CLINICAL OUTCOMES OF CULTURALLY ADAPTED PARENTING INTERVENTION FOR MOTHERS WITH SCHIZOPHRENIA IN LOW RESOURCE SETTINGS: PILOT RANDOMIZED CONTROL TRIAL

Zaib un Nisa,
Department of Psychology,
University of Karachi
Karachi - Pakistan

Amena Zehra Ali
Department of Psychology,
University of Karachi
Karachi - Pakistan

Abstract

Schizophrenia is a severe psychiatric emergency associated with significantly impact functional and adversative outcomes in both mothers and their children. Mothers with schizophrenia encounters caregiving burden and challenges, which fade mother infant bonding, reduced parenting sensitivity, and limited social support. It increased developmental and psychological problems risk in their offspring. Despite the growing evidence for psychosocial interventions in psychosis, culturally appropriate parenting interventions for mothers with schizophrenia remain unexplored in Low- and Middle-Income Countries (LMICs). This paper aim assess the feasibility of schizophrenic symptoms reduction among mother through Learning Through Play Plus (LTP Plus), parenting intervention integrated with a culturally adapted Cognitive Behavioral therapy for psychosis (CaCBTp) in Karachi, Pakistan. A randomized controlled trial was conducted with 50 diagnosed schizophrenic mothers who has last born child aged birth to 36 months. Participants were randomly allocated to either the intervention group (LTP Plus) or treatment as usual (TAU), with 25 participants in each group. The intervention combined the Learning Through Play parenting program with culturally adapted CBT for psychosis and was delivered through weekly sessions by trained clinical psychologists. Participants were assessed at baseline and at third month follow-up post randomization using the Positive and Negative Syndrome Scale (PANSS). Descriptive statistics and independent and paired sample t-tests were used to analyze data on SPSS v23. At baseline, no significant differences were observed between the groups

among the PANSS three subscales. At follow-up, the intervention group demonstrated significantly greater reductions in PANSS Positive ($p < .001$), negative ($p < .001$), but not significant changes were observed in the general psychopathology subscale, than the control group. The findings suggest that LTP Plus is a promising, culturally adapted psychosocial intervention for mothers with schizophrenia, can further needs to assessed on the implementation studies. Integrating parenting support with cognitive behavioral therapy may enhance maternal mental health and caregiving capacity in resource limited settings.

Introduction

Schizophrenia is a chronic disorder severely affects cognition, emotional reactivity, and social functions due to remain untreated. The illness cause the burden on health care system globally and also on the individual and family itself (Li et al., 2023). Literature available reported that average life expectancy of individuals with schizophrenia reduces ten years as compare to general population, resulted the impaired functioning additionally, due to comorbid physical health conditions and an increased risk of suicide (Hjorthøj, Stürup, McGrath, & Nordentoft, 2017; Peritogiannis, Ninou, & Samakouri, 2022). It contributes to approximately 1.1% of Disability-Adjusted Life Years (DALYs) and 2.8% of Years Lived with Disability (YLDs) globally, showing its increased health burden in low resource settings (Murray & Lopez, 1996). Schizophrenia is the eighth cause of DALYs among adults (15–44 years) (Piao et al., 2022) and is characterized as disability due to the continuous care and support needs, at the same time this is the most crucial time of an individual's life (Hunt et al., 2022).

The disorder had long impacts across the generations due to the contribution of biological and environmental factors (Schmitt, Falkai, & Papiol, 2023). Offspring of pychotic mothers, are at a higher risk for emotional, behavioral, and cognitive problems (Gregersen et al., 2022). They are more vulnerable to psychiatric disorders in later life and or with delayed developmental milestones or functioning (Wang & László, 2025). Maternal schizophrenia is significantly linked to disturbed parent infant interactions, low sensitivity in caregiving, and impaired mother-infant bonding (Boström & Strand, 2021; Wan et al., 2007). In high income countries, these issues have necessitated the separation of children from their mothers, particularly where proper psychosocial care is not accessible (Park et al., 2006). The quality and access of social and family support are the main factors in determining children's outcomes; nevertheless, women with schizophrenia tend to rate the level of support they receive lower than women with other psychiatric disorders (Abel et al., 2005). Notwithstanding such difficulties, the majority of women with schizophrenia would like to care for and continue being an active part of their children's lives (Montgomery et al., 2006).

