
Pre-test	75-100	90.44	6.603	60.29	76-100	90.30	7.226	60.2
Post-test	32-57	40.20	6.547	26.8	75-100	88.94	6.793	59.29

N=50+50

Data presented in Table 5 shows that in the experimental group the post-test stress level score ranged between 32-57, which is lower than their pre-test stress level score (75-100) whereas in the control group the post-test stress level score ranged between 75-100, which is almost equal to their pre-test stress level score (76-100).

Table 6: Area-wise mean percentage of pre-test and post-test academic stress score of adolescents in experimental group

Area	Max. score	Pre-test		Post-test	
		Mean	Mean %	Mean	Mean %
College related factors	90	56.18	62.42	38.48	42.76
Faculty related factors	30	16.2	54	10.16	33.87
Parents related factors	30	18.06	60.2	9.76	32.53

N=50+50
Maximum score: 150

Table 7: Area-wise mean percentage of pre-test and post-test academic stress score of adolescents in control group

Area	Max. score	Pre-test		Post-test	
		Mean	Mean %	Mean	Mean %
College related factors	90	55.52	61.68	55.10	61.22
Faculty related factors	30	17.00	56.66	16.64	55.47
Parents related factors	30	17.78	59.26	17.44	58.01

N=50+50
Maximum score: 150

The data in the Table 7 reveals the comparison of area wise academic stress score in control group. In this the mean pre-test academic stress score was higher in college related factors and almost where equal in faculty and parents related factors whereas in the post-test there was no much reduction in any areas.

Table 8: Paired t' test to test the significant difference between the mean pre-test and post-test academic stress score of adolescents among the experimental and control group

	Mean	Mean difference	SD	't' value
Experimental group	40.20	50.24	8.761	40.58**
Control group	88.94	1.360	9.893	.972

N=50+50
Maximum score=150 t (49) = 40.548, $p<0.05$. ** = Highly Significant

Data presented in Table 8 reveals that the computed t value (t_{49}=40.54) was significantly higher than the table value (t_{49}=3.02) at 0.05 level of significance. This clearly indicates that Jacobson's progressive muscle relaxation is highly effective in reducing the level of academic stress among experimental group.

Table 9: Unpaired't' test to test the significant difference between the mean academic stress score of adolescents between two groups

	Mean	Mean difference	SD	't' value
Experimental group	40.20	50.24	8.761	36.53**
Control group	88.94	1.360	9.893	

N=50+50
Maximum score=150 t (98) = 36.53, $p<0.05$. ** = Highly Significant

Data presented in table 9 reveals that computed't' value (t_{98}=36.53) was higher than tabled value (t_{98}=1.99) at 0.05 level of significance. Hence the null hypothesis is rejected and research hypothesis is accepted. It can be inferred that the Jacobson's Progressive Muscle Relaxation was effective in reducing academic stress of adolescents.

Table 10: Chi-square test showing the association between the mean pre-test stress score and selected baseline variables of adolescents in Group I and Group II

Demographic variable		Experimental			Control		
		< median	≥ median	χ^2 value	< median	≥ median	χ^2 value
1	Age in years						
a.	15	24	23	.355	20	20	.000
b.	16	1	2		5	5	
2	Gender						
a.	Male	13	13	.000	12	15	.725
b.	Female	12	12		13	10	
3.	Birth order						
a.	First	11	9	1.533	15	14	.101
b.	Second	10	14		7	8	
c.	Third	4	2		3	3	
d.	Other						
4.	Number of siblings						
a.	0	3	3	.985	4	8	1.829
b.	1	10	12		12	9	
c.	2	8	5		8	7	
d.	> 2	4	5		1	1	
5.	Monthly family income						
a.	<10,000	0	2	3.497	8	8	3.000
b.	10,001-15,000	4	7		2	6	
c.	15,001-20,000	12	9		10	6	
d.	>20,000	9	7		5	5	
6.	Type of family						
a.	Nuclear	25	23	.490*	19	18	.138
b.	Joint	0	2		4	5	
c.	Extended				2	2	
7.	Occupation of parent						
a.	Unemployed	0	0	.917	2	1	4.362
b.	Government employee	4	2		3	6	
c.	Private employee	14	14		17	18	
d.	Any other	7	9		3	0	
8.	Place of residence						
a.	Hostel	1	0	1.000 *	0	1	2.000
b.	Home	24	25		24	24	
c.	Other				1	0	
9.	Grades obtained in last sessional						
a.	A+-A	7	10	1.725	10	9	.536
b.	B+-B	9	5		8	9	
c.	C+-C	9	10		5	6	
d.	D+-D				2	1	

N=50+50

* Fisher Exact test

The data presented in Table 10 shows the association between mean pre-test stress score and selected variables showed that there was no significant association between the pre-test stress score and selected baseline variables at 0.05 level of significance.

Conclusion

Since students are in competitive busy world and have to struggle with lot of stress in daily life. This intervention may be used to reduce stress among the students. Teaching staff can be trained to impart Jacobson's Progressive Muscle Relaxation Technique to the students.

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