

# Application of functional analytic psychotherapy to manage schizophrenia

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## ABSTRACT

**Introduction:** Cognitive behavioral therapy (CBT) and third-wave CBT approaches have been shown to ameliorate symptoms of schizophrenia. However, this study uses the functional analytic psychotherapy which focuses on the environmental causes of behavior which includes the client's present environment as well as his history of past interactions with it, to bring about a change in the client and reduce the symptoms. This therapy has never been used earlier with patients having schizophrenia in India; therefore, it was taken up for this study. **Methodology:** A pre-post design with control group was used in the present study. Ten patients were taken. Positive and Negative Syndrome Scale for measuring symptoms of schizophrenia, Schizophrenia Quality of Life Scale for assessing quality of life, Coping Response Inventory-Adult form for assessing coping skills, Apathy Evaluation Scale-Clinician Version for assessing apathy, Family Adaptability and Cohesion Evaluation Scale for assessing perceived interpersonal relationship were used for assessment pre- and postintervention. Fifteen sessions were done with each patient within a period of 10 months at the rate of one session per week. Chi-square test, Wilcoxon signed-rank test, and Mann-Whitney U-test were used for the analysis of data. **Results:** Significant improvements were found in positive symptoms, general psychopathology, approach coping mechanisms, psychosocial and motivation domains in quality of life, and perceived cohesion in family among the patients postintervention. **Conclusion:** Functional analytic psychotherapy is an effective method for treating patients having schizophrenia with the application of its specifically modified rules for use with patients having psychosis.

**Keywords:** Cognitive behavioral therapy, functional analytic psychotherapy, schizophrenia, third-wave cognitive behavioral therapy

Schizophrenia is usually treated with therapies such as cognitive behavioral therapies, mindfulness-based therapies, social skills training, interpersonal psychotherapy, and family therapy. However, functional analytic psychotherapy has never been used earlier in patients having schizophrenia in India. Therefore, this approach was taken up for use in the present study to bring about greater effectiveness in the interpersonal realm of the patients having schizophrenia. This eventually aims to result in better perceived interpersonal relationship in the patient and thereby helps them improve quality of life and coping skills of the patients.

This psychotherapy originates from radical behaviorism and "contextualism." It demands explanation of why we act the way we do to taking into account the unique history of the individual up to that moment in time. It focuses on the environmental causes of behaviour which includes the client's current environment and his history of interactions with it. In this approach of psychotherapy, the problematic client behaviours are collaboratively identified and gradually shaped towards greater effectiveness as they show up as occurring within the client-therapist relationship. The therapist provides honest feedback and reinforcement

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of client's behavior occurring right in the moment in his interaction with the therapist (called "clinically relevant behaviors"), so that the client can use this immediate feedback to modify his ways of relating to the therapist and consequently to others outside the sessions. That is, maladaptive behavior and thoughts, if corrected within the session, may be generalized by the patient outside the therapy session when relating to other people. As a result of this, the client's general perceptions alter significantly with change in his patterns of interpersonal interactions. The therapy breaks the barrier between behaviour therapy and psychoanalytic psychotherapy and intertwines them for better management of patients. A study on quantitative analysis of functional analytic psychotherapy by Singh and Brien<sup>[1]</sup> revealed that the therapy shows significant in-session changes in subjects' behavior patterns, which was successfully generalized outside the session with appropriate reinforcement. In a study conducted by Dixon *et al.*<sup>[2]</sup> on functional analysis and treatment of inappropriate verbal behavior, differential reinforcement of alternative behaviors was given, where each appropriate verbal utterance was followed by reinforcement in the form of showing an interest into it while at the same time ignoring the inappropriate behaviors. Results indicated a decrease in the number of inappropriate utterances and an increase in appropriate utterances. Landes *et al.*<sup>[3]</sup> evaluated the effect of active components of functional analytic psychotherapy, evoking client's clinically relevant behavior, contingently responding to behavior, and generalizing improvement with favorable results revealing that active components of functional analytic psychotherapy improved the targeted behavior. Weeks *et al.*<sup>[4]</sup> used functional analytic psychotherapy, in which positive reinforcement of a client's effective behavior proved to be a powerful mechanism of change for the person.