Given the vulnerability of children of mothers with schizophrenia, parenting support in early life is a critical preventive intervention. Such children are likely to present early indicators of psychopathology, lower school performance, reduced social development, and lower self-esteem (De la Serna et al., 2021; Lin et al., 2017). Apart from psychological susceptibility, they tend to be stigmatized because of their parents' mental illness, resulting in social isolation and distress (Sathiyaseelan et al., 2019). Although interventions for parenting in maternal depression have been comprehensively tested and applied extensively (Barlow et al., 2012; Barlow et al., 2014), The lack of available literature on increasing parental bond among schizophrenic mothers especially in LMICs, where there is limited access to mental health resources.

HICs such as United Kingdom and Australia, offer psychiatric and parenting support for women with serious mental health disorders at their Mother Baby Units (MBU) (Adhikary et al., 2024). However, LMICs such as Pakistan lacks in such available resources of mother baby units in the hospital settings, resultantly, their ability to enhance mother-infant relationships is controversial (Abel et al., 2005). This highlights the critical need for cost-effective, culturally appropriate parenting interventions that can be implemented within low-resource health systems.

An evidence based program culturally adapted Learning Through Play (LTP) program, meets the cultural needs and effective intervention to enhance maternal mental health and support healthy early child development (Husain et al., 2024). Rooted in established developmental theories, Piaget's theory of cognitive development and Bowlby's attachment theory, LTP was initially developed in Canada but has since been modified for implementation in LMICs (Piaget et al., 1952; Bowlby, 1980). It aims to enhance infant-mother interaction, promote early education, and minimize child morbidity (Husain et al., 2021). Along with this, Cognitive Behavioral Therapy (CBT), a first-line psychological therapy for psychosis, has proven effective in LMICs, such as in randomized controlled trials in Pakistan (Naeem et al., 2015). An integrated LTP intervention with culturally modified CBT has the potential to provide a new and scalable model to assist mothers with schizophrenia and enhance developmental outcomes for their offspring in resource-limited environments. This manuscript presents the findings of pre- and post-intervention comparisons using the Positive and Negative Syndrome Scale (PANSS) to evaluate changes in symptom severity among the participants. So, the aim of this study is to assess the changes in the symptoms of schizophrenia in LTP Plus arm or TAU arm. This paper is a secondary paper of a PhD project on "Learning through Play and Culturally adapted Cognitive Behavior Therapy for Mothers with Schizophrenia: A Feasibility Randomized Controlled Trial" (NBC Ref: No.4-87/NBCR-1015/23/1119). The trial was registered on clinicaltrials.gov (NCT06301347).

Method:

Study Design

The present study is a randomised controlled trial (RCT) design. A total of 50 participants (25 in each group) recruited from psychiatric units. This sample size accounts for potential attrition and ensures at least 12 participants per group for analysis. Recommendations from previous pilot RCTs suggest a sample size of 24–50 participants is adequate for feasibility testing (Julious, 2005; Sim & Lewis, 2012).

Participants

Mothers received the diagnosis of first episode psychosis, schizophrenia, schizoaffective disorder, or schizophreniform disorder based on DSM-V TR criteria, and aged 18 or above were included. They were all mothers of infants from birth to 36 months of age, and stabilised on antipsychotic medication for at least three months before recruitment.

Women were excluded if they failed to fulfill inclusion criteria, could not undergo screening or baseline evaluations, or had a DSM-V TR diagnosis of a substance abuse (other than nicotine) during the preceding month, or dependence in the last six months.

Interventions

Study ARMS:

Randomised participants allocated in 2 arms: 1) Learning through Play Plus 2) Treatment as Usual arm (TAU).

1. Learning Through Play Plus (LTP Plus)

In LTP Plus arm there were 2 interventions integrated for the feasibility testing. Plus aspect of the intervention adding the evidence based Culturally adapted Cognitive Behavior Therapy for psychosis (CaCBTp).

Learning Through Play (LTP)

The *Learning Through Play* (LTP) programme promotes early child development through a pictorial calendar illustrating eight developmental stages from birth to 3 years. Each stage highlights five key areas: sense of self, physical development, relationships, understanding, and communication. The calendar uses low-literacy text with visual cues to facilitate understanding. LTP was previously translated, culturally adapted, and successfully tested among Pakistani mothers with postnatal depression (Husain et al., 2021). In this trial, it will be delivered to mothers with psychosis to strengthen parenting skills, attachment, and understanding of child development.

