REVIEW OF LITERATURE

Generalized anxiety disorder (GAD) is the most common of the anxiety disorders with a prevalence rate of 2.3 to 8.1 per 100 population (Reiger et al, 1990). The nature and treatments of GAD have been the subject of considerable interest and controversy in the recent years. Though medication has been the preferred treatment of choice for many years, tolerance, dependence and side effects are some of the genuine problems (Rickels, 1987, Dubovsky, 1990, Gorman & Papp, 1990), which have prompted the need to find out some nonpharmacological psychotherapeutic treatment alternatives for GAD. Compared with the substantial progress in behaviour therapy, in the treatment of phobic and panic disorders (eg. Barlow, 1988; Clark 1986; Foa and Kozak, 1985) progress in the development of effective treatments for GAD has remained disappointing (Butler, Fennell, Robson & Gelder, 1991). Below a review of the relevant studies carried out in this field will be given. Review will be broadly divided into following sub areas:
(a) Review of the relevant studies on pharmacotherapy of GAD.
(b) Review of the relevant studies on psychological treatments of GAD.

REVIEWS ON PHARMACOTHERAPY

The benzodiazepines (BDZs) belonging to the anxiolytics and hypnotic class of drugs are among the most widely prescribed drugs in the world and the preferred treatment choice for GAD. BDZs were discovered in the 1920s and 1930s, but the use of them as tranquilizers began in the early 1960s, with the first commercial production of Chlordiazepoxide (Librium) and Diazepam (Valium). These drugs were mainly used as anti anxiety drugs (anxiolytics) and secondarily as sedatives (hypnotics) (Lader & Petursson, 1983). Various studies have shown that BDZ has considerable utility in relieving suffering and controlling anxiety (Marks, 1983, Rickels, 1981). The short term superiority of BDZs over placebo is confirmed by a number of experimental studies (Eaves, Jain & Swinson, 1973; Kelly, Brown & Shaffer, 1969; Lader & Wing, 1965; Lader, Bond and James, 1974), although not entirely consistently (Nesselhok, Gallant & Bishop, 1965; Schwartzberg & Vande Castle, 1961). However, many of these studies suffer from methodological flaws (Solomon & Hart, 1978). An important study (Shapiro, Struening, Shapiro & Milcarek, 1983) suggested that diazepam may be superior to placebo in the short term but not over a longer time course. Thus, it is generally agreed that BDZs are
useful, but should be given only for a relatively short time, and that their use should be carefully monitored (Committee on the Review of Medicines, 1980; Lader & Petursson, 1983).

One question is now repeatedly coming up. "Do the benefits of these drug outweigh the harm?" Murray (1981) discussing the interviews with the patients, notes that the patients stated that they wished to stop taking drug but felt that if they did, "they would be unable to cope". They appeared to see drug use as "... a means of sustaining daily life, rather than representing a determinate course of treatment". The same kind of experience was revealed by Andrews (1991) where he saw that the patients developed tolerance, and those who used BDZs to control daytime anxiety were often tempted to use more. The patients value drug effects highly and if the doctor ceases to prescribe, a small proportion will go to another doctor, who will prescribe. Edwards, Cantopher & Olivieri (1984) have argued that long term BDZ use may prevent the patient from finding alternative ways of coping with stress. In answering whether BDZs create dependence, Hayward et al (1989) attempted to study, whether the drug produce tolerance, dosage escalation, a craving and withdrawal symptoms. These are the signs of opiate dependence, and anyone who experiences a number of these features, not necessarily all the features, might be considered to be dependent.

Tolerance to a numbers of the physiological effects of BDZs was demonstrated over 15 days by Higgitt, Fonagy & Lader (1988). This study assessed tolerance using measures of EEG, skin conductance, finger tremor and various performance tests and mood rating scales, as well as measuring physiological effects of a single dose of diazepam following treatment either with BDZs or a placebo. Twelve volunteer subjects were tested for 15 days with each of three BDZs and placebo. Tolerance effects were identified for the BDZ. Lader & Petursson (1983) also found similar results indicating that tolerance at least to some effects of BDZs seems to be well established. The key question, however is whether tolerance develops to the anxiolytic effects of BDZs? There is no clear answer to the question of tolerance to the anxiolytic effects of BDZs in humans. Survey data (Rickels, Case, Downing & Winoker, 1983; Haskell, Cole, Schniebolk & Lieberman, 1986) indicate that even long term users still feel that they are deriving some benefit from their medication. Hollister, Conley, Britt & Shuer (1981) and Parry, Balter, Mellinger, Cisin & Manheimer (1973) also reported that they continued to
derive benefit from long term BDZs use. Such evidence is sometimes sited as proof that BDZs remain effective (Marks, 1985), but it must be viewed with caution as it is based solely on self report. Hayward et al (1989) commented that patients have a strong motivation to believe in the continued efficacy of their BDZs, since to state that they are ineffective may be to admit that they are 'hooked'. Further, some patients may experience withdrawal symptoms which they interpret as anxiety, and when these are relieved by another dose of tranquillisers, they interpret this relief as a sign of their continued need for BDZs. These suggestions derive some support from Shapiro, Struening, Shapiro and Milcarek (1983), who found that after six weeks diazepam was no longer superior to placebo in controlling anxiety. Such results suggest that long term BDZ users may develop a tolerance to their anti anxiety effects, and that, inspite of their beliefs, BDZs are not making them less anxious than they would have been, had they never taken them.

If tolerance does develop to the anxiolytic effects of BDZs, it is not marked by the same kind of behavioural effects as the tolerance induced in habitual users of drugs such as heroin. For example, the majority of BDZs users do not seem to show the same pattern of dosage escalation as those addicted to opiates (Owen & Tyrer, 1983) even when BDZs are made freely available (Winstead, Anderson, Eilers, Blackwell & Zaremba, 1974). But there are also some reports that suggest that dosages may need to be increased to maintain therapeutic effectiveness (Gross, 1977; Haskell, et al 1986). However, reports of craving are rare. The possible mechanism of tolerance to the effects of BDZs are complex. Unlike alcohol and opium derivatives, BDZs show little evidence of pharmacokinetic tolerance, that is tolerance caused by increasingly rapid metabolism of the drug in tolerant subjects. Instead it has been argued that there is a combination of pharmacodynamic tolerance, in which changes in the nervous system itself produce tolerance to drug effects, and various conditioning effects, both classical and operant (Hayward et al 1989). In addition Higgitt et al (1988) discussed the possible role of cognitive factors in mediating tolerance.

Besides the issue of tolerance, there is however a growing concern that long term users of BDZs run the risk of experiencing withdrawal symptoms when they stop the drug use. Various case studies report unpleasant and distressing symptoms when long term users tried to discontinue their medication (Ashton, 1984, Schopf, 1983). One of the major
effects was an increase in anxiety which could be attributed to the return of the
symptoms for which the drug were prescribed. However, other types of withdrawal
symptoms were also reported, and although it could be argued that these, too, were
possible symptoms of stress (Rodrigo & Williams, 1986), it seemed increasingly likely
that a true withdrawal syndrome was being experienced at least by some tranquiliser
users. The most commonly reported withdrawal symptoms are anxiety, insomnia and
nightmares impaired memory and concentration, lack of energy depression, headache,
muscle pain or twitches, metallic taste in mouth, sensitivity to light, sound or touch,
incoordination or vertigo, depersonalization or derealization (Hayward et al 1989). One
study on BDZ withdrawal was undertaken by Tyrer, Rutherford and Huggett (1981), who
found 45% of their patients experienced withdrawal symptoms. Of those taking
lorazepam, 85% experienced such symptoms, as opposed to 38% of those taking
diazepam. Shorter acting BDZs, produce more serious withdrawal symptoms, and
gradual reduction in dosage reduce the number and intensity of withdrawal symptoms
(Ashton, 1984, Higgitt, Lader & Fonagy, 1985; Marks, 1983). In a study of Tyrer et al
(1981) when medication was stopped abruptly 34% of diazepam users dropped out,
while in this study, using gradual withdrawal the figure was 12 percent.

withdrew 27 patients from BDZs using a double blind procedure. All these patients were
referred because they had previously experienced difficulties in stopping their medicine.
All these patients experienced some form of withdrawal reactions, ranging from
increased anxiety and insomnia to somatic complaints and perceptual distortions. The
symptoms peaked three to seven days after stopping the medication and then dropped
off. Anxiety, as assessed by the Hamilton Anxiety Rating, doubled during that period.

In contrast to the studies previously reported, Bowden & Fisher (1980) found few
significant withdrawal symptoms. They changed half of a group of long term diazepam
users to placebo for a two week period under double blind condition. During the second
week the only symptom which was noticed was an increase in anxiety. They argued that
this represented the return of previous anxiety rather than representing
withdrawal symptoms, on the grounds that the anxiety increased over two weeks,
instead of reaching a peak and diminishing.
Several significant points emerge from the various studies. BDZ creates risk of withdrawal symptoms although they are more severe in the quickly metabolized BDZs. Symptoms seem to peak within seven days of stopping medication, then decline gradually. Withdrawal is effective in decreasing the severity of the symptoms. However, one follow-up study of BDZ users who had withdrawn from BDZ use (Golombok, Higgitt, Fonagy, Dodds, Saper & Lader, 1987) found that only 54% of these subjects continued to be free of BDZs for one to five years, suggesting that many patients who withdraw from BDZs may relapse to using them again.

Thus most authorities agree that the most appropriate use for BDZ is short term anxiety management (Committee on the Review of Medicines, 1980; Lader & Petursson, 1983; Tyrer, 1984) and say that four to six months is a crucial time period, after which the risk of dependency increases. However, a number of recent studies have reported increased anxiety after even short time BDZ use. Murphy, Owen & Tyrer (1984) reported a rise in anxiety with the termination of six weeks of diazepam use. Power, Jerrom, Simpson & Mitchell (1985) also noted a rebound in anxiety after six weeks of diazepam use, where they seemed to return approximately to their original level of anxiety. In Fontain, Chovinar & Annables' (1984) study, a rebound anxiety effect after 4 weeks of BDZ use was found. In this study BDZ was withdrawn abruptly and the patients were found to be even more anxious than when treatment began. Dubovsky (1990) reported that discontinuation of BDZ treatment can result in rebound or an intensification of previous symptoms in 25-75% of individuals, in a withdrawal syndrome in 40-100%, and a relapse of original symptoms in 63-81% of individuals.

Finally, an important question, still unanswered, is whether BDZs facilitate or hinder psychological treatment. Though Mathews, Gelder & Johnston (1981) argued that BDZ might facilitate therapy for phobias by promoting more rapid exposure, Edwards et al (1984) suggested that it reduces general motivation for psychological treatment. Three other arguments were put by Hayward et al (1989) to suggest that BDZ hinders psychological treatment: (1) the phenomenon of state-dependent learning (Eich, 1980; Jensen & Poulson, 1982) could compromise the generalization of new responses learned while on BDZs (2) patients might attribute improvements in competence to the drugs rather than to their own abilities or conversely might attribute an increase in anxiety to withdrawal and hence take more BDZs and (3) BDZs make some patients
forget what they have learned in their sessions and thereby preclude any enduring benefit.

The advent of the non-benzodiazepine anxiolytic buspirone has been seen to represent an advancement in the field of pharmacotherapy of GAD. Buspirone has been reviewed by Eison & Temple, 1986, Newton, Merunyez, Alderdice and Napoliello, 1986; Feighner & Boyer, 1989; Rickels 1990. This unlike the BDZs produces very little sedative effects, with hardly any withdrawal syndrome or rebound anxiety following discontinuation. However like the benzodiazepines, discontinuation of it can lead to the return of the original symptoms (Rickels & Schweizer, 1990). Moreover the onset of anxiolytic effects may take several weeks. Some have suggested that buspirone may be useful for long term use, as it lacks dependence potential (e.g. Da Roza Davis & Gelder, 1991), but as experience has been limited to the few years since the drug was introduced, its long term effects are largely unknown (Gorman & Papp, 1990).

There are no studies which evaluate the efficacy of other drug groups with GAD in which the sample studied is diagnostically pure. There is some evidence that tricyclic antidepressants may have more of a general anxiolytic effect than has previously been thought (Hunt & Singh, 1991). For example, Kahn et al (1986) found that imipramine had greater efficacy than placebo or chlordiazepoxide in a sample of primarily anxious subjects (excluding panic-phobia syndromes). This work requires replication in patients with a pure diagnosis of GAD.

**REVIEWS ON PSYCHOLOGICAL TREATMENTS**

Review of literature on pharmacotherapy, as done above, brings out the fact that long term efficacy with pharmacotherapy remains questionable and indeed relapse follows discontinuation in a significant number of cases. Gorman & Papp (1990) argued that drug treatments should not be regarded as treatments of choice for GAD unless we accept that relapse is typical of this disorder, and that the majority of the patients should learn to live with a chronic pattern of intermittent drug use and anxiety. Instead it is argued that therapies that provide new ways of coping, more control over thoughts, feelings and behaviour, and build the confidence in individuals that they are able to deal with problems themselves are the treatment of choice (Barlow, 1988; Butler et al 1987).
Generalized anxiety disorder is a most interesting and challenging problem to be treated by psychological means. This is due partly to its complexity and partly to the fact that theoretical understanding of the condition lags behind that of the other anxiety disorders. Butler and Booth (1991) thus commented that 'attempting to grapple with issues surrounding generalized anxiety disorder can all too easily lead to some feelings associated with the condition itself. The inconsistent research findings, treatment obstacles and diffuse nature of the disorder can bring on very similar feelings of being demoralized, confused and overwhelmed'. There has been less research on this than on any of the other anxiety disorders, and a relatively large proportion of these patients have responded rather poorly to psychological treatments.

Now let us turn our attention to the review of the various psychological treatments of generalized and chronic anxiety, based on various theoretical backgrounds. In a recent review on the 'management of common anxiety disorders', Walley, Beebe & Clark (1994) commented that the useful psychotherapeutic models featuring brief interventions are supportive and cognitive approaches, and behavioural therapies such as biofeedback, in vivo exposure and systematic desensitization.

**Behaviour Therapeutic Techniques on GAD**

A number of behavioural approaches have been applied successfully in the treatment of the anxiety disorders. These behavioural techniques were accurately derived from either classical or operant conditioning procedures, developed in laboratory studies of learning theory (Kazdin, 1978). The most commonly used behavioural techniques to overcome the anxiety of a feared object is exposure. It is the key element of effective behavioural treatment, and systematic desensitization, covert reinforcement, flooding or modeling are simply different ways of ensuring this exposure. But this exposure technique becomes successful only when there is a clearly identifiable external stimulus, as in the case of phobia (Emmelkemp, Kuipers & Eggeraat, 1978). But in GAD, symptoms appear to occur independently of external stimulus. Here the symptoms occur internally and it is the perceptions of these internal responses, that cause the patients to report themselves as distressed (Mathews, 1985). Thus all the exposure techniques like systematic desensitization, modeling or flooding which have so much relevance in treating the phobic disorders, lose their relevance in GAD (Marshall & Segal, 1988). Long back Gelder (1969) also commented that behaviour therapy cannot
be used for anxiety disorders unless situational elicitors of anxiety can be identified. However there is no reason in advance to suppose that internal signs cannot serve as stimuli to which the patient must be exposed during treatment.

**Biofeedback**

The most thoroughly evaluated behavioural strategies for the treatment of GAD have been biofeedback procedures. Biofeedback, a new technique in behaviour therapy was a conceptual revolution (Schwartz, 1973) which emerged form the research finding that autonomic response are amenable to voluntary control by the individual.

Here it is assumed that the basis for the disorder is that one or other psychophysiological system gets over aroused and becomes out of patient's control. The system supposedly at fault then is monitored and the patient is provided feedback of the aberrant arousal and he thereby learns to control responding. A detailed review by Lader (1975,1983) have already uncovered significant differences between anxious patients and calm controls in terms of psychophysiological changes. Recent Indian studies on psychophysiology (Chattopadhyay & Palit, 1982; Chattopadhyay & Biswas, 1983) also have corroborated these findings. Biofeedback therapy in anxiety patients thus aim to teach the patients the techniques of controlling and reducing these overaroused psychophysiological systems.

Biofeedback procedures have been widely used in the treatment of anxiety neurotics. The use of biofeedback as a treatment technique in anxiety disorders, is a logical out come of research evidences, which indicates that operant conditioning and biofeedback techniques can be effectively used to modify autonomic nervous system and other bodily responses typically associated with anxiety states (Miller, 1969).

One of the important studies in this field was conducted by Raskin, Johnson and Rondestvedt (1973). They explored the possibility of managing chronic anxiety with EMG feedback training. Ten clients with mean age of 27 years who had remained symptomatic for over an year, despite treatment with psychotherapy and medication were trained to relax with auditory, frontalis EMG feedback in one hour sessions, five times a week. Five of the clients were on medication (40 - 80 mg per day of chlordiazepoxide ). Eight weeks prior to the relaxation training, the clients were asked by
the referring therapist to rate levels of anxiety, insomnia and tension headache of every week. This practice continued during feedback training and during the eight weeks of home practice. The information obtained during the home practice phase comprised the data for the study.

Home practice was recommended when clients achieved the criterion of 2.5 µv for 25 minutes during a feedback session. During this phase, clients were asked to practice relaxation at home in half-hour daily sessions and maintain charts of mood state following relaxation as well as the duration and success at relaxation. They visited the laboratory twice a week to assess success at relaxation and rated their feelings of calmness or anxiety on a ten point scale. The visits to the laboratory were more frequent, if the clients reported difficulties in relaxing at home.

All the clients attained the criterion EMG level in an average time of six weeks. Those who had responded with anxiety to initial brief relaxation periods took the longest time. Subsequently, all the clients maintained EMG levels at least half to one eight of their initial values and reported an ability to relax while feeling very anxious. However, EMG levels and anxiety ratings were found to be poorly correlated. But, the client's verbal reports indicated that deep muscle relaxation was accompanied by a sense of tranquillity and that a preoccupation with problem solving resulted in an unsettled mind and a relaxed body. Relaxation induced anxiety was evident in two clients.

The anxiety symptom scores of one client improved markedly, of three moderately and six there was no change. All the clients reported an ability to reduce episodes of severe anxiety at home and the three clients with moderate improvement, reported an ability to control situational anxiety. The clients were not successful in preventing the occurrence of anxiety through relaxation practice. Five of the six clients with insomnia reported frequent awakening or an early awakening. All four of the clients with tension headache reported a reduction in the frequency and intensity of the pain and an ability to prevent or reduce the pain.

The authors concluded that biofeedback training appeared to be a promising technique in managing chronic anxiety as four severe cases improved to some extent. However the extent of success was dependent on the clients ability to incorporate relaxation into the daily routine.
This study of Raskin et al (1973) was significantly a very important study in the field of biofeedback and its application on anxiety patients. But the study did not give a definite criteria for the definition of chronic anxiety, nor did they elaborate the interactional effect of medicine, which was continued along biofeedback therapy. Rickels, Onoda and Doyle (1982) also criticised this study for its lack of a definite criteria for chronic anxiety and a failure to examine the interactive effects of biofeedback and psychotherapy.

Pancheri, Crebelli and Chiari (1979) selected 27 anxious clients with symptoms for at least 2 years and administered EMG biofeedback. Their mean age was 30.63 years and had previously received psychotherapy / pharmacological treatment. Some of the clients continued to be on medication during their first visit. The feedback training consisted of twenty biweekly sessions of 20 minutes each. The results indicated that 50% of the sample had improved as assessed by clinical impressions, subjective and objective (interview), data, personality and anxiety measures. These clients had discontinued medication. The improvement was seen in free-floating and somatic anxiety, depression, overt hostility, obsessive-compulsive traits and in social and interpersonal relationships.

Another important study, in this field was conducted by Townsend, House and Addario(1975). They found EMG biofeedback relaxation training to be at least as effective as group therapy in reducing the anxiety. 18 clients with a major complaint of anxiety assigned to one of the two groups underwent a four week training programme. The EMG, feedback group also received taped instructions in progressive muscular relaxation. The clients' baseline values of frontalis EMG, mood state, and trait anxiety were obtained before and after the programme.

There was a significant reduction in muscle tension levels and an improvement in the symptoms of insomnia and tension headache in the EMG feedback group. There were comparable changes in mood state, state and trait anxiety between the two groups. There was an overall improvement in 4 of the 10 clients in the feedback group while none of the 8 in the other group met the criteria for improvement, at the end of the programme. The authors stated that EMG feedback training is an important addition to the therapist's armamentarium for the treatment of chronic anxiety. This conclusion was criticised by Frankel (1975) who pointed out that the pre-post changes for those
receiving group therapy was minimal and that those receiving EMG feedback did not differ markedly from them. Hence, according to him, the proper conclusion should be that biofeedback mediated relaxation was at most, slightly less ineffective than group therapy in chronic anxiety. Further the use of progressive relaxation along with feedback training confounds the effects of the latter.

In reply, Townsend et al (1975) affirmed that the biofeedback group did obtain lower scores on all 18 of the possible between group comparisons and a significantly greater proportion of the clients were classified as improved. Further EMG feedback was used as an aid to the learning of muscle relaxation and that the efficacy of EMG feedback per se was not examined in this study.

Raskin, Bali and Peeke (1980) compared the relative efficacy of EMG feedback, transcendental meditation and relaxation training, in the management of 31 clients with anxiety neurosis. The information on psychological and physiological variables was obtained during the six week base line period. This was followed by a six week treatment and a six-week post baseline period. The data analysis indicated that clinically significant decrease in the anxiety levels occurred only in 40% of motivated subjects.

The treatment gains were usually maintained at follow up. Almost all the clients whether improved or not continued regular practice of relaxation at home, and often reported periods of increased anxiety when they did not practice. The data analysis also showed that the three treatments produced comparable effects. So neither EMG-frontalis biofeedback nor transcendental meditation was in any way more effective in alleviating the symptoms of chronically anxious patients than relaxation therapy. Additionally the three treatments were similar with respect to both the time course for obtaining therapeutic results, and the subjects' ability to maintain these results once they were obtained.

The authors' assumption for administering EMG frontalis biofeedback for the treatment of anxiety was that EMG would produce profound degree of skeletal muscle relaxation which in turn would help to reduce anxiety. But the relationship that was observed between frontalis EMG scores and anxiety did not support this assumption. During baseline, treatment, and post treatment periods, nowhere a significant correlation between the measures of anxiety and the EMG scores was obtained. Moreover, the
subjects' EMG scores rose significantly from treatment period to the post treatment period, while their anxiety level remained constant. This lead the authors to conclude that a profound degree of skeletal muscle relaxation was not found necessary in achieving relief when using the self-regulatory therapies.

After treatment was stopped, the feedback trained individuals lost some of their skill in muscular relaxation and their frontalis scores rose significantly, indicating that maintenance of low EMG scores requires frequent booster sessions or portable equipment for home practice.

From this study of Raskin et al (1980) one thing becomes clear that all the three treatments used, elicited a relaxation response in the subjects. Authors tried to find out why practice of relaxation response on a daily basis for a number of weeks brought a substantial relief in 40% of the subjects. According to them, relaxation might have changed the individual physiologically by decreasing his arousal level, or might have changed the individual's cognitive orientation so that he became less preoccupied with his aversive thoughts or it might have occurred via a placebo response, i.e. the individual who believed he could cope with his anxiety found methods of effective coping. But unfortunately they found, relaxation treatments to be insufficient in the treatment of most chronically anxious patients. The relaxation response was found to be of slow onset, particularly when the individual was tense or anxious. Thus the response no matter how well leaned, appeared to be of limited value in inhibiting chronic anxiety. The authors' attempts to teach individuals to incorporate relaxation into the daily activities added little to the treatment results. Subjects reported that attempts to relax in the face of anxiety, or even prior to expected anxiety, were usually unsuccessful.

In this regard Stoyva (1977) also stated that with chronically anxious patients "relaxation is only a beginning .............. the patients must not only learn to relax, he must also learn to reshape his coping responses". So on the basis of all the findings Raskin et al (1980) concluded that relaxation has a limited role in the treatment of chronic anxiety, and to obtain satisfactory result, one needs to take into consideration of those factors that elicit and maintain anxiety in these chronically anxious individuals.

Another important study in this field trying to find out the efficacy of biofeedback training in comparison to other relaxation therapies, in the treatment of chronic anxiety, was
conducted by Leboeuf and Lodge (1980). Twenty-six outpatients with a diagnosis of chronic anxiety were selected for this study. Patients were only selected if their main complaint was pervasive anxiety which had been present for at least 2 years. The symptoms of anxiety were assessed by each referring psychiatrist using the Hamilton Anxiety Scale. (Hamilton, 1959). Previous to study most of the patients were on various tranquiliser medication but there was no evidence that any patient had shown any marked response to these drugs in the six months up to the present study. Patients were assigned either to a frontalis feedback group or to a progressive relaxation group. This was not random assignment as attempt was made to match the two groups for age and sex.

Irrespective of the type of treatment, patients received a total of 16 sessions of therapy, each lasting approximately for 30 minutes. Both treatments were carried out by the same therapist. Patients' symptoms were assessed before treatment, at the completion of treatment and at 3 months. Throughout treatment patients practised relaxation skills for at least 20 minutes per day.

The results of this study provided no evidence to suggest that frontalis EMG feedback training was more effective than progressive relaxation training in reducing the symptoms of chronic anxiety, even though it was considerably more effective in reducing frontalis EMG activity. This finding was in consonance with Raskin et al (1980) findings. This finding was again quite consistent with other accumulating evidence that EMG biofeedback was not superior to other relaxation techniques in the treatment of tension related disorders (Tarler - Benilo, 1978). Moreover although both relaxation techniques prompted significant decrease on all anxiety questionnaires administered, the results of therapy, were clinically assessed by the referring psychiatrist, on the following categories, viz: marked improvement, moderate improvement, slight improvement, no change and slight deterioration. The results of the therapies were disappointing. No patient demonstrated a marked improvement in his symptoms and few showed even a moderate improvement. Thus, they concluded that a decrease on anxiety questionnaires while valid might not be clinically significant. In contrast to this finding, in the study of Townsend et al (1975) significantly greater proportion of clients were classified as improved. But as Townsend et al did not have any criteria for clinical improvement, high success rates of that study was based on only the anxiety questionnaires.
A similar comparative study of biofeedback and progressive relaxation in anxious patients was conducted by Scandrett, Bean, Breeden and Powell (1986). They examined the effects of EMG feedback and progressive muscle relaxation on reduction of frontalis muscle tension and subjective reports of anxiety symptoms. Subjects were psychiatric inpatients and outpatients. Result indicate significantly greater reduction in frontalis muscle tension for the biofeedback group and greater symptom relief for the progressive relaxation group.

In India, Sargunaraj, Kumaraiah and Mishra (1987) evaluated the effect of EMG feedback training on the anxiety symptoms of 13 clients. There were 8 clients in the experimental group and 5 clients in the waiting-list control group. The former group was taught to relax with analogue EMG feedback of 20 sessions of 30 minutes each. There were significant reduction within this group in the frontalis muscle tension levels and in the anxiety symptoms scores. The within group differences, on the dependent measures were not significant for those in the control group. A between group comparison indicated a significantly greater reduction in the anxiety symptom scores of the treatment group.

TO SUM UP till now we were discussing about effectiveness of biofeedback, specially EMG biofeedback on anxiety disorders. Various important past and recent studies conducted in this field have been elaborated and discussed. From these studies it becomes clear that EMG biofeedback when compared to the control group has been effective in reducing the anxiety of the patients. But in comparison to other methods of relaxation it shows equal effectiveness. Moreover, poor correlation was found between EMG scores and anxiety ratings of the clients.

It is surprising that compared to EMG biofeedback, relatively little attention has been paid to the electrodermal activity like skin conductance, skin resistance, and the use of these in the biofeedback treatment for anxiety patients. Many previous studies (Lader & Wing, 1966; Lader, 1975; Chattopadhyay et al, 1980) have found skin conductance to be one of the best sensitive measure in detecting even the slightest change in the level of arousal. Moreover, Lader and Wing (1964) denoted that high arousal level found in different psychiatric disorders is the expression of anxiety related to the disorder; and they (Lader & Wing 1969) also confirmed it from their findings. Some of the recent studies have also highlighted on this issue. Ashcroff, Guimaraes, Wang and Deakin
(1991) compared skin conductance variables in 30 anxious adult patients and 30 controls to investigate the extent to which anxiety is associated with increased autonomic arousal & reduced habituation. They found that the skin conductance level, variability (spontaneous fluctuations), and response amplitudes to tones were significantly greater in patients than controls. Results indicate that anxious neurotic patients have greater sweat gland activity and reactivity than controls but they do not differ in the central mechanism of habituation. Another study by Zahn, Nurnberger, Berrettini and Robinson (1991) reported relatively consistent and significant correlation between anxiety and ANS arousal level. Relationship between electrodermal laterality and anxiety were also reported. Similar findings were also reported by Noveteur and Roy (1990). This relation between electrodermal activity and autonomic arousal level in the anxiety patients indicates that skin conductance biofeedback can act as an useful therapeutic strategy in the management of anxiety disorders.

