CHAPTER 4

METHODOLOGY

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4.4 SUMMARY
4.1 INTRODUCTION

The present chapter will discuss the operational definitions of the variables included in the study, hypotheses derived, sample, tools, the procedure, and statistical analysis used in the present study.

4.2 VARIABLES, DEFINITIONS AND HYPOTHESES

This section deals with the definitions of the variables under study and they hypotheses formulated to be tested.

4.2.1 Variables and Definitions

The independent variables in the present study were music intervention and dance intervention, which are two distinct forms of expressive therapies which use music and dance respectively as a media for therapy.

Music intervention included the use of music therapy techniques, like singing, toning, listening, imagery, playing instruments, lyric writing and improvisation. Music Therapy is the use of music and/or its musical elements (sound, rhythm, melody and harmony) in a process designed to facilitate and promote communication, relationships, learning, mobilization, expression, organization and other relevant therapeutic objectives in order to meet
physical, emotional, mental, social and cognitive needs (World Federation of Music Therapists, 1996).

Dance intervention included the use of dance therapy techniques like, body movement, movement with props, imagery and movement, space awareness and memory movements. Dance therapy is a type of psychotherapy that uses movement to further the social, cognitive, emotional, and physical development of the individual (American Dance Therapy Association, 2007). A detailed description of both the interventions has been given in chapter II.

The dependent variable was the frequency or the occurrence of ADHD behaviors as measured by the ADHD Rating Scale IV by George DuPaul et al. (1998), that measures ADHD behaviors as defined in DSM-IV, which necessitates symptoms of inattention and hyperactivity-impulsivity that have persisted for at least six months to a degree that is maladaptive and inconsistent with the developmental level. Some hyperactive-impulsive or inattentive symptoms that cause impairment must be observed before the age of 7 years. Some impairment from the symptoms is present in two or more settings. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning. And lastly, the symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder and are not better accounted for by another mental disorder (e.g. mood disorder, anxiety disorder, dissociative disorder or a personality disorder) (APA, 2000).
4.2.2 Hypotheses

On the basis of the objectives, the following hypotheses were formulated:

1. Music intervention significantly reduces ADHD scores derived from teachers’ as well as parents’ ratings of the study group weighed against that of the comparison group.

Hence:

i. Inattention Scores – Teacher version of the study group are lower after Music intervention as weighed against that of the comparison group.

ii. Hyperactivity-Impulsivity Scores - Teacher version of the study group are lower after Music intervention as weighed against that of the comparison group.

iii. Combined Scores – Teacher version of the study group are lower after Music intervention as weighed against that of the comparison group.

iv. Inattention Scores – Parent version of the study group are lower after Music intervention as weighed against that of the comparison group.

v. Hyperactivity-Impulsivity Scores – Parent version of the study group are lower after Music intervention as weighed against that of the comparison group.

vi. Combined Scores – Parent version of the study group are lower after Music intervention as weighed against that of the comparison group.
2. Dance intervention significantly reduces ADHD scores derived from teachers’ as well as parents’ ratings of the study group weighed against that of the comparison group.

Hence:

i. Inattention Scores – Teacher version of the study group are lower after Dance intervention as weighed against the comparison group.

ii. Hyperactivity-Impulsivity Scores - Teacher version of the study group are lower after Dance intervention as weighed against the comparison group.

iii. Combined Scores – Teacher version of the study group are lower after Dance intervention as weighed against the comparison group.

iv. Inattention Scores – Parent version of the study group are lower after Dance intervention as weighed against the comparison group.

v. Hyperactivity-Impulsivity Scores – Parent version of the study group are lower after Dance intervention as weighed against the comparison group.

vi. Combined Scores – Parent version of the study group are lower after Dance intervention as weighed against the comparison group.

3. There is no significant difference between the effects of music and of dance interventions.

Hence:
i. Inattention Scores – Teacher version are not different for the Dance and Music Intervention groups.

ii. Hyperactivity-Impulsivity Scores – Teacher version are not different for the Dance and Music Intervention groups.

iii. Combined Scores – Teacher version are not different for the Dance and Music Intervention groups.

iv. Inattention Scores – Parent version are not different for the Dance and Music Intervention groups.

v. Hyperactivity-Impulsivity Scores – Parent version are not different for the Dance and Music Intervention groups.

vi. Combined Scores – Parent version are not different for the Dance and Music Intervention groups.

4. There is no significant difference between the pre-intervention and post-intervention ratings of the comparison group.

Hence:

i. Inattention Scores – Teacher version are not different for the pretest and posttest of the comparison group.

ii. Hyperactivity-Impulsivity Scores – Teacher version are not different for the pretest and posttest of the comparison group.

iii. Combined Scores – Teacher version are not different for the pretest and posttest of the comparison group.
iv. Inattention Scores – Parent version are not different for the pretest and posttest of the comparison group.

v. Hyperactivity-Impulsivity Scores – Parent version are not different for the pretest and posttest of the comparison group.

vi. Combined Scores – Parent version are not different for the pretest and posttest of the comparison group.

4.3 METHOD

This section describes the method used to study the variables and test the hypotheses. Thus, it is a description of the sample selected, the tools used and the procedure employed.

4.3.1 Sample

The sample for the study consisted of 90 boys from Pune city who were identified as having ADHD symptoms based on the ADHD Rating Scale-IV by DuPaul et al. (1998). These boys were between the ages of 10 and 12 years, were predominantly from the middle class, who lived with their parents. These 90 boys were not on any medication before and during the period of this study. The parents of these children were educated and had a good command over the English language.
4.3.2 Tools

1. **ADHD Rating Scale- IV, Checklists, Norms and Clinical Interpretation by DuPaul, Power, Anastopoulos and Reid (1998)**

   This scale was used to measure the occurrence of ADHD behaviors. It was used as a pre-test as well as a post-test measure. This inventory uses the DSM-IV criteria, which are based in part on factor analyses of teacher ratings of ADHD symptoms according to the criteria of DSM-III R (APA, 1987, cited in DuPaul, 1998), which reveal two separate factors of Inattention and Hyperactivity- Impulsivity (Bauerneisten et al 1995, DuPaul, 1991, cited in DuPaul, 1998).

   The Scale has a home version and a school version, that both contain 18 items in all. These items are equally divided between the two sub-scales. This helps in removing response bias. The odd numbers form the items on the Inattention sub-scale, the even numbers form the items on the Hyperactivity-Impulsivity subscale. The subscales are empirically derived and conform to the two symptomatic dimensions described in DSM-IV. Parents are asked to determine the symptomatic frequency that best describes the child’s deportment at home over the past six months (in accordance with DSM-IV guidelines), and teachers rate the frequency that best describes the deportment in school over the past six months or since the beginning of the school year, which range from, “never or rarely”, “sometimes”, “often” to “very often”. Three scores of Inattention, Hyperactivity-Impulsivity and a Total score can be obtained. The addition of the odd numbered items provide the raw score for
the Inattention subscale, and the addition of the even numbered items provide the raw score for the Hyperactivity-Impulsivity subscale and the combination of both the subscales provides the total raw score. The total score is the sum of the two sub-scale scores. All the raw scores can be converted into percentile scores by using the appropriate scoring profiles based on the child’s gender and age (DuPaul et al., 1998).

The Home and School Versions of the ADHD Rating Scale-IV both were standardized on different samples of 2000 each. Participants ranged in age from 4 to 20 years.

Coefficient alphas were calculated to determine the internal consistency of both the School and the Home versions of the ADHD Rating Scale IV and its sub-scales.

The following are the alpha coefficients for the School version: Total score = .94, Inattention = .96 and Hyperactivity-Impulsivity = .88. Test-retest reliability data were obtained for teacher ratings four weeks apart. Pearson product-moment correlation coefficients were as follows: Total score = .90, Inattention = .89 and Hyperactivity-Impulsivity = .88.

For the Home version, the alpha coefficients are: Total score = .92, Inattention = .86, and Hyperactivity-Impulsivity = .88. Test-retest reliability was obtained for parents’ ratings four weeks apart. Pearson product-moment correlation coefficients are as follows: Total score = .85, Inattention = .78 and Hyperactivity-Impulsivity = .86 Interrater agreement coefficients between
parents and teachers were in the moderate range, as follows: Total score = .41, Inattention = .45 and Hyperactivity-Impulsivity = .40.

Thus, both versions of the rating scale have high internal consistency and test-retest reliability. The subscale scores correlate significantly with questionnaires like Conner’s Parent and Teacher Rating Scale. Overall the absolute values of Pearson’s product-moment correlation coefficients ranged from .22 to .88, with 28 out of 30 achieving statistical significance. Teacher ratings correlate significantly with classroom behavioral observations and children’s academic performance. For the home version, the absolute values of obtained validity coefficients ranged from .10 to .81 with 15 out of 18 achieving statistical significance. Parent and teacher ratings discriminate between children representing different ADHD subtypes. The combination of both parent and teacher ratings is a better predictor of ADHD (DuPaul, 1998). (Appendix –II and III).


The music intervention sessions were divided into four sub sections:

i. Warm Up
ii. Singing and Discussion / Guided Imagery / Song Improvisation
iii. Cool Down
iv. Closure

A brief explanation of the above is as follows:
i. Warm Up: Vocal exercises and Breathing exercises were taught and practiced at the commencement of every session. The aim was to exercise the vocal cords and relax the body in preparation for the session that followed.

ii. Singing and Discussion: Age and content appropriate songs with a theme were taught to each group of subjects, after which they were encouraged to talk about their thoughts and feelings regarding the song. With the help of the facilitator the subjects were encouraged to explore their latent emotions. Once their feelings were expressed a discussion of the same was carried out. Next the group improvised lyrics, based on the theme of the discussion. With the help of the facilitator the lyrics were then set to a tune.

iii. Guided Imagery and Music: In this technique, while listening to Classical music, the subjects were made to relax and a wide range of imagery was evoked based on the theme for the day. After this the participants were encouraged to share and discuss their feelings, experiences and emotions.

iv. Song Improvisation: Based on the theme of the week the subjects were asked to make up lyrics and a song, they were allowed to work as a group and come up with a song.

v. Cool Down: Vocal and relaxation breathing exercises were taught to the subjects and they were made to perform them at the end of every session.

vi. Closure: This was the last part of each session. With the help of the facilitator a verbal sharing process with the subjects was encouraged. They were urged to share individually their experiences, difficulties, awkward moments, and also provide feedback for the session.
3. Dance Intervention

The Dance Intervention sessions were also divided into four sub sections:

i. Body Preparatory Exercises

ii. Theme Development

iii. Cooling Down

iv. Closure (Kashyap, 2005)

A brief description of the same is as follows:

i. Body Preparatory Exercises: Slow paced movements were taught to the subjects to prepare them physically and mentally for more complex movements that ensued in the latter part of the session. Warm-ups generally included stretching, bending and moving the body in isolation as well as, a whole.

ii. Theme Development: This is the core of the session: Movements were taught to the subjects in accordance with the aim of the session. Using various hand and feet movements, the subjects were taught as well as encouraged to improvise movements. For example, if trust was the theme for that particular session, the subjects were taught the “trust drop” and were also encouraged to express themselves using various body parts.

iii. Cooling Down: This concluded the movement segment of the session. From fast pace hectic movements, slow movements were gradually introduced along with stretching and relaxation techniques so as to cool the body.
iv. Closure: This section of the session was much the same as that of the Music Intervention. With the help of the facilitator individual feedback was invited from the subjects regarding the session, their response to activities, awkward moments, difficulties in performing the movements, relationships with others in the group, what they enjoyed and what they did not like.

4.2.3 Procedure

After procuring permission from the Head or Principals of the various schools included in the study, the ratings of the ADHD Rating Scale-IV were obtained from the class teacher and then the respective parents of the target population. The entire process was explained to the parents after which their consent was obtained.

The three parts of the procedure were as follows:

Pre-test - Interventions - Post-test.

Hence the design could be classified as a Pre-test Post-test three group design.

1. Pre-test

After the class teachers were briefed on ADHD and its symptoms. The class teachers, followed by either parent of the target population were asked to rate their ward on ADHD Rating Scale –IV. Based on the cut offs 90 identified boys were randomly assigned equally to three groups consisting of 30 boys in each group.

The cut-offs were:
ADHD- Inattentive sub scale- Teacher Rating 90\textsuperscript{th} percentile, Parent Rating 80\textsuperscript{th} percentile.
ADHD-Hyperactivity-Impulsivity sub scale- Teacher Rating 80\textsuperscript{th} percentile, Parent Rating 85\textsuperscript{th} percentile.
ADHD Combined type- the Inattention scale was at the 90\textsuperscript{th} percentile for the Teachers rating and at the 80th for the Parents rating. Hyperactivity-Impulsivity was at the 80\textsuperscript{th} percentile for Teachers rating and at the 85\textsuperscript{th} percentile for Parents rating.

2. Interventions

Randomly one of the three groups was given Music Intervention, the other Dance Intervention and the third group was not provided with any intervention at all. Within each group a maximum number of 6 boys were given the intervention together. The intervention lasted for 30 sessions, each session was of 40 minutes duration for both the Music and Dance intervention groups separately.

3. Post-test

After the 30 sessions, the ADHD Rating Scale-IV was once again administered to the same parent and the class teachers of the 90 subjects.

Thus the design of the study was:
X--------30 Sessions Music Intervention--------Y (Study Group I)
Xi--------30 Sessions Dance Intervention--------Y i (Study Group II)
4.2.4 Statistical Analysis

The pre-test measures on each of the parameters were treated as covariates, and ANCOVA was carried out on the post-intervention scores of the subjects in the three groups and the t-test was carried out for the pre and post-intervention scores of the comparison group.

4.3 SUMMARY

In this chapter the design of the study was discussed in detail. Being an intervention study, there were three groups, two of which were the treatment groups and one was the comparison group. This made the study a pre-test post-test three group design. The sample of the study and the tools used were described. Pre-test and post-test scores were obtained on ADHD behaviors and were analyzed using ANCOVA treating the pretest scores as covariates.