In the present study, functional analytic psychotherapy was applied on the patients having schizophrenia to see its effects on the variables of positive and negative symptoms of schizophrenia, apathy, coping skills, quality of life, and perceived interpersonal relationship. Coping skills intervened in this study include the approach coping (problem-focused) and avoidance coping (emotion-focused) techniques and the domains of quality of life includes the Psychosocial Domain, the Motivation Domain and the Energy and Symptoms domain. The domains of perceived interpersonal relationship include adaptability (perceived chaotic family) and cohesion (perceived enmeshed family).

## METHODOLOGY

Thirteen male patients from the inpatient department of our institute, within the age range of 20–40 years, who

studied up to at least 10<sup>th</sup> standard, belonged to middle or lower socioeconomic status, who were married and had children, without the history of significant neurocognitive impairments, substance abuse, traumatic head injury, and comorbid psychiatric conditions, were taken by the method of purposive sampling, out of which 3 dropped out during preintervention assessment. Written consent was taken from all of them. A pre–post design with control group was used. The study was undertaken after clearance from the department of clinical psychology of our institute.

### Description of test materials used

#### *Positive and Negative Syndrome Scale (PANSS)*

Positive and Negative Syndrome Scale (PANSS)<sup>[5]</sup> is a 7-point rating scale having 30 items for evaluating the presence and severity of positive and negative symptoms and general psychopathology of schizophrenia. The marking on the scale is done based on the patient's perceptions of his thoughts, experiences, and beliefs in the week prior to assessment. Its internal reliability ranges from 0.73 to 0.83.

#### *Apathy Evaluation Scale- Clinician Version*

Apathy Evaluation Scale-Clinician Version developed by Marin<sup>[6]</sup> is an 18-item 4-point Likert type scale. It detects apathy based on changes in three basic areas: observation of (overt) activity, thought content, and emotional responsiveness. Its reliability is around 0.94 and validity is around 0.76.

#### *Family Adaptability and Cohesion Evaluation Scale*

Family Adaptability and Cohesion Evaluation Scale (FACES)<sup>[7]</sup> measures perceived interpersonal relationship in family based on two main domains, namely cohesion (high score on which indicates enmeshed nature of family) and adaptability (high score on which indicates chaotic nature of family). Its reliability is around 0.84 and validity is around 0.70.

#### *Schizophrenia Quality of Life Scale*

Schizophrenia Quality of Life Scale (SQLS) developed by Wilkinson *et al.*<sup>[8]</sup> is a self-administered scale having 30 items. It has three domains, namely psychosocial, motivation and energy, and symptoms. The scale focuses upon the perceptions and concerns of patients having schizophrenia. It has been specially designed to be used in clinical trials and evaluation of clinical interventions. Its reliability is around 0.93 and validity is around 0.78.

#### *Coping Response Inventory-Adult form*

Coping Response Inventory-Adult form (CRI-A) developed by Moos<sup>[9]</sup> measures eight specific coping strategies to stressful life circumstances, namely logical analysis, positive reappraisal, seeking guidance and support, problem solving (which together constitutes the

approach or adaptive coping) and cognitive avoidance, acceptance-resignation, seeking alternative rewards, emotional discharge (which together constitutes the avoidant or maladaptive coping). Its internal consistency reliability is around 0.74.

### **Brief description of techniques used in therapy**

The following techniques were used as per the module of functional analytic psychotherapy developed by Dykstra *et al.*<sup>[10]</sup> for patients having schizophrenia.

#### **Expanded rationale technique**

Here, the rationale was made to express the therapist's views about the causes and intervention of schizophrenia. Here, the patient's perception about the nature of his interpersonal relationships was discussed. The system of artificial reinforcement to be used in sessions in the form of token economy in case of demonstration of desirable behavior patterns on part of the client was delineated, relating it with therapist's natural course of emotional cues in the due course of time. The rationale served to prepare about what he should expect to encounter during the therapy session and structured the nature and style of intervention used by the therapist.