Culturally Adapted Cognitive Behavioural Therapy for Psychosis (CaCBTp)

CaCBTp manual developed by Kingdon & Turkington (1994) and culturally adapted by Naeem (2015). The approach will involve:

- Building engagement and developing a shared understanding of symptom origins of schizophrenia.
- Addressing distress and disability through psychoeducation and normalisation.
- Treating co-existing anxiety or depression.
- Developing collaborative case formulations.

Specific intervention target:

- **Auditory hallucinations:** through critical analysis, voice diaries, reattribution, and coping strategies.
- **Delusions:** through guided discovery and graded behavioural experiments.
- **Thought disorder:** by clarifying thought links and themes.
- **Negative symptoms:** via activity scheduling, mastery diaries, and behavioural activation.

The therapy delivered by Master level trained psychologist in both LTP and CaCBTp interventions. Regular supervisions were provided by the senior clinical psychologists.

3. Treatment as usual

Participants in the control group were continued with treatment as usual (TAU)—attending outpatient clinics and receiving prescribed medication. They will not receive the LTP-Plus intervention during the study period but will be offered it after completing the 3-month follow-up.

Procedure

Participant Information Sheets and Consent Forms were translated into Urdu. Potential participants were approached at collaborating psychiatric units. Screening for eligibility were conducted with confirmation from consultant psychiatrists.

Eligible participants were receiving full verbal and written information and asked for signing written consent after a 24-hour. Baseline assessments were included demographics (age, family structure, income, treatment duration, comorbid conditions). In this study change in the symptoms were assessed through Positive and Negative Syndrome scale: A 30-item structured interview measuring symptom severity over the past week across positive, negative, and general psychopathology subscales. Urdu-translated versions have been used widely (Deakin et al., 2018; Husain et al., 2017).

Eligible Participants were randomized via computer-generated sequence into either the *intervention* or *waitlist control* group and assigned a unique ID. Intervention participants were attended weekly therapy sessions within one week of consent. Waitlist control group participants were continued routine care and undergo assessments at baseline assessment and follow-up assessments will occur at 3 months post-intervention, and any adverse events were recorded throughout the study.

Data Analysis

Data were analyzed using SPSS (version 23). Descriptive statistics (means, SDs, frequencies) were reported participant characteristics and key outcomes. Independent sample t test and paired sample t test were used for comparisons.

Ethical Considerations

The research was conducted in accordance with the Declaration of Helsinki and reviewed by the National Bioethics Committee (NBC Ref: No.4-87/NBCR-1015/23/1119) of Pakistan. Written informed consent was provided by all participants. The trial were registered on clinicaltrials.gov (NCT06301347).

Confidentiality was ensured through keeping information in password-protected electronic files and locked drawers. Participants were educated about the fact that they could withdraw at any point in time without influencing their current treatment. No procedures were invasive, and any unwanted events were observed and reported in a timely manner.

After data collection was completed, the waitlist control group was then provided with the intervention to provide equal access to benefits that could be potentially obtained.

Results

Table 1: Socio-demographic characteristics of the sample (n=50)

	Control n = 25	Intervention n = 25	Total N = 50
	Mean (SD) and Median [IQR]		
Age	28.16 (4.90)	28.36 (4.60)	28.26 (4.70)
Diagnosis of Schizophrenia (weeks)	191.36 (113.80)	214.48 (121.17)	202.92 (116.92)
Number of family members	6 [4 – 7]	6 [3 – 10]	5 [4 – 7]
Household income (x1000)	29.71 (10.02)	25.10 (7.73)	27.46 (9.17)
	n (50)		
Education			
No formal education	06	08	
primary	06	03	
Secondary	12	10	
Intermediate	02	04	
Family system			
Nuclear	18	15	
Joint	07	10	
Occupation			
Housewives	24	24	
Skill based work	01	01	

Table 2: Comparison of PANSS scores between control and intervention groups at baseline and follow-up.