Effectiveness of Galvanic skin responses (G.S.R) in decreasing the arousal was examined by Klinge (1972) and Stern & Kaplan (1972). Both of them found G.S.R. to be effective in reducing the arousal level of the patients. But some contrasting results were found by Holmes, Frost, Bennett, Nielsen & Lutz (1981). They suggested that biofeedback may be effective for increasing arousal, but not for decreasing the arousal.

Two experiments were conducted by them in this regard. Experiment 1 examined the separate and combined effects of instruction to change skin resistance and skin resistance biofeedback, for both increasing and decreasing skin resistance. The results generated two conclusions. First, biofeedback aided subjects in increasing their arousal but did not aid subjects in decreasing their arousal, and second, the subjects who were not given any instruction to change their resistance level and had not been given biofeedback, had the lowest level of arousal. So from these conclusions, the authors suggested that though biofeedback was directed at the reduction of arousal, this was ineffective in decreasing the arousal, and had only had effect on increasing the arousal level. Moreover they felt that giving instruction and biofeedback to reduce arousal did not help a patient, but in contrast gave a deleterious effect.

The result of experiment 1 was disappointing, as it did not offer any evidence that skin resistance on biofeedback was effective for decreasing arousal (or increasing...
resistance). But the authors planned the second experiment according to the speculation of Shapiro (1977), who suggested that biofeedback training might have been more effective when conducted in a stressful situation. Thus the experiment 2, examined the effectiveness of instructions to relax, skin resistance biofeedback, and a placebo for aiding subjects in reducing arousal while in a stressful situation (of being shocked). The results indicated that the stress manipulation (shocks) was effective for increasing arousal and that the instructions to relax aided subjects in reducing arousal but that neither the skin resistance biofeedback nor the placebo treatment aided subjects in reducing arousal. So Holmes et al. (1981), after conducting these two experiments raised questions about the effectiveness of skin resistance biofeedback for aiding persons in decreasing arousal.

But a closer inspection of this research raises various doubts about its conclusion. Generally, it is known that an individual needs to undergo various sessions of biofeedback training to learn the technique of reducing the arousal level. It is natural that if an individual is suddenly exposed to biofeedback, he may react with heightened arousal level, as this is a novel situation asking some novel tasks from the individual. Now let us see in the above study how much time the examiners (Holmes et al. 1981) had given the individuals to get adapted to the task and learn to relax. It is seen that after receiving the instructions the subjects participated in six 3 minutes recording periods separated by 1 minute rest periods. This is definitely too little a time to learn how to control and reduce the arousal level. In the second experiment, it was found that during stressful situation, the combination of instruction and skin resistance biofeedback was not effective in helping the subjects to lower their arousal. This was again a natural consequence, because one needs to first learn the methods of lowering arousal before they can be directly applied to the stressful periods. So it was obvious that when the patients were just asked to relax the subjects could reduce arousal - because here there was no challenge involved in the situation. Biofeedback can not be learned from a single session. This needs adequate training sessions. So it would be too early to accept the findings of Holmes et al which placed severe limitations on the utility of electrodermal biofeedback. Lastly in the discussion the authors also ultimately agreed that with prolonged training biofeedback might become effective in reducing the arousal.
The effectiveness of G.S.R. biofeedback has been studied in various tension related disorders. Collet, Cottraux and Junet (1986) compared the use of galvanic skin response (G.S.R.) feedback with Schultz relaxation (Schultz & Luthe, 1969) on patients (23-62 years old) presenting with tension headaches. 13 subjects were assigned to the GSR feedback group and 12 subjects were assigned to Schultz relaxation. The group treated by GSR feedback showed significant improvements with respect to frequency and intensity of headaches and to anxiety as measured by subject’s self evaluation. A greater improvement was found in headache intensity for the GSR feedback group than for the relaxation group at the post treatment stage. The percentage of subjects showing at least 50% improvement in headache frequency was significantly higher in the GSR feedback than in the relaxation group. Patel (1973; 1976) and Patel & North (1975) studied the application of biofeedback in the management of hypertension. She found that Yoga and biofeedback could maintain low level of arousal which was effective in reducing resting blood pressure. In the study of 1975, 34 hypertensive patients were assigned at random either to six week’s treatment by Yoga relaxation methods with biofeedback or to placebo control (general relaxation). In the biofeedback group throughout the session a patient was connected to one of two biofeedback instruments giving a continuous audio signal. G.S.R. feedback was used for the first few sessions followed by an electromyograph. Both experimental and control group showed reduction in blood pressure from 168/100 to 141/84 m.m. Hg in the treated group and from 169/101 to 160/96 m.m. Hg in the control group. The difference was highly significant. The control group was then trained in Yoga relaxation and their blood pressure fell to that of the other group.

Another study, in the same field by Patel, Marmot and Terry (1981) also revealed that greater reduction in blood pressure was obtained in the group which was treated with G.S.R. biofeedback than the control group. The improvement persisted eight months after the training, suggesting that relaxation based biofeedback methods might be offered as first line of treatment to patients with mild hypertension.

Effectiveness of G.S.R. biofeedback in the treatment of Generalized Anxiety Disorder was studied by the present investigator (Biswa, Biswas and Chattopadhyay, 1995), in India. G.S.R. biofeedback was compared with patients kept on pharmacotherapy and patients kept on cognitive behaviour therapy. 16 patients (age ranging from 25 to 40...
years) were randomly assigned to either one of the three groups and they were kept under respective treatment for three months and were followed up after the treatment for the next four months. Assessment on various measures of anxiety and cognition were done at the pre-treatment, post treatment and every month during the follow up period. The results indicated that biofeedback group was having comparable effectiveness with the other two groups in the anxiety measure at the post treatment evaluation, and could maintain the improvement till the four months of follow up. However during the last follow up assessment, it was showing some signs of reverting backwards compared to the cognitive therapy group. But the biofeedback was not so significant in changing the cognitive patterns and faulty assumptions of the patients.

**SUMMARY OF BIOFEEDBACK RESEARCHES**

The various researches conducted on biofeedback have indicated that this therapeutic strategy plays an important role in the different tension related disorders and in alleviating the anxiety of the chronic patients. Out of the various biofeedback techniques, both E.M.G. and G.S.R. appeared to be promising techniques in the treatment of chronic anxiety. However, researches on EMG were much more compared to the G.S.R. technique. Studies have revealed that deep muscle relaxation learnt by EMG technique was accompanied by a sense of tranquillity (Raskin et al, 1973); improvements in free floating and somatic anxiety, depression, social and interpersonal relationships (Pancheri et al, 1979); and improvements in the symptoms of insomnia and tension headache (Townsend et al, 1975). However, the extent of success was dependent on the clients' ability to incorporate relaxation into the daily routine. Moreover, it was found that the patients were never successful in preventing the occurrence of anxiety (Raskin et al, 1973). When EMG feedback was compared with other relaxation techniques, no evidence of it being more superior than other treatments was found (Raskin et al, 1980; Leboeuf and Lodge, 1980; Tarler - Benlolo, 1978). Though EMG biofeedback caused a profound degree of skeletal muscle relaxation, EMG levels were poorly correlated with anxiety ratings. This means that profound degree of skeletal muscle relaxation was not necessary in achieving anxiety relief when using the self-regulatory therapies. (Raskin et al, 1973; Raskin et al, 1980).
G.S.R. or skin conductance biofeedback was found to be effective in reducing the arousal level of the patients (Klinge, 1972; Stern & Kaplan, 1972). A contradictory study by Holms et al (1981) though suggested that this biofeedback was not effective in decreasing the arousal, but was effective in increasing it, a closer inspection of the study revealed that patients were not given adequate time to learn the biofeedback technique. Effectiveness of G.S.R. biofeedback was also studied in other tension related disorders. It was found to be more effective in bringing significant improvement with respect to frequency and intensity of headache, compared to Schultz relaxation technique (Collet et al, 1986). Effectiveness of this biofeedback was also found in the management of hypertension (Patel et al, 1973; 1975; 1976; 1981;). In India in 1987 Sargunaraj et al evaluated the effect of EMG feedback and in 1995, Biswas et al evaluated the effect of skin conductance feedback on chronic anxiety patients. Significant reduction in the anxiety symptoms was found in both the studies. In the latter study, skin conductance feedback was found to be equally effective to pharmacotherapy and cognitive therapy at the post treatment assessment.

However, the different researches (Raskin et al 1980; Biswas et al, 1995) revealed that once the biofeedback treatments were stopped, feedback trained individuals lost some of their skills in relaxation and scores rose significantly, indicating that maintenance of low scores require frequent booster sessions.

The researchers concluded that relaxation treatments no matter how well learned appear to be insufficient for the most chronically anxious patients, as subjects reported that attempts to relax in the face of anxiety, or even prior to anxiety, were usually unsuccessful (Raskin et al, 1980; Leboeuf & Lodge, 1980).

Thus the overall summary shows that relaxation by biofeedback is only a beginning. Besides the relaxation the patients must also learn how to reshape his coping resources and must take into consideration of those factors that elicit and maintain anxiety in the chronically anxious individuals.

*Cognitive Methods of Treatments*

With the limitations observed from the various brief psychological intervention using behaviour therapeutic strategies like modeling, systematic desensitization, flooding and
relaxation of various types including biofeedback, the theoretical and clinical grounds show that some form of cognitive behavioural treatment may be effective with this population. According to Beck and Rush (1975) as stimuli in GAD are broader, less specific and more frequently internal, the interventions must take into account the internal 'cues' or 'cognitions'. Mathews (1985) also argued that as variety of cognitions are associated with anxiety, it is necessary to change them before permanent anxiety reduction can be expected. Moreover, with the comparative success of Beck's cognitive therapy in the treatment of depression (Rush, Beck & Kovacs, 1977; Blackburn et al., 1981), it appears that similar procedures might also be effective with anxiety disorder. Moreover as with other anxiety disorders like panic disorder and agoraphobia some controlled cognitive studies have prove to be generally encouraging (Emmelkemp & Mersh, 1982; Michelson, Mavissikalian, Greenwald, Kornblith & Greenwald, 1982), it was felt that these procedures might be successful with GAD too.

In the light of these researches various anxiety management training (AMT) techniques started developing. These techniques were using various cognitive restructuring methods (of Meichenbaum, 1974; and Beck & Emery, 1979) along with the behavioural techniques. Richardson and Suinn (1973) was one of the first one to use these anxiety management techniques and found that AMT was more effective than other more limited forms of relaxation training and with a student population. Hutchins, Denny, Basgull & Houston (1980) found that AMT produced more consistent decrease in anxiety than relaxation.

Generally these anxiety management packages were widely used in clinical practices and there were relatively few reported studies involving some degree of experimental control. One of the first such study was done by Woodwards & Jones (1980). In this study, 27 clients were allocated to three different treatment methods viz. cognitive restructuring, systematic desensitization, combined treatment, and a no treatment control group. Although all active treatments were superior to the no-treatment control, on some analysis the measures which showed these effects were not central to the presenting problem of anxiety. The combined treatment, which included relaxation, desensitization and cognitive restructuring was found to be superior than the more limited treatments involving either restructuring or systematic desensitization alone. However, a closer inspection of the study shows that the superiority of the combined
treatment was limited to relatively irrelevant measures. Moreover, the treatments were incompletely specified and the follow up was conducted only for 4 weeks.

Jannoun, Oppenheimer & Gelder (1982) examined the effects of anxiety management training (AMT) in reducing generalized anxiety. AMT was developed by Suinn and Richardson (1971) keeping the generalized anxiety patients in mind, as they are unable to identify the exact stimuli for their anxiety. In this treatment anxiety was viewed as a drive state and as such patients were trained to identify and attend to internal cause of anxiety itself, which could themselves act as stimuli for further anxiety, rather than to external stimuli. Patients were taught how to induce anxiety with mental imagery and to bring it under control by using a combination of muscle relaxation and mental imagery. Thus patients learnt to control symptoms of anxiety regardless of what prompted them.

Effectiveness of this AMT method on generalized anxiety patients using a self help format was studied by Jannoun et al (1982). 27 anxious patients with mean age of 36 years, with complaints of moderate to severe generalized anxiety and panic attacks took part in the study. They were randomly allocated to one of the three groups which differed only in the length of time they waited for treatment. So group 1 waited for 4 weeks, group 2 had a 6 week wait and group 3 had an 8 week wait. Assessments were made by an independent assessor, 2 weeks before the first treatment session, and 2, 6 and 12 weeks after the last session. All patients received five treatment sessions over a 6-week period and one “booster” session 6 weeks after the end of treatment.

Treatment was presented to all patients as self-help program, and the main components of it were (a) self monitoring - where patients kept a daily record of their anxiety level and drug intake, (b) instruction booklets - which explained the treatment plan, gave information about the psychophysiology of anxiety, and described the uses and limitations of anxiolytic drugs, (c). muscle relaxation - which was learned from audio-taped instruction and practised at home, and (d). cognitive control - where patients were taught to evoke images and to change in positive self talk.

Various measures showed that very little change occurred while on the waiting list, compared to the significant improvement that followed the anxiety management treatment. Improvements were also found to be maintained during the follow-up period. However, in spite of the improvements, the study had some methodological problems.
There was absence of any specific diagnostic criteria in screening the generalized anxiety patients. Consequently panic disorders and agoraphobic were also included in the same group. Moreover, the patients were all on concomitant medication and the interactional effect of medication on therapy was not studied.

In 1984, Barlow, Cohen, Waddell, Vermilyea, Klosko, Blanchard, and DiNardo made a detailed review of nonphobic anxiety including both panic and generalized anxiety disorders and tried to highlight on their nature and treatment aspects. They observed a surprising paucity of clinical investigations in this area and pointed out a clear need for outcome research on the effects of various psychological treatments for GAD and PD (Panic Disorder).

In the study, eleven patients meeting DSM III criteria for GAD and PD were assessed comprehensively and divided into a treatment and a wait list control group. The assessment revealed significant differences between PD and GAD patients, with PD patients showing higher somatic responding on both questionnaire and psychological assessment measures.

Treatments consisted of somatically oriented and cognitively oriented methods. The subjects under treatment were given progressive relaxation training and frontalis EMG biofeedback combined with cognitive-behaviour therapy (CBT). The treatment protocol consisted of 18 sessions over a 14 week period, with the first session devoted to an introduction to the therapy package. Thereafter the treatments were presented in an integrated fashion, based on a detailed treatment protocol. The relaxation training was adapted from Bernstein and Borkovec (1973). All subjects received 12 clinic relaxation training sessions, but were required to practice relaxation at home at least once per day and maintain records of their practice. In the sixth treatment session, subjects began EMG biofeedback. The biofeedback session consisted of 4 minutes baseline period, 3 minutes of self control (i.e. relaxation without feedback), 20 minutes of biofeedback and a 4 minutes return to baseline. Subjects received a total of 8 biofeedback sessions.

The cognitive behavioural component of treatments was based on Meichenbaum and Turk's (1973) stress inoculation training and Beck and Emery's (1979) cognitive therapy for anxiety disorders. Presentation of CBT was divided into three phases: an
introduction and educational phase, where subjects received didactic education about anxiety and a therapeutic rationale; a rehearsal phase, during which subjects were taught specific strategies for coping with stress and anxiety; and an application and practice phase, wherein subjects practised the coping strategies, both during and between therapy sessions. The strategies taught included coping self statements and cognitive restructuring of anxiety provoking thoughts. Subjects received 12 sessions of CBT.

Components of the treatment package were integrated in the following way. After the introductory session, the relaxation training and the educational phase of CBT were combined in 90 min sessions for four sessions. Biofeedback was introduced in the sixth session and combined with the remainder of relaxation training, was alternated with remainder of CBT during subsequent sessions.

5 GAD and 5 PD patients were treated with the same treatment package, with the remainder assigned to the wait list control group. Assessments were conducted by psychophysiological measures (frontalis EMG and analysis of heart rate), clinicians' ratings, self report measures (State - Trait Anxiety Inventories, Beck depression Inventory and Psychosomatic symptom check list), and daily records of subjects' self monitored anxiety. Compared to controls, treated patients improved in all the measures. GAD and PD patients responded equally well to treatments, while the wait list group did not improve. At follow-up, the treated group continued to improve.

The interesting thing about this study is that though PD and GAD had clear pre-treatment differences with PD displaying higher somatic responding on both psychological and physiological assessments, there was no significant differences in the outcome across the diagnosis. It is possible that patients with one or the other diagnosis were responding differentially to different parts of the comprehensive treatment. Thus PD might have responded primarily to the somatically oriented treatments of relaxation and EMG biofeedback, while GADs benefited somewhat more from the cognitive-based interventions. The mechanism of action of the treatment did not become clear. The authors (Barlow et al, 1984) also felt that a careful dismantling of this treatment package was necessary to separate specific from non-specific factors.
Moreover, careful dismantling of the somatic and cognitive components of this treatment were also necessary.

However, this well controlled study of Barlow et al (1984) provided a foundation to proceed. It was one of the first studies, where sophisticated cognitive methods were used, with careful attention to the identification of individual thoughts and assumptions. Earlier studies previous to it had used rather simplistic versions of the cognitive approach (e.g. Ramm, Marks, Yuksel & Stern, 1981; Woodwards and Jones, 1980), where insufficient attention was given to the identification of individuals thoughts, assumptions and beliefs, and more attention was given to provide people with and helping them to use more constructive or positive ways of thinking.

In the early '80's, little was known about specific cognitive processes in anxiety, so cognitive interventions were based predominantly on ideas derived from work on depression (Beck, Rush, Shaw & Emery, 1979). In 1985, Beck and Emery, provided the basic cognitive formulation of anxiety disorder and suggested a comprehensive treatment model for GAD. This brought a tremendous impetus in the research patterns, and a series of researches studying the cognitive therapy independently and in conjunction with behavioural methods on GAD started to be published.

The study by Butler, Cullington, Hibbert, Klimes and Gelder (1987) is one of the prominent of these studies. The study demonstrated that significant, durable and internally replicable gains could be achieved using a multi-component, cognitive and behavioural treatment, which they called 'anxiety management'. Here individualized and collaborative cognitive methods were combined with exposure, relaxation and methods to increase confidence. The strategies were aimed at breaking the vicious circles that otherwise maintain anxiety, and the main message was designed to reduce demoralisation and build confidence by mobilising people's resources for coping with their symptoms. Thus the final package contained four relatively well known procedures for reducing symptoms-relaxation, distraction, controlling upsetting thoughts and panic management -- and two procedures that had not been previously systematically employed in GAD -- graded exposure to reduce avoidance and procedures to increase self confidence and reduce demoralisation. Anxiety management was compared with a waiting list control group. It proved to have
substantial effects not only on measures of anxiety, but also on those of depression and the frequency of panic attacks. These changes were replicated almost exactly when patients in the waiting-list group completed treatment. The gains were seen to persist unchanged for the following six months.

The study represented an advance on previous findings, and it also provided more information about the nature of GAD. Contrary to previous assumptions, they found that 64% of their patients reported non-phobic types of avoidance and 80% of them reported some situational anxiety (Butler, Gelder, Hibbert, Cullington and Klimes, 1987). Much of this avoidance took subtle cognitive or affective forms which might maintain anxiety, if not reversed. Despite these encouraging results response to treatment was still highly variable as up to one--third of the patients appeared to gain little from the treatment.

Lindsay, Gamsu, McLaughin, Hood and Espie (1987) carried out a controlled study to test the relative effectiveness of cognitive--behaviour therapy (CBT), anxiety management training (AMT) and treatment by benzodiazepines against a waiting list control. CBT group received a treatment based on that described by Beck & Emery (1979), and Beck et al (1979) and Meichenbaum (1974). Treatment was focused on anxiety related self statements and underlying assumptions about the self. Treatment sessions were arranged twice a week over four weeks and the first two sessions were generally given over to assessing underlying beliefs & anxiety--related self statements. From three to eight sessions treatment was conducted following Beck & Emery (1979), which included exploration of the underlying beliefs, challenging the cognitions, reviewing errors in thinking, rehearsal and homework assignments. In AMT, relaxation remained the main method of treatment. Subjects were taught relaxation exercises, and given a relaxation tape. Subjects were asked to maintain recordings of anxious situations and during therapeutic sessions they were asked to imagine the situation while practising relaxation. Anxiety was explained to the patients in terms of physiological symptoms and the emphasis of treatment was always on relaxation. In the benzodiazepine group, the patients were prescribed lorazepam 1 mg. three times for 10 days, 1 mg. two times for 10 days and 1 mg. once for the final 10 days.
All subjects were referred from the general practitioner with a primary problem of anxiety. If they fulfilled the screening requirement by G.H.Q. (to screen anxiety and depression), subjects were randomly assigned to one of four conditions. All subjects suffered from chronic anxiety of at least one year duration. Assessment measures were taken before and after treatment and again at three months follow-up. Measures were taken on both process and outcome of treatment. The most immediate and greatest improvements in anxiety were seen in the group receiving drugs. However, these improvements reduced as the trial progressed and were minimal at the end of therapy. This may be again due to the drug dose getting gradually tapered off through out the treatment period (due to the concern about possible drug dependency problems) so the clients were essentially drug free by the post therapy assessment. It was found that both the psychological treatment groups improved as the trial progressed and both were significantly superior to the wait list group. Comparison among the two psychological treatments indicated a clear trend for self-rating measures to favour CBT. Although perhaps due to the small number of subjects in each group, there were no significant differences between the two active treatment conditions. Moreover, after treatment, on every measure, the CBT group had the greatest number of subjects reaching the criteria of clinically meaningful improvement. These improvements were also maintained reasonably well at 3 month follow-up. In marked contrast, only four patients of the benzodiazepine group felt themselves sufficiently improved to wait for 3 month follow up. The rest six patients who were on drugs refused to wait without treatment until the follow-up assessment.

This study of Lindsay et al (1987) had an important contribution in the treatment of chronic anxiety. However, it had certain limitations for e.g. no proper diagnostic criteria was followed for the selection of the generalized anxiety patients, and screening of the anxiety patients was left to the general physicians. Moreover, the drug dose varied throughout the treatment period and very few sessions of CBT were imparted. So meaningful comparisons amongst the therapeutic techniques remained doubtful. Moreover, due to the reluctance of the benzodiazepine group to remain for follow up, no comparison amongst the three groups at follow up could be conducted. In spite of all these limitations, the study retains its importance, because this is the first published study, where the effectiveness of CBT on chronic anxiety was compared not only with a
wait list group and a psychotherapeutic group, but also with pharmacotherapy -- the most commonly used method for alleviating anxiety.

Till now, reviewing all the above mentioned studies, one thing becomes undoubtedly clear that inspite of methodological problems, the various psychological treatment packages produced significantly more change in the patients than did no treatment control conditions. Unfortunately, it was not possible to conclude that the specific components involved in the psychological treatment had a significant impact, since none of the comparisons between different psychological treatment methods had revealed significant differences in anxiety symptoms, and no study included a control for non-specific treatment effects. This was also felt by Blowers, Cobb and Mathews (1987). They felt that anxious client often improved when taken into treatment, particularly if the treatment was intense and novel. So Blowers et al suggested that anxiety management packages could only be properly evaluated in comparison to a control condition that was matched for relevant non-specific variables.

In their study, Blowers et al (1987) attempted to control the non-specific treatment effects by including a nondirective counselling condition along with anxiety management and wait list control group. The nondirective counselling did not include any of the specific components included in anxiety management. The anxiety management group mainly used relaxation and cognitive therapy as the primary therapeutic techniques. Sixty-six generally anxious clients were allocated to either of the three groups. Anxiety management was significantly more effective than the wait list condition on a number of relevant measures at post treatment but there were few significant differences between anxiety management and nondirective counselling, either at post treatment or at 6 month follow-up. Thus it was concluded that anxiety management was clearly better than a non-treatment control condition, but that its superiority to a less structured and less directive alternative remained to be proven. In this study the cognitive components used in anxiety management was based on that described by Beck & Emery (1985), but was a much abbreviated form, where the whole therapy was imparted only in eight sessions, which also included a few sessions of relaxation training.

Borkovec, Mathews, Chambers, Ebrahimi, Lytle and Nelson (1987) observed that although the recent studies had supported the possible efficacy of therapy packages
that had targeted both cognitive and somatic symptoms, design limitations had restricted
the specificity of the conclusions that could be drawn from the available data. First, one
could not rule out the role of placebo effects. Second, one could not as yet identify from
among the several elements present in the packages the specific, active ingredients that
had been responsible for improvement. In an initial attempt to address these issues,
graduate student therapists provided 12 sessions of training in progressive muscular
relaxation to 30 volunteers who met criteria for generalized anxiety disorder. Most of
these volunteers were undergraduate students, except three of them, who were
university employees. Besides relaxation training 16 out of the 30 clients also received
cognitive therapy and the remaining 14 received nondirective therapy. Cognitive therapy
was based on Beck and Emery’s (1979) method and over the course of 10 sessions
clients were taught (a) to identify irrational anxiety provoking thoughts, images and
beliefs; (b) to analyze the validity of these thoughts on the basis of logic, probability and
evidence; (c) to identify alternative, realistic thoughts and new beliefs; and (d) to use
these alternatives in anticipation and in response to anxious experiences.

In the nondirective therapy the therapist’s role was to facilitate discovery by focusing on
and clarifying feelings, and the therapist provided only reflections of the
expressed experience of the client. Advice, instructions, or suggestions were never
given at any time in the sessions except as it pertained to relaxation training. Warmth,
empathy and non-judgemental acceptance of the client was the therapist’s general
approach.

The group as a whole showed substantial reductions in anxiety as measured
by psychiatric assessor ratings, questionnaires, and daily self monitoring. In comparison
between the two groups, relaxation plus cognitive therapy produced significantly greater
improvement than relaxation plus nondirective therapy on several pre therapy - post
therapy questionnaires. The authors concluded that cognitive therapy, in combination
with relaxation training did contain an active ingredient beyond non specific relationship
factors in the treatment of generalized anxiety in the relatively young and well educated
sample. However, this study had some notable limitations. The therapists did not have
much experience, as they were graduate students who were enrolled in clinical practice.
Moreover the follow up was inadequate, with only 16 clients responding to it Lastly,
clients were primarily students, solicited through advertisement. This limited the
generalizability of the results only to young, well educated volunteers.

Borkovec and Mathews in 1988 extended this previous study in three ways. First older
and more severely anxious clients (GAD and panic disorder) were used. Second, in
addition to the two earlier treatment conditions, the study included a coping
desensitization condition. Finally, the therapists were more experienced than those in
the previous investigation.

Here the clients were referred from mental health agencies and from news ads
announcing treatment for generalized anxiety and panic problems. Of 141 contacts, 109
were excluded due to not meeting the inclusion criteria. Lastly 30 clients completed
the entire treatment. The patients were randomly assigned to each of the three
treatment conditions, resulting in 6 clients with GAD and 4 clients with panic
disorder in each of the three conditions. Nondirective therapy and cognitive therapy
used the same principles employed in the previous study (Borkovec et al 1987). In the
coping desensitization method, a hierarchy was constructed based on the client's
cognitive and somatic symptoms. Relevant environmental situations served as scene
contexts for the imagery incorporating the internal anxiety cues. After a relaxed state,
scenes were repeatedly presented and the clients practised eliminating existent anxiety.
12 sessions of relaxation following Bernstein & Borkovec's (1973) method was given to
all the 30 clients. Pretherapy and post therapy assessments, as well as 6 month and 12
month follow up measurements, indicated that the group as a whole showed
significant and continued improvement on a variety of self report questionnaires, daily
diary and psychiatric assessor instruments. No differences were found between the
three treatment conditions. This was unlike the previous study (Borkovec et al 1987)
where a clear superiority of cognitive therapy was found. Like the previous study, in this
study also, those clients who had relaxation induced anxiety during the relaxation
training sessions had poorer outcomes.

Thus, the results of this study failed to support differential effectiveness between the
three therapy conditions. Each condition produced significant improvement. Therefore,
the two studies (Borkovec et al 1987 and Borkovec & Mathews, 1988) together
suggested that cognitive therapy might make a unique contribution to the reduction of
anxiety when anxiety was mild but the efficacy of it remained doubtful when anxiety was severe or chronic.

Another important research, conducted during this period was by Durham and Turvey (1987). As none of the previous studies differentiated sufficiently between cognitive therapy and behaviour therapy, they for the first time took up the issue. They wanted to study the relative efficacy of Beck's cognitive therapy and behaviour therapy in the treatment of outpatients suffering from chronic general anxiety. According to them, since the cognitive and behavioural components of Beck and Emery's treatment package (Beck & Emery 1980) are qualitatively different in nature, and sufficiently well described to be implemented separately, a comparison of their relative efficacy seemed to be of clinical and theoretical value. Psychiatric outpatients with chronic anxiety of at least one year's duration were randomly assigned to either behaviour therapy or Beck's cognitive therapy, and to one of two experienced therapists. Both treatment conditions followed the therapeutic process described in Beck's treatment manual for anxiety states. The cognitive therapy condition included behavioural techniques when appropriate in the context of the cognitive model of treatment, but the behaviour therapy condition excluded any attempt to modify automatic thoughts, thinking errors, or underlying assumptions. However, it did include the use of positive self statements. Out of 68 patients provisionally accepted for study, 41 patients completed the treatments. All patients received a maximum of 16 hour individual therapy over a maximum of 6 months. At the start of the treatment, the referring doctors were requested not to change or increase medication during the trial. Patients were encouraged to reduce medication if possible but therapist made no specific attempts to help to achieve this goal.

Several outcome measures were administered before treatment, during treatment, at discharge and at 6 month follow up. At the end of treatment there was no difference between the cognitive and behavioural treatments in the amount of improvement observed. But, by the 6 month follow-up, however, there were a number of significant treatment differences between the two treatment conditions. Cognitive therapy condition showed a tendency to maintain or improve upon their post treatment scores while behaviour therapy patients tended to revert to their mid-therapy or pre-treatment scores.
Thus, the above study suggested that the coping techniques taught in cognitive and behaviour therapy were equally effective as long as regular therapist contact was maintained, but that the CT techniques were more frequently or more effectively employed once this contact was terminated. In general, it seems likely, that in order to cope independently with life stresses and disabling symptoms, like depression and general anxiety, it is necessary to integrate into everyday life a framework for perceiving and coping with problems that is understandable, personally relevant and broad ranging in its application.

Till this point of literature review, it is seen that most of the studies had concentrated on the comparison between two psychosocial treatments and unfortunately, with the exception of the study by Lindsay et al (1987), the efficacy of multidimensional psychological treatments of generalized anxiety had not been adequately compared with the widely used pharmacological alternatives. In 1989, Power, Jerrom, Simpson, Mitchell and Swanson attempted to compare the relative effectiveness of cognitive behaviour therapy, diazepam and placebo in the management of generalized anxiety patients in a primary care setting. Here in the study, 31 GAD patients were randomly allocated to cognitive behaviour therapy, diazepam or placebo. Treatments were balanced for degree of psychologist / patient contact. A range of outcome measures, including patient self report, psychologist assessor and general practitioner ratings were used. Large variations within group response to treatment emerged. At the end of active treatment the superiority of cognitive - behaviour therapy was suggested. Post - study psychotropic prescription and psychological treatment was assessed at a 12 month follow-up. The cognitive behaviour group revealed the lowest incidence of subsequent treatment interventions.

In this study, the results did not permit an adequate comparison of treatment efficacy at follow-up. Furthermore, there was no combined psychological and pharmacological treatment group. In a subsequent study the researchers tried to rectify the inadequacies. Thus, Power, Simpson, Swanson, Wallace, Feistner and Sharp (1990) randomly allocated one hundred and one patients meeting the DSM III criteria for GAD to one of 5 groups viz. cognitive - behaviour therapy, diazepam, placebo, cognitive-behaviour therapy + diazepam or cognitive - behaviour therapy + placebo and treated over 10 weeks. Treatments were balanced for degree of psychologist / patient contact. A fixed
dose medication procedure was used, where following one week single-blind placebo, three times daily, diazepam and placebo treatment groups received six weeks double-blind 5mg diazepam (DZ) or placebo, three times daily respectively. Following this active treatment period the DZ group received three weeks of graded withdrawal. In the CBT group, patients received a maximum of seven treatment sessions over a nine week period equivalent to the length of time DZ and placebo groups received double blind active treatment and graded withdrawal. CBT was based on an abbreviated form of Beck and Emery’s (1979) approach. Patients were also trained in progressive relaxation using a procedure adapted from Jacobson (1938).

The study used a range of outcome measures including psychologist assessor and patient self-report. Subsequent post treatment pharmacological, psychological, and psychiatric treatments were recorded. Outcome measures at end of treatment and at six months follow-up revealed the superiority, of all CBT treatments, especially CBT alone, and CBT + DZ. DZ was no more effective than placebo. This may have been due to use of a fixed low dosage regime for the DZ group. CBT + DZ and DZ groups showed no withdrawal symptoms or anxiety recurrence during graded withdrawal. However, the potential effectiveness of DZ and DZ + CBT might have been enhanced by the use of a flexible dose procedure with a higher maximum dose. All CBT groups revealed the lowest incidence of subsequent treatment interventions at six month follow-up.

Although the CBT approaches used in the above study were more effective than the pharmacological alternative, it has to be kept in mind that this result was found with patients where the maximum duration of illness was only for one month. Moreover the researchers dealt with less severe cases. Thus, the efficacy of CBT in comparison to pharmacotherapy in patients with severe and chronic illnesses still remained to be seen. Butler Fennel, Robson & Gelder (1991) reviewed the past studies and observed that the indication of cognitive techniques becoming effective on GAD (e.g. Borkovec et al 1987; Durham & Turvey, 1987; Woodward & Jones, 1980) have not been consistent (e.g. Barlow et al, 1984; Borkovec & Mathews, 1988; Lindsay, et al 1987). They felt that the task of this stage was to compare two different treatments both theoretically likely to be helpful, in an attempt to find out more about what factors contribute to effectiveness. In their previous study (Butler et al 1987), though anxiety management was found to be effective as a treatment for generalized anxiety, many
questions remained unanswered. First, anxiety management had both the cognitive and behavioural components, and it was not clear how much each component contributed to the results, or whether behavioural treatment alone would be equally effective. This issue was felt to be important as behaviour therapy is a simpler and thus more economical than cognitive therapy which uses both cognitive and behavioural methods. Secondly, the cognitive techniques used in the anxiety management were relatively uncomplicated and it seemed possible that a more extensive cognitive treatment based on an explicit cognitive rationale, might produce better results.

In view of this, they took up the present study, where they compared cognitive behaviour therapy (modelled on cognitive therapy as described by Beck. e.g. Beck, 1976; Beck & Emery, 1985) along with behavioural treatments. Here the cognitive procedures were more elaborate than the anxiety management. Before this study began, the new definition of GAD (DSM III-R, 1987) with its clear focus on the essential features of ‘anxious expectation’ or worry, had just become available and this definition had also done much help in understanding the cognitive aspects of the problem. Thus, in the study, in a controlled clinical trial, 57 subjects meeting DSM III R criteria for GAD were randomly allocated to cognitive-behaviour therapy (CBT), behaviour therapy (BT), or a waiting list control group. Assessments were done, before and after treatment and at 6 months later. Results showed a clear advantage for CBT over BT. At the end of the study, 42% of the patients receiving CBT met operationally defined criteria for “good outcome” compared with 5% of those receiving BT, and unlike BT, CBT was shown to be equally useful for patients who were depressed as well as anxious.

Some of the recent studies had also reported of advantage of cognitive therapy over other forms of psycho-social treatments. For e.g. Borkovec and Costello (1993) adapted cognitive therapy to tackle specific behavioural, cognitive, somatic features of GAD, and demonstrated long term follow up results, suggesting that cognitive therapy had achieved better results than a nondirective treatment (reflective listening), and that 60% of the patient had high end state functioning compared with only 37.5% of patients receiving relaxation. Durham, Murphy, Allan, Richard, Treliving and Genton (1994) also reported substantial advantages for cognitive therapy, this time in comparison with analytic psychotherapy, and once again the advantages appeared to become greater over the year following treatment (Durham, 1995). Another important study in this field is
by Kendall (1996), where he examined the long term effects of CBT on anxiety disordered youths, who had completed treatments 3.35 years (on average) earlier and found that gains were still maintained.

In India, very few control studies have been conducted using cognitive strategies on anxiety disorder. Abraham & Kumaraiah (1993) evaluated the combined effect of Meichenbaum's stress inoculation training (SIT) and EMG feedback assisted relaxation in a sample of 22 anxious clients. The authors assumed that a consolidated treatment using cognitive therapy for the subjective component and relaxation therapy for the physiological component would be ideal for the disorder. Here the patients were assessed at pre, mid and post therapy level using both psychological and physiological (feedback dermograph and feedback myograph) measures. Each client was seen over 20 sessions. The results indicated that with the combined effect of EMG feedback assisted relaxation and SIT significant decrease was obtained on all the measures except the GSR level of the patients.

In India the only other reported study on cognitive therapy on anxiety disorders was conducted by the present researcher (Biswa, Biswas and Chattopadhyay, 1995). In this study 16 male patients with age ranging from 25 to 35 years, meeting the DSM III - R criteria of GAD and having the illness at least for 2 years were taken up and randomly assigned to either of the three groups, viz. CT, BFBK & PhT. The patients of BFBK and CT were put on to 20 sessions of therapy over 12 weeks. Assessments of all the three groups were conducted before the treatment, at the end of the 12 weeks (when CT and BFBK got terminated) and once on each month for the next 4 months of follow up. In the PhT group as the patients were not ready to give up the medicine, the drugs continued through out the entire period of follow up. Assessments were conducted by Hamilton's Anxiety Rating Scale, State-Trait Anxiety Inventory, Dysfunctional Attitude Scale, Self Control Schedule and Locus of Control Scale.

Analysis of the results showed that all the three treatment conditions were effective in bringing a significant reduction in the anxiety symptoms. The comparisons between CT and BFBK revealed that both the groups were equally effective in reducing the anxieties of the patients as measured during post treatment and the follow up phases. However PhT was found to be more effective than CT at the post treatment, but in the follow up
phases the differences between the two disappeared and CT indicated a better maintenance of improvements compared to PhT. In the within group comparisons, it was found that CT was the only group which could bring effective changes in the dysfunctional attitudes and locus of control of the patients, while BFBK and PhT remained ineffective. Regarding the application of self control strategies CT was found to be most effective, followed by BFBK, while PhT was found to be totally ineffective.

This study was only an initial pilot study. Effective comparisons between the groups in the follow up phases was not possible as the PhT group was continuing on drugs. Moreover follow up was only conducted for four months. Besides this, there was no physiological measure of anxiety. To overcome all these drawbacks, thus the current research was planned.

**GENERAL SUMMARY OF THE REVIEW OF LITERATURE AND IMPLICATIONS OF PRESENT RESEARCH**

GAD is the most common of the anxiety disorders, but the treatments of it has always remained as a subject of controversy.

Till now medication has remained as the main treatment of choice, and out of it benzodiazepines belonging to the anxiolytics and hypnotic class of drugs are the most widely prescribed drugs for the treatment of GAD. But continuous use of BDZs have numerous disadvantages. So Committee of Review of Medicines (1980), inspite of agreeing that BDZs are useful, has advised that it should be given only for a short time and its use should be carefully monitored.

Continued use of BDZs may cause tolerance. Tolerance to a number of physiological effects of BDZs was demonstrated by Higgit et al (1988). Moreover, Gross (1976) and Haskell et al (1986) suggested that dosages of BDZs may need to be gradually
increased to maintain therapeutic effectiveness. Besides tolerance, long term users of BDZs also run the risk of experiencing withdrawal symptoms and the most commonly reported withdrawal symptoms are anxiety, insomnia, nightmares, impaired memory and concentration, lack of energy, depression, headache, muscle pairs or twitches, metallic taste in mouth, sensitivity to light, sound or touch, incoordination or vertigo, depersonalization or derealization (Hayward et al., 1989). According Tyrer et al. (1981) about 45% of their patients experienced withdrawal symptoms. However, it is found that the shorter acting BDZs produce more serious withdrawal symptoms than the longer acting BDZs like diazepam. Moreover gradual withdrawal is found to be more effective in decreasing the severity of the symptoms (Higgitt et al. 1985; Marks, 1983).

Once taken, difficulty in stopping the drugs and tendency to relapse to the use of BDZ were also found, for e.g. Golombok et al. 1987 found that only 54% of these subjects continued to be free of BDZs for one to five years. A rebound in anxiety after six weeks of diazepam use, and returning approximately to the original level of anxiety was also found (Power et al., 1985). Finally the most important question, which is still unanswered is whether BDZs facilitate or hinder psychological treatments. However Edwards et al. (1984) and Hayward et al. (1989) suggested that BDZs reduce general motivation for psychological treatment as patients attribute improvements in competence to the drugs rather than to their own abilities, more over the drugs create an effect on the cognitive functions & memory faculties and hamper from any enduring benefit.

Resorting to nonbenzodiazepine anxiolytic drugs also does not provide any suitable alternative as discontinuation of these also can lead to the return of the original symptoms (Rickels & Schweizer, 1990). So in this situation where long term efficacy of pharmacotherapy remains questionable and relapse follows discontinuation in a significantly large number of cases, one has to think of other modalities of treatment, unless one accepts that relapse is a typical of this disorder and patients should learn to live with a chronic pattern of intermittent drug use & anxiety (Gorman & Papp, 1990).

It is argued that psychological treatments can be the best choice as these provide new ways of coping, control over negative thoughts, feelings and behaviour, and build up the confidence in individuals so that they can deal with the problems on their own. But GAD
is the most challenging problem to be treated by psychological means. Because of inconsistent research findings, treatment obstacles and diffuse nature of the disorder the developments in the psychological treatments lag far behind that of the other anxiety disorders.

Exposure, the most commonly used behavioural technique to overcome anxiety of a feared object, is found to be successful only when there is a clearly identifiable external stimulus. But in GAD, as symptoms appear to occur independently of external stimuli, more from the perception of the internal responses, all exposure techniques like systematic desensitization, modeling or flooding, lose their relevance.

However, biofeedback procedures are the most thoroughly evaluated behavioural strategies for the treatment of generalized anxiety. The various researches conducted on biofeedback have indicated that this therapeutic strategy plays an important part in alleviating the anxiety of the chronic patients. Out of the various biofeedback techniques, both E.M.G. and G.S.R. appeared to be promising techniques. Studies have revealed that deep muscle relaxation learnt by EMG is accompanied by a sense of tranquillity, improvements in freefloating and somatic anxiety, in insomnia and tension headache (Raskin et al, 1973; Townsend et al, 1973, Sargunaraj et al 1987). Skin conductance or GSR biofeedback is found to be effective in reducing the arousal level of the patients (Klinge, 1972; Stern & Kaplan, 1972) and thus has been found to be effective in various tension related disorders (Collet et al, 1986; Patel et al, 1973 ; 1975 ; 1976 ; 1981). However the different researches have revealed that once the biofeedback treatments are stopped, feedback trained individuals lost some of their skills in relaxation and scores rise significantly, indicating that maintenance of low scores require frequent booster sessions. Moreover, the researches (Raskin et al, 1980; Leboeuf & Lodge, 1980) have also concluded that relaxation treatments no matter how well learned appear to be insufficient for the most chronically anxious patients, as subjects report that attempts to relax in face of anxiety, or even prior to anxiety, are actually unsuccessful. So the overall studies show that relaxation by biofeedback is only a beginning. Besides this the patients must also learn how to reshape his coping resources and must take into consideration of those factors that elicit and maintain the anxiety.
Thus, with the limitations observed from the various brief psychological interventions, the theoretical and clinical grounds show that as variety of cognitions are associated with anxiety, the interventions must take into account the internal 'cues' or 'cognitions' (Beck & Rush, 1975; Mathews, 1985). Initially various packages of anxiety management techniques were used, which employed cognitive strategies along with behavioural methods (Woodwards & Jones, 1980; Ramm et al, 1981). Early studies using cognitive strategies showed small or inconclusive effects largely because insufficient attention was given to the identification of individual thoughts, assumptions and beliefs and more attention was given to providing people with more constructive and positive ways of thinking. But the principle of cognitive therapy on GAD (Beck et al, 1985) suggested that more independent cognitive work needs to be done for each patient, if the method is to result in a change in mood. Interventions should be individually tailored to help people deal with different aspects of anxious thinking. When this was done, and the cognitive interventions were combined with behavioural ones such as relaxation and exposure (Butler et al, 1987; Barlow et al, 1984), better results were obtained. Despite the encouraging results up to one - third of the patients, still gained relatively little from treatment (Butler, et al, 1987) and similar relatively low response rates were observed both by Durham and Turvey (1987) and by Borkovec & Mathews (1988). Moreover, although some superiority was demonstrated for cognitive methods over other forms of treatment (Durham & Turvey 1987; Borkovec et al, 1987; Power et al, 1989 ; 1990), the gains achieved by nonspecific treatments appeared to be substantially similar (Borkovec & Mathews, 1988). In face of this controversial results, some of the few recent studies (Butler et al, 1991; Borkovec & Costello, 1993; Durham 1995 and Kendall, 1996), have showed some advantages of CBT over other psychological treatments.

So the entire review shows that the researches on cognitive therapy are still at a very initial stage of development. It is only very recently that some positive findings have started coming up. Moreover, the review shows that till now cognitive therapy have been mainly compared with the non-directive, non-specified treatments or with behaviour therapies using various strategies of relaxation, exposure, systematic desensitization, modeling, activity scheduling or homework assignments. Most of these above mentioned behaviour therapeutic strategies have overlapping components with the Beck’s cognitive therapy. But there is no known reported study (except our pilot study reported above) where CT is compared with biofeedback -- the brief structured
behaviour therapeutic strategy which has less overlapping components with CT. Though biofeedback uses relaxation as a mode of treatment, here the whole process of doing it is very different -- where a psychophysiological system which is over aroused and out of patient's control is monitored and by providing feedback, control over the system is learnt. Besides this, there are still very few studies (e.g. Lindsay et al, 1987; Power et al, 1989; 1990) which have compared the effectiveness of CT with pharmacotherapy. So, from the review it appears that still now CT has not been adequately compared with those therapeutic methods, which are most widely used for the treatment of generalized anxiety. So in this situation the present study was taken up. The aim of the study was to study the application of CT in a more thorough fashion, with the help of various psychological and psychophysiological measures, and to compare the same with two other treatment methods, viz. Biofeedback (BFBK) and Pharmacotherapy (PhT).

In the light of this, a pilot study was taken up (Biswas, Biswas & Chattopadhyay, 1995), the detail of which has been given before. The study was conducted with a small sample and compared CT with BFBK and PhT. However the study was only a beginning of a more elaborate study and various limitations were observed which are detailed before.

To overcome the shortcomings and to bring some improvements over the previous studies, the present study was planned. In this study, the changes in the anxiety symptoms were assessed both by psychological and physiological measures. It was felt that to call some one sufficiently improved, the changes observed in the individual's inner experiences should also be transmitted to the physiological parameter, by bringing a reduction in the arousal level. Many of the previous studies have mainly used psychological and self report measures, and there are very few studies (e.g. Barlow et al, 1984; Michelson, Mavissakalian and Marchione, 1985) that have used psychophysiological measures. To make the global assessment, the present study took the help of both kinds of measures.

Besides this, the present study tried to emphasise on the follow up assessment. Because of the fluctuating and chronic course of GAD, it was felt extremely important to conduct the follow up of the patients after the treatments got over. But in most of the previous studies adequate follow up was not possible because of the frequent drop outs, which had reduced the number of the patients to such an extent that statistical analysis
was not possible. So the aim of the present study was to conduct follow up at least for six months for all the patients who had completed the treatment. Moreover the present investigator was also interested to study the process of changes that take place during the follow up, so it was planned to conduct frequent follow up assessments during the period of six months and to do proper statistical analysis of them.

Moreover, in the presence of multiple therapeutic techniques for the treatment of a single disorder it becomes necessary to find out certain predictors of response. The aim of the present study was to find out certain predictors either in the clinical characteristics of the patients or in their personality profile which would indicate the type of therapy to be chosen. So besides investigating the comparative efficacy of the three therapeutic techniques in the treatment of GAD, the second part of the research aimed to study whether the various clinical characteristics of the patients (viz. severity of illness, duration of illness, level of depression and history of previous treatment) or the locus of control (a personality variable) of the patients could influence the outcome of the various therapeutic modalities.