#### **Cognitive rationale technique**

The therapist provides an explanation of the cognitive distortions and its origins. He focuses on the cognitive distortions which were found to be maintained in the patient's ways of relating with the therapist during interactions, in terms of how the patient interprets the therapist's behavioral expressions, how he expresses delusional content in his speech, and how accurately he can detect therapist's emotional cues, and were trained within the session using the therapeutic relationship. The effect of such distortions on the patient's perception of surroundings in terms of situations and people within and outside the therapy session and maladaptive behaviours occurring as a result of that were assessed and intervened in the sessions. Patient was trained with techniques of formal mindfulness to have better conscious control over his thoughts, emotions, and to develop compassion.

#### **Behavioral rationale technique**

Here, cognition was explained in terms of overt behavior. It was explained as an activity of thinking, planning, believing, reacting, and categorizing, placing the degree of control exerted by cognition on the client in a continuum. It varied as per his clinical history of learning the behavior during some situation in the past which can similarly be unlearned during modification of observable behaviors within the repertoire of therapeutic relationship. Using the behavioral rationale technique, the patient was thus taught to identify his thought, analyze it, and consequently reacting

to it. Social skills training was employed in group setting to obtain better results. Thereafter, to improve patient's social attribution, he was also trained to decipher facial expression using 10 pictures from Ekman's picture stimuli (pictures of facial affect) to improve his socioemotional cue perception.

#### **Greater use of client-therapist relationship**

Here, the therapist deliberately introduced some conflicting situations within the repertoire of therapeutic relationship to elicit similar reactions from the patient as he reacts during similar situations in his daily life circumstances and thereafter corrects the maladaptive behaviors within the session itself, so that the patient can learn to react and behave similarly in future in his daily life circumstances outside the sessions.

#### **Training of social skills**

The functionally analytic way focuses upon the social skills, both verbal and nonverbal like communication, expressiveness, postures, and so on, as manifested in session during the interaction of the patient with the therapist. Thereafter, the maladaptive behaviors with respect to such social skills were intervened as manifested within the repertoire of the therapeutic interaction with demonstration from the therapist.

#### **Role playing**

The patients were made to practice the learned skills in the form of role playing in groups of five. Imaginary situations were introduced and they were made to interact with each other according to it, thereby recreating a potential real-life situation within the therapeutic milieu with necessary directions from the therapist. In this way, the patients mastered the social skills they exercised in sessions, so that they can apply the same in their interpersonal interactions outside the session. Thereafter, therapist focused on gradual initiation of generalizing the learned skills and modifying clinically relevant behaviors for better community integration.

#### **Learning community integration**

The patients were helped to apply the learned skills in role playing and within the therapeutic milieu in their regular interactions with other people and provide a feedback of the experience to the therapist, so that it can be modified within his in-session behavioral repertoires. Altered and improved perception of social situations, improved communications, emotional expressions, and so on as needed for adequate community living were exercised with the patient.

#### **Maintaining adaptive behavior patterns**

The therapist discussed with the patient mainly about the environmental variables that often impact the client's

behavior in his current surroundings. Focus of intervention here was kept on the ways to use the skills learnt in therapy situation in collaboration with therapist in order to improve interpersonal relationship and behavioural patterns within family and thus function better in the community.

### Statistics used for analysis of data

The study involved a small group of individuals. Therefore, nonparametric statistics was used. Version 20 of the IBM Statistical Package for the Social Sciences (SPSS) was used for the analysis. Chi-square test was used to assess the sociodemographic variables. Wilcoxon signed-rank test assessed both the magnitude and direction of the difference between baseline assessment and postintervention assessment. Mann–Whitney U-test compared the differences in the chosen measures between the control group and the experimental group since the data in control and experimental groups are unpaired observations of two independent groups of equal sizes.

## RESULTS

Analysis of data showed no significant difference in the sociodemographic correlates among the patients belonging to both experimental and control groups on the variables of age, education, occupation, type of family, socioeconomic status, marital status, duration of illness, and duration of treatment. The baseline assessment of the participants, belonging to both experimental and control groups, showed that there was no significant difference in the clients in variables of apathy, coping skills, quality of life, and perceived interpersonal relationship. Postintervention assessment showed that there were significant variations in certain subdomains of scales measuring positive and negative symptoms and general psychopathology, coping skills, quality of life, and perceived interpersonal relationship in the patients belonging to the experimental condition. However, no significant difference was found in apathy postintervention.

The data of clients belonging to the experimental group postintervention are shown. The data on the variables in which there were significant changes post intervention are shown in the study.

## DISCUSSION

Table 1 shows scores on PANSS in the experimental group before and after intervention. Mindfulness exercises helped the patients to focus upon their moment's experiences, control their anger and impulsiveness. This, in turn, helped them to cope with the associated distress. It also reduced the intensity of the psychotic symptoms as the patient learnt

to read emotional cues of the therapist within the session. Patient also learnt to identify therapist's overt expressions with the help of the pictures of emotional expressions given in Universal Facial Expression of Emotion by Paul Ekman. Thereafter, he was gradually able to read emotional cues of other patients in group within session and later on was able to accurately comprehend emotional cues of others outside session. This further helped to decrease his delusional experiences, suspiciousness, and expressed hostility. The trustworthy therapeutic relationship between the patient and therapist was generalized outside the session, resulting in decreased suspiciousness. The improved trust in turn improved interpersonal relationship and decreased anxiety, guilt, and depressive feelings. This indicates that the therapy was effective in reducing some significant symptoms of schizophrenia. A study done on quantitative analysis of functional analytic psychotherapy by Singh and Brien revealed that functional analytic psychotherapy shows a fairly effective and significant in-session change in the subjects' behavior patterns, which was successfully generalized outside the session with appropriate reinforcement.

Table 1 also shows scores obtained by the patients of experimental condition on different domains of CRI-A before and after intervention. The mean scores were significantly higher in the domains of logical analysis, positive reappraisal, seeking guidance and support, and problem solving among the approach coping strategies among patients in the experimental group post intervention. This indicates that the patients were able to logically analyze difficult interpersonal and other situations within their family and outside as they have learned in the in-session practices with their therapist and are able to rationally think and converse in a conflicting situation and appraise old conflicting situations in a new light post intervention. That is, they were able to reconstruct the dynamics of old interpersonal relationships as they generalize therapeutic relationship outside the session due to improved emotional cues' reading and better interpersonal perceptions that they learned through role playing within sessions as well and were thus able to cope better during times of conflicts. Their scores in problem solving was greater post intervention compared to pre-intervention assessments phase as they were able to seek more guidance and support from other people in their surroundings, due to increased generalized trust within and outside family relationships. As a result, their score in the domain of seeking guidance and support has also increased post intervention. The scores in the domain of acceptance or rejection have significantly reduced post intervention, which indicates that the patients were able to relate with other people better with a reduced fear of whether they will be accepted or rejected in an interpersonal situation.



**Table 1: The scores on scales during baseline assessment and assessment postintervention**

| Variables                    | Subjects, mean±SD         |                                   | Wilcoxon sign rank test |                      |       |       |
|------------------------------|---------------------------|-----------------------------------|-------------------------|----------------------|-------|-------|
|                              | Baseline assessment (n=5) | Postintervention assessment (n=5) | Significant             | Mean rank            | Z     | P     |
| PANSS                        |                           |                                   |                         |                      |       |       |
| Positive Syndrome Scale      | 34.6±2.96                 | 19.8±6.01                         | –<br>+                  | 3.00<br>0.00         | 2.03* | 0.042 |
| Negative Syndrome Scale      | 69.8±1.92                 | 62.6±6.02                         | –<br>+                  | 3.00<br>0.00         | 2.02* | 0.043 |
| General Psychological Scale  | 123.6±25.70               | 95±10.04                          | –<br>+                  | 3.50<br>1.00         | 1.76* | 0.04  |
| SQLS                         |                           |                                   |                         |                      |       |       |
| Psychosocial                 | 41±12.17                  | 13±3.89                           | –<br>+                  | 3.00<br>0.00         | 2.02* | 0.043 |
| Symptoms                     | 19±11.64                  | 3.6±3.78                          | –<br>+                  | 3.00<br>0.00         | 3.03* | 0.042 |
| CRI-A                        |                           |                                   |                         |                      |       |       |
| Logical analysis             | 28.6±3.64                 | 60.8±2.94                         | –<br>+                  | 0.00<br>3.00         | 2.06* | 0.039 |
| Positive reappraisal         | 35±3.74                   | 58±2.45                           | –<br>+                  | 0.00<br>3.00         | 2.03* | 0.042 |
| Seeking guidance and support | 33.4±6.10                 | 62.6±8.35                         | –<br>+                  | 0.00<br>3.00         | 2.02* | 0.043 |
| Problem solving              | 34.4±5.13                 | 61.2±3.83                         | –<br>+<br>+             | 0.00<br>3.00<br>5.00 | 2.03* | 0.042 |
| Acceptance or rejection      | 67.6±3.84                 | 41.4±2.88                         | –<br>+<br>+             | 3.00<br>0.00<br>0.00 | 2.03* | 0.042 |
| Emotional discharge          | 76±5.65                   | 49.6±3.28                         | –<br>+                  | 3.00<br>0.00         | 2.02* | 0.043 |

\*Significant at 0.05 level. "n" - number of participants in each condition; PANSS – Positive and Negative Syndrome Scale; SQLS – Schizophrenia Quality of Life Scale; CRI-A – Coping response inventory-adult form; SD – Standard deviation

This may be because they have been able to fearlessly relate with the therapist during the sessions, which instilled a confidence in them to relate the same way with others. The scores in the domain of emotional discharge have significantly reduced post intervention, which indicates that post intervention they were better able to control their anger outburst and had a grip on their emotional expressions, which might be attributed to mindfulness practices. Greater use of problem-focused coping strategies was associated with high levels of self-efficacy and better performance on a measure of sustained attention emphasizing perceptual processing.<sup>[11]</sup> In a study conducted by Andres *et al.*,<sup>[12]</sup> efficacy of coping-oriented therapy approach was tested. It was found that the patients' overall social functioning improved along with the extent of the cognizance of the disorder. The patients also mastered active problem-focused coping strategies immediately after the completion of therapy. In a cross-sectional study by Avery *et al.*<sup>[13]</sup> on role of effort, cognitive expectancy, appraisals and coping style in the maintenance of negative symptoms of schizophrenia, all the psychological variables had significant partial correlations with some of the measures of negative symptoms.

Table 1 also shows scores obtained by the patients of experimental condition in the domains of the FACES scale. It is seen that the score in the domain of adaptability is significantly lower post intervention compared to baseline, which indicates that the patient perceived his family to be less chaotic post intervention, which led to improvement in his interpersonal relationships both. This might be because the patient was able to adequately generalize the nature of interrelatedness and trust with the therapist among his interpersonal relationships outside the sessions, which post intervention were perceived to be more trustworthy, embracing, and less threatening to the patient. Corrigan and Toomey<sup>[14]</sup> conducted a study examining the relationship between receiving, processing, and sending skills along with social cue perception in patients with schizophrenia who presented with deficits in interpersonal problem solving, social cue perception, visual vigilance, verbal memory, conceptual flexibility, and psychiatric symptoms. Significant relationships were found between sensitivity to social cues and receiving, processing, and sending skills. Recognition and recall skills were also associated with problem-solving skills. In a study by Hewitt and Coffey,<sup>[15]</sup> the authors reviewed the evidence on necessity and sufficiency of

**Table 2: The scores on scales during assessments postintervention in patients belonging to experimental group and control group**

| Variables                    | Subjects, mean±SD        |                     | Mann-Whitney U test |               |       |        | P     |
|------------------------------|--------------------------|---------------------|---------------------|---------------|-------|--------|-------|
|                              | Experimental group (n=5) | Control group (n=5) | Mean rank           |               | U     | Z      |       |
|                              |                          |                     | Experimental group  | Control group |       |        |       |
| FACES                        |                          |                     |                     |               |       |        |       |
| Adaptability                 | 28.6±10.07               | 9.69±4.33           | 7.20                | 3.80          | 0.000 | 2.22** | 0.001 |
| SQLS                         |                          |                     |                     |               |       |        |       |
| Psychosocial                 | 27.8±13.33               | 3.6±5.94            | 8.00                | 3.00          | 0.000 | 2.61** | 0.009 |
| Symptoms                     | 13.4±10.03               | 1.4±5.53            | 7.90                | 3.10          | 0.000 | 2.5**  | 0.01  |
| CRI-A                        |                          |                     |                     |               |       |        |       |
| Logical analysis             | 33±1.34                  | 2.2±7.91            | 3.00                | 8.00          | 0.000 | 2.69** | 0.007 |
| Positive reappraisal         | 11±23.58                 | 6.6±8.99            | 4.20                | 6.80          | 0.001 | 1.36** | 0.007 |
| Seeking guidance and support | 26.6±4.56                | 2.8±5.35            | 3.00                | 8.00          | 0.000 | 2.62** | 0.008 |
| Problem solving              | 26.8±3.70                | 3.70±2.60           | 3.00                | 8.00          | 0.000 | 2.65** | 0.008 |
| Acceptance or rejection      | 26.2±3.56                | 3.2±3.76            | 8.00                | 3.00          | 0.000 | 2.61** | 0.009 |
| Emotional discharge          | 26.4±6.98                | 8.4±8.32            | 7.80                | 3.20          | 0.000 | 2.4**  | 0.01  |

\*\*Significant at 0.01 level. "n" – Number of participants in each condition; FACES – Family Adaptability and Cohesion Evaluation Scale; SQLS – Schizophrenia Quality of Life Scale; CRI-A – Coping response inventory-adult form; SD – Standard deviation

therapeutic relationships when working with people with schizophrenia. The findings suggested that therapeutic relationships characterized by facilitative and positive interpersonal relationships with helpers had benefits.

Table 2 shows the comparison of difference scores between experimental and control conditions in the domains of quality of life as measured by SQLS. It shows that difference score is significantly higher in the experimental group in the domains of psychosocial and symptoms, which indicates that post intervention there was a significant improvement in these domains in patients of experimental group. In a study by Domenech *et al.*,<sup>[16]</sup> it was found that the factors which were mostly associated with health-related quality of life were alteration and reduction in the negative symptoms of schizophrenia.

Table 2 also shows the comparison of difference scores between experimental and control conditions in the domains of coping skills as measured by CRI-A. The patients who received interventions had significantly higher difference scores in approach coping strategies such as logical analysis, seeking guidance and support, and problem solving and in avoidance coping such as acceptance or rejection and emotional discharge. This indicated that the intervention produced significant changes in both the approach and avoidance coping styles in the experimental group in these domains. This may be related to a study by Schlier *et al.*<sup>[17]</sup> on fostering coping as a mechanism of symptom change in cognitive behavioral therapy for psychosis, in which the cognitive and behavioral efforts to manage taxing external and internal demands created a mechanism of change in cognitive behavioral therapy. A continuous improvement in suspicious, negative symptoms and depression over the

course of CBT was preceded by the improvement in coping and improvement in negative symptoms and depression predicted subsequent improvement in coping.

### Clinical implications

The present study indicates that along with the medicinal treatments, third-wave psychotherapy like functional analytic psychotherapy brings about significant improvements in the different domains of impaired functioning among the patients having chronic schizophrenia. Therefore, the patients should be regularly enrolled in psychotherapeutic management within and outside institutionalized setup to bring about an improvement in their prognosis. However, the study was conducted with limited sample size, which is its primary limitation. In future, the study may be replicated with a larger sample size considering both male and female patients to see differential impacts upon gender along with sufficient follow-up sessions.

### CONCLUSION

The findings state that functional analytic psychotherapy brought improvements in variables such as symptoms, perceived interpersonal relationship, quality of life, and coping strategies except in apathy.

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### Conflicts of interest

There are no conflicts of interest.

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