		Control (N= 25) Mean (SD)	*Intervention (N=25) Mean (SD)*	*T*	*df*	*Mean Differences (95% CI)*	*P-value*
PANSS Positive							
	Pre	16.36 (2.97)	16.96 (3.09)	-0.70	47.93	-0.60 (-2.32 to 1.12)	.487
	Post	14.08 (2.93)	10.08 (1.44)	6.13	34.90	4.00 (2.675 to 5.33)	***.000***
PANSS Negative							
	Pre	12.12 (4.44)	13.52 (3.87)	-1.19	47.14	-1.40 (-3.77 to 0.97)	.241
	Post	12.68	08.40 (1.61)	4.29	29.50	4.28 (2.24 to 6.32)	***.000***

		(4.74)					
General psychopathology							
	Pre	33.28 (7.12)	34.20 (6.00)	-4.94	46.65	-0.92 (-4.67 to 2.83)	.624
	Post	26.24 (8.85)	20.84 (5.66)	2.57	40.82	5.40 (1.15 to 9.65)	***.014***
PANSS Total							
	Pre	61.76 (12.62)	64.68 (10.55)	-0.88	46.54	-2.92 (-9.54 to 3.70)	.379
	Post	53.00 (13.41)	39.32 (6.79)	4.55	35.54	13.68 (7.58 to 19.78)	***.000***

A comparison of PANSS scores between the intervention and control groups at baseline and follow-up showed significant improvements in the intervention group across all symptom domains. At baseline, there were no significant differences between groups in PANSS Positive, Negative, General Psychopathology, or Total scores (all $p > .05$). However, at follow-up, the intervention group demonstrated significantly greater reductions in PANSS Positive symptoms ($t(34.90) = 6.13$, $p < .001$, mean difference = 4.00, 95% CI [2.68, 5.33]), Negative symptoms ($t(29.50) = 4.29$, $p < .001$, mean difference = 4.28, 95% CI [2.24, 6.32]), and General Psychopathology ($t(40.82) = 2.57$, $p = .014$, mean difference = 5.40, 95% CI [1.15, 9.65]). Likewise, the intervention group showed a significant reduction in PANSS Total scores compared to the control group ($t(35.54) = 4.55$, $p < .001$, mean difference = 13.68, 95% CI [7.58, 19.78]). These findings indicate that the intervention produced clinically meaningful improvements in positive, negative, and general psychopathological symptoms relative to treatment as usual.

Discussion

The findings of this study indicated that, participant in the intervention arm showed significant improvement in positive, negative, general psychopathology, and total PANSS scores at follow-up comparing TAU group. These findings supporting the clinical need of structured psychosocial interventions in addition to pharmacological treatment for mothers with schizophrenia. The finding's suggested intervention is feasible by retaining all the participants at 3rd month followup and all the participants attended all the sessions.

The reduction in positive symptoms shows that the intervention supporting the management of core psychotic experiences, such as hallucinations, delusions, and thought disorder. The intervention techniques were followed from the literature, that cognitive restructuring, coping

skills training, and behavioral techniques are effective to improve positive symptoms (Jauhar et al., 2014; van der Gaag et al., 2012). It is expected that participants had improved insight about the symptoms and associated risk and protective factors enhanced reality assessement, which in turn reduced distress associated with psychotic experiences (Phelan & Sigala, 2022). Positive symptoms often distressing, impair daily functioning, and, if insufficiently treated, increased relapse ratio and hospitalization (Oneib, Mansour, & Bouazzaoui, 2025). The psychoeducation often reduces the relapse rate and improve the management of symptoms (Oliveira & Dias, 2023).

Significant changes were observed negative symptoms in the intervention arm at follow-up time, which is noteworthy that resistance of negative symptoms to pharmacological interventions alone (Kirkpatrick et al., 2006). Negative symptoms of schizophrenia included reduced motivation, social withdrawal, apathy, and anhedonia, are strong predictor of disturbed functional outcomes and poor quality of life. The intervention is feasible in mitigating these symptoms suggests the importance of behavioral activation, structured routine activities, goal directed activities, and engagement in meaningful social interactions. These findings align with available evidence suggested psychosocial interventions are effective in improving behavior, motivation, and social engagement can significantly impact the negative symptoms (Lincoln et al., 2011; Fusar-Poli et al., 2015).

Importantly, the intervention was not reported any significant changes in general psychopathology, such as anxiety, tension, depression, and emotional instability. Psychosocial interventions, target coping skills, stress management, and emotional regulation, have been associated with increased resilience, adaptive functioning, and the ability to manage daily life hassles in psychotic individuals (Wