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RESEARCH ARTICLE

A STUDY TO EVALUATE THE EFFECTIVENESS OF MULTI COMPONENT INTERVENTION PROGRAM (MCIP) ON THE LEVEL OF ANXIETY AMONG ADOLESCENTS

¹Dr. Pawan k Sharma and ²Dr. Pity Koul

¹Sharma Associate Professor, Deptt of Psychiatric Nursing, PGIMER-Dr. RML Hospital, New Delhi

²Professor, School of Health Sciences, IGNOU, New Delhi

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*Corresponding author:

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INTRODUCTION

"There is no such thing as pure pleasure; some anxiety always goes with it"

(Anonymous)

Asia is the home of more than half of all adolescents globally. In absolute numbers, South Asia is having more adolescents (around 340 million) than any other region, followed by East Asia and the Pacific with around 277 million of adolescents (UNICEF 2016). Child and adolescent psychiatric disorders are not uncommon in the community with prevalence rate of

6.46% and in schools they are much higher i.e. up to 23.33%. The reporting systems of psychiatric disorders in children are found to be inadequate. (Sivagurunathan *et al.*, 2015). Unfortunately the modern youth is in perpetual state of anxiety, unhappiness and is withdrawn because he is not able to achieve a well-balanced placement in his present circumstances and situations. (Joshi D, Dutta I 2014). Jacobson asserted that relaxation of muscles would lead to relaxation of the mind, "because an emotional state fails to exist in the presence of complete relaxation of the peripheral parts involved. Briefly, in PMR clients sit in a comfortable chair and the therapist instructs them in contracting and releasing different muscle groups. (Jacobson 1987).

ABSTRACT

Background: Adolescents are the future of the nation, forming a major demographic and economic force. One of every six person is an adolescent. There are about 1.2 billion adolescents with the age group of 10-19 years, which comprises sixteen percent of world's population. Studies have shown that relaxation training has tremendous effect in decreasing anxiety. In present study a combination of Deep Breathing, Progressive Muscle Relaxation and Laughter Therapy was included.

Objectives

- To assess and analyze the level of anxiety among adolescents,
- To prepare a multi component intervention programme for adolescents with anxiety,
- To evaluate the effect of multi component intervention programme (MCIP) on anxiety level of Adolescents.

Methods: Descriptive approach with Quasi experimental Pre-test Post-test Control Group design was used to conduct the study. The study was conducted in two phases. In phase I total enumeration sampling was used to assess the prevalence and level of anxiety among 1447 study subjects using standardized tool i.e. State Trait Anxiety Inventory (STAI). In phase II, study subjects who were having high to extremely high state anxiety scores were selected and Multi Component Intervention Programme (MCIP) was implemented once in a day for 15 days. Anxiety in study subjects was reassessed with State Trait Anxiety Inventory (STAI) after 15 days. **Results:** Finding revealed that in phase I majority 51.14% study subjects had average state anxiety followed by 20.73% with high state anxiety as measured by STAI. In phase II MCIP was implemented and findings revealed that MCIP was effective in reducing the anxiety of adolescents. Association of anxiety with Gender, Family income and Class was found to be statistically significant among study subjects. **Conclusion:** The present study confirms the prevalence of anxiety among adolescents and highlights the need for immediate attention towards strategies in reducing the magnitude of the problem. Teachers can play a vital role in early identification of anxious adolescents and helping them in promotion of their psychological functioning thereby improving their self confidence, social integrity and social interaction.

Bernstein and Borkovec modified Jacobson's original method in that they do not promote distinguishing between different degrees of tension, but rather instruct patients to either tense or relax a muscle group completely. Many ancient philosophers, such as Aristotle and Plato, and later, Descartes, Hobbes, Locke, Kant and Darwin, as well as modern philosophers such as Bergson, Jankelevich and Alvin Toffler, have considered humour or laughter to be a central phenomenon in the lives of people and society. Studies indicate that there is growing application of humour and laughter interventions with child and adult medical patients, as well as its use in psychotherapy frameworks (Marc, 2011). In addition, relaxation results in an increased useful output, flourishing the internal talents, and an increase in ability of thinking and innovation through empowerment of psychological and mental power and increase of self-confidence. Therefore, practice of Progressive muscle relaxation seems to be essential for students. (Maryam, 2014). Laughter therapy can also be used to create happiness and satisfaction in life among elderly (Deshpande, 2014). Laughter is universally well tolerated and it has very limited side effects. Laughter therapy relaxes the muscles and improves breathing. It raises the pain threshold, increases tolerance and improves psychological well-being. It also increases friendliness and collaboration and facilitates group identity, solidarity and cohesiveness. (Melike, 2015).

Aim of the Study: The major aim of the intervention was to reduce Anxiety among adolescents and to assess the effectiveness of Multi component Intervention Program (MCIP), among adolescents in selected school at Ludhiana.

MATERIALS AND METHODS

The study has been conducted in Bahadur Chand Munjal Arya Model Senior Secondary School, Model town, Ludhiana, Punjab. A quantitative research approach has been adopted to accomplish the objectives of the present study and was conducted in two phases Phase-I and Phase II. In phase-I Prevalence of anxiety was assessed using Descriptive Exploratory Research Design and In phase II effect of MCIP was assessed using Non Equivalent Pre test-Post test Control Group Design (Quasi Experimental Design) to evaluate the effectiveness of Multi Component Intervention Program (MCIP) on the level of Anxiety among adolescents.

Hypothesis for this study were

H₁: There is a significant difference in the level of anxiety among male and female adolescents as measured by STAI at $p < 0.05$ level.

H₀₁: There is no significant difference in the level of anxiety among male and female adolescents as measured by STAI at $p < 0.05$ level.

H₂: There is a significant difference in pre intervention and post intervention anxiety scores of adolescents as measured by STAI at $p < 0.05$ level.

H₀₂: There is no significant difference in pre intervention and post intervention anxiety scores of adolescents as measured by STAI at $p < 0.05$ level.

Sample and Sampling Technique: The present study is carried out in two phases.

In Phase I of the study, sample consisted of 1447 adolescents studying in 9th, 10th, 11th, and 12th class for assessment of anxiety. Total enumeration sampling was used to select the sample for assessment of prevalence of anxiety. In phase II of the study, sample consisted of 344 adolescents selected by Purposive sampling technique who were having high to extremely high level of anxiety out of all adolescents assigned in phase I.

Sample Size Calculation: Sample size was calculated using power analysis. The required sample size was 323, though the researcher has enrolled all the subjects having high to extremely high level of anxiety.

Tool: STAI (State Trait Anxiety Inventory) was used to assess prevalence of anxiety among adolescents.

Reliability of the tool: STAI is a standardized tool. The Test-retest reliability for State test was found to be 0.88 whereas for Trait test it was 0.86 with 0.87 for total test. So the tool was found to be highly reliable.

Description of Multi component Intervention Programme (MCIP): MCIP was implemented to assess its impact on anxiety. It consisted of following three components.

Deep Breathing is the practice of voluntary breath control, consisting of conscious inhalation, retention and exhalation. Deep Breathing or Belly Breathing consists of three phases: inhalation, retention and exhalation.

Progressive Muscle Relaxation: Progressive relaxation training involves the systematic tensing and releasing of various gross muscle groups throughout the body and learning to attend to the feelings of tension and of relaxation that occur as a consequence of those procedures. The ultimate clinical goal is to increase the client's ability to identify even mild tension and to efficiently eliminate that tension.

Laughter Therapy: Laughter universally provides observable physiological advantages and has social functions (Pearce J 2004)⁹, (Morreall J 2009)¹⁰. Laughter therapy is a therapeutic exercise composed of unconditional laughing exercises with yoga breathing techniques. Laughter therapy involves adding laughter exercises to yoga. During a session, laughter is feigned through physical exercises, by providing contact with other members of the group.

Data Collection Procedure: After taking formal permission from head of the institution, informed written consent was obtained from parents and selected study subjects STAI was administered to assess the anxiety level. Study subjects who were having extremely high to high anxiety were selected for MCIP. Out of the 1447 adolescents, 344 were found to be having high to extremely high Anxiety scores on STAI. All these adolescents were enrolled for the study. Thereafter these 344 study subjects were assigned to two groups randomly. They were divided by systematic random sampling in two groups- Non – intervention group and Intervention group. To first group (Non–intervention group) no intervention was given but standard treatment was given after data collection. They were referred to the school counsellor. To the Second group (Intervention Group) MCIP was implemented every day for fifteen days from day 1st to 15th.

On 15th day, after MCIP implementation, the anxiety level of study subjects of both groups was re-assessed using Tool I.

Ethical Consideration: Formal written permission was taken from the Principal of the school to conduct the study on adolescents to assess anxiety and to assess the effect of MCIP on anxiety among them. Informed written consent was also taken from the selected adolescents and their parents for participation in the study.

RESULTS

Section I deals with distribution of sample characteristics among study subjects. (Intervention and non-intervention group).

Section 2: It deals with prevalence of anxiety and level of anxiety among study subjects.

Section 3: This section comprises the effectiveness of MCIP on study subjects and includes comparisons of pre and post intervention anxiety among study subjects.

Section I

This section deals with distribution of sample characteristics among Intervention and non-intervention group. Table 1 deals with Sample Characteristic as per Intervention and Non-intervention Group. The findings revealed that in Intervention Group, maximum 36.05% of study subjects were in age group of 17 years. In Non-intervention group, majority 34.88% of study subjects were in age group of 15 years. With respect to Class, maximum 29.65% of study subjects in Intervention Group were in 12th class. As per Gender 51.74% of study subjects in Intervention Group were male and remaining 48.26% were female. In Non-Intervention group 50.58% of study subjects were male and remaining 49.42% were female. With regard to Academic Performance in previous class, majority 32.56% of study subjects were in Intervention Group scored 81% and above in their previous class and only 11.05% of study subjects have scored below 60% in their previous class. In Non-Intervention Group maximum 48.84% of study subjects scored 81% and above. According to Family income per month, maximum 46.51% of study subjects in Intervention Group had family income of ₹30,001-₹60,000 whereas in Non-Intervention Group as many as 50% of study subjects had family income of above ₹60,000. With respect to Type of family, in both the group maximum numbers of study subjects were residing in nuclear family ie in Intervention Group 69.81% and in non intervention group 70.93%.

According to Father's occupation, most of the of study subject's father 47.67% in Intervention Group had business. As per Mother's occupation, mothers of majority of study subjects in Intervention Group 51.74% were home maker. The findings revealed that both the groups were comparable with respect to age, class, gender, academic performance (Percentage in previous class), family income/ month, type of family, father's occupation and mother's occupation.

Section II

Section II deals with assessment of prevalence and level of anxiety among study subjects. Table 2 depicts the Prevalence and Level of Anxiety among Study subjects.

Findings revealed that majority 51.14% of study subjects (mean 49.6) had average state anxiety (rank 1st) followed by 20.73% with rank 2nd (mean 55.3) high state anxiety, 19.62% with rank 3rd (mean 38.6) low state anxiety and 5.45% with rank 4th (mean 18.2) extremely low state anxiety. Least number of study subjects 3.04% with rank 5th had extremely high state anxiety (mean 62.6). Hence it was inferred that anxiety was prevalent among study subjects.

Section III

This section comprises the results of MCIP on study subjects and includes comparisons of pre and post intervention anxiety among study subjects. Table 3 depicts the Pretest and Post-test State anxiety scores in Intervention and Non-intervention group as per level of Anxiety. Findings revealed that Intervention group majority of the study subjects had high anxiety 84.30% with mean 55.6 ± 2.54 followed by extremely high anxiety 15.69% with mean 63.9 ± 4.22 before intervention. Post intervention scores showed that majority of the study subjects had average anxiety 62.21% with mean 48.6 ± 3.06 followed by high anxiety 20.93% with mean 53.3 ± 3.40 and only 10.47% of study subjects had extremely high anxiety with mean 60.7 ± 3.40 . In intervention group, the difference in pretest and post test scores was found to be statistically significant at $p < 0.001$. Hence it can be concluded that Multi Component Intervention Plan (MCIP) was effective in decreasing state anxiety of study subjects. In non intervention group also, the difference in pretest and post test scores was found to be statistically significant at $p < 0.05$. It could have been due to extraneous variables which could have affected the level of trait anxiety among adolescents. So later in the analysis, regression analysis was done to limit the effect of extraneous variables. Table 4 depicts the Comparison of Pre and Post Intervention State Anxiety scores among Study subjects in Intervention and Non-Intervention Group. Findings revealed that in intervention group pre intervention mean was 56.9 ± 4.1 whereas post intervention unadjusted and adjusted mean were 50.1 ± 5.9 and 49.5 ± 0.245 respectively. In Non-intervention group pre intervention mean was 55.8 ± 2.67 whereas post intervention unadjusted and adjusted mean were 54.4 ± 2.8 and 54.9 ± 0.245 respectively. There was significant difference in pre and post intervention among both the groups, so regression analysis was done and covariates were adjusted. After ANCOVA analysis, a significant difference between post interventions of both the groups was found and hence it can be inferred that intervention was effective in decreasing the anxiety of the study subjects in intervention group.

DISCUSSION

In the present study it was found that MCIP was effective in decreasing the anxiety of study subjects significantly in intervention group. In the present study researcher used a combination of deep breathing, Progressive muscle relaxation and Laughter as a combined program. Similar findings are reported by various studies however the researcher was not able to find the same interventions used in any study. Maryam (2014) reported that that practicing PMR is effective in reducing the test (examination) anxiety among nursing students. Rasid M Z, Parish S T (1998)¹¹ also reported that providing progressive muscle relaxation training to students is significantly associated with decreasing test(examination) anxiety among them.

Table 1. Sample Characteristic

N=344

Socio-demographic characteristics	Intervention group(n ₁ =172) f (%)	Non-Intervention Group (n ₂ =172) f (%)	p- value
Age (in years)			
14	45(26.16)	15(8.72)	0.10
15	30(17.44)	60(34.88)	
16	35(20.35)	49 (28.49)	
17 and above	62 (36.05)	48(27.91)	
Class			
9 th	44(25.58)	18(10.47)	0.10
10 th	30(17.44)	57(33.14)	
11 th	47(27.33)	53(30.81)	
12 th	51 (29.65)	44 (25.58)	
Gender			
Male	89 (51.74)	87 (50.58)	0.829
Female	83 (48.26)	85(49.42)	
Academic Performance(Percentage in previous class)			
Below 60	19(11.05)	00	0.10
61 – 70	43(25.00)	22(12.79)	
71 – 80	54(31.40)	66(38.37)	
81 and above	56(32.56)	84(48.84)	
Family income/ month			
< ₹30,000	28(16.28)	18(10.47)	0.071
₹30,001-₹60,000	80(46.51)	68(39.53)	
> ₹60,000	64(37.21)	86(50.00)	
Type of family			
Nuclear	119(69.18)	122(70.93)	0.52
Joint	53(30.81)	50(29.07)	
Father's occupation			
Government job	45(26.16)	41(23.84)	0.259
Private job	44(25.58)	59(34.30)	
Business	82(47.67)	72(41.86)	
Others	01(00.58)	00	
Mother's occupation			
Home maker	89(51.74)	106(61.63)	0.085
Government job	30(17.44)	23(13.37)	
Private job	26(15.12)	30(17.44)	
Business	27(15.70)	13(7.56)	

Table 2. Prevalence and Level of State Anxiety

N=1447

Level of Anxiety	State Anxiety				Trait Anxiety			
	n	n%	Mean	Rank	n	n%	Mean	Rank
Extremely High	44	3.04	62.6	5	59	4.07	61.9	5
High	300	20.73	55.3	2	85	5.87	55.9	4
Average	740	51.14	49.6	1	394	27.22	46.3	2
Low	284	19.62	38.6	3	818	56.53	34.6	1
Extremely Low	79	5.45	18.2	4	91	6.28	17.1	3

Table 3. Pre-test and Post-Test State Anxiety Scores in Intervention and Non-Intervention Group

N= 344

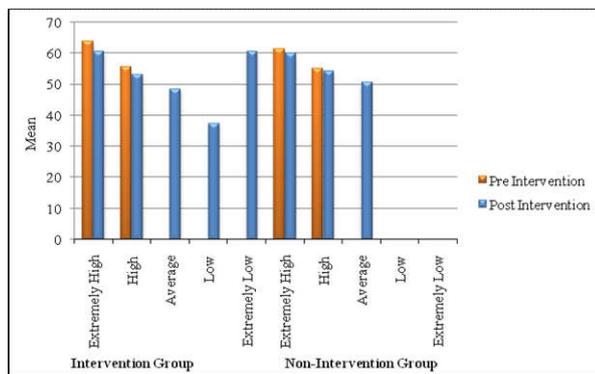
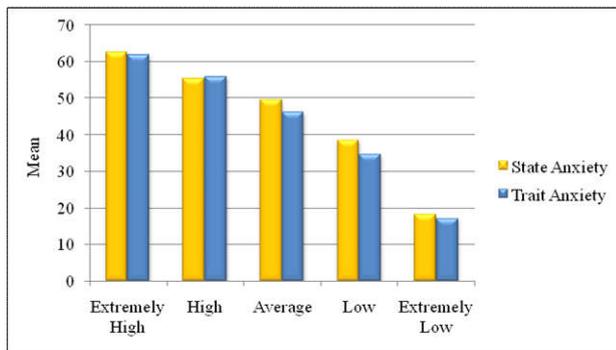
Level of State Anxiety	Pre Intervention n (n%)	Mean	Post Intervention n (n%)	Mean	Within the Group p-value
Intervention Group n = 172					
Extremely High	27 (15.69)	63.9+4.22	18 (10.47)	60.7+ 3.40	0.001
High	145 (84.30)	55.6+2.54	36 (20.93)	53.3+ 3.40	
Average	00	--	107 (62.21)	48.6+ 3.06	
Low	00	--	11 (6.40)	37.6+ 5.20	
Extremely Low	00	--	00	--	
Non-Intervention Group n = 172					
Extremely High	17 (9.88)	61.5+ 1.77	14 (8.14)	60.2+ 1.62	0.001
High	155(90.12)	55.2+ 1.91	138 (80.23)	54.3+ 1.98	
Average	00	--	20 (11.63)	50.6 +0.94	
Low	00	--	00	--	
Extremely Low	00	--	00	--	
Between the Group p-value	0.106		0.001		

Table 4. Comparison of Pre and Post Intervention State Anxiety Scores

N=344

Group	n	Pre and Post Intervention State Anxiety Score			
		Pre intervention		Post intervention	
		Mean+ SD	Unadjusted Mean (SD)	Adjusted Mean + SE	p-value*
Intervention group	172	56.9+4.1	50.1 ±5.9	49.5±0.245	0.001
Non-Intervention Group	172	55.8+2.67	54.4± 2.8	54.9 ±0.245	0.001
Between the group p-value#		0.004	0.001	.001@	

@ANCOVA applied adjusting baseline Pre Age, Family Income, Academic performance (Percentage in Previous Class) and Class



Similarly in consistent with present study findings Sellakumar (2015) after conducting a research on adolescents studying in higher secondary school concluded that here is a significant decrease in the level of anxiety after slow deep breathing exercise. Similarly Ranjita *et al.* (2014) further reported that Modified Jacobson Progressive Muscle Relaxation Therapy (JPMRT) is effective in reducing anxiety. Poorgholami *et al.* (2014) also conducted a study to assess the effect of multimodal therapy (relaxation education, regular desensitization, and cognitive behavioural interventions) on anxiety among adolescents. The findings revealed that multimodal therapy had significant effect on decreasing the test anxiety among students as used by the researcher in present study. Similar findings are reported by Kuru *et al.* (2017) that Laughter therapy improved the quality of life of nursing home residents. Chang *et al.* (2013) reported that Laughing Qigong Program (LQP) is helpful in decreasing stress of adolescents and it is a non-pharmacological and cost-effective means to help adolescents mitigate stresses in their everyday life. Consistent to this Melike Demir, (2015) reported that not only healthy adolescents but patient suffering from some diseases like cancer can also be benefited by laughter in decreasing their anxiety. Choi W, Park J, Jung H, Yim J, Lee S(2016)¹⁷ explored that effects of laughter Therapy Interventions for Smartphone Addicts and reported that stress and anxiety is significantly reduced by the use of laughter therapy intervention. Weaver L. and Darragh, (2016) concluded after their systematic review that the effect of deep breathing in decreasing anxiety has been examined across many studies and spans a wide variety of physical, emotional, and behavioural conditions. Overall, the results from these studies were positive that deep breathing is effective in reducing anxiety and anxiety-related symptoms or behavior (e.g. nervousness, worry, fatigue, sleep disturbance). In consistent with present study findings though not the exact same intervention Shazia Ali, (2010) conducted a case study on effectiveness of relaxation therapy in the reduction of anxiety related symptoms. The researcher has combined deep breath, instant vacation, ideal relaxation and visualization.

The findings revealed drastic decrease in level of anxiety after twelve sessions of relaxation therapy as measured by IPAT Anxiety and IPAT Depression scale. Gholami *et al.* (2013) conducted a study to assess the impact of two methods of music therapy and relaxation on the aggression in high school students. The relaxation therapy included combination of music, PMR, Breathing exercise and imagery. The findings of the study revealed that combination of PMR, Deep breathing with music was effective in aggression of male students. The present study confirms that state anxiety is prevalent among adolescents. Multi Component Intervention Program (MCIP) was effective in reducing the anxiety among adolescents. Class, Family Income and Gender were found to be having statistically significant impact on level of anxiety among adolescents. The practice of these interventions does not require any equipment or machine or extra expenses except the willingness of the subjects to learn and practice. These strategies will help in reducing the magnitude of the problem. With respect to contributory factors present study revealed that unfulfilment of basic needs, frustration in life, physical abuse, privacy issues, too much competitive activities and parental pressure for good academic performance are most reported factors leading to anxiety among them.

Conclusion

The present study confirms that state anxiety is prevalent among adolescents. Multi Component Intervention Program (MCIP) was effective in reducing the anxiety among adolescents. Class, Family Income and Gender were found to be having statistically significant impact on level of anxiety among adolescents. The practice of these interventions does not require any equipment or machine or extra expenses except the willingness of the subjects to learn and practice. These strategies will help in reducing the magnitude of the problem. With respect to contributory factors present study revealed that unfulfilment of basic needs, frustration in life, physical abuse, privacy issues, too much competitive activities and parental pressure for good academic performance are most reported factors leading to anxiety among them.

Conflict of Interest: No conflict of interest is involved in above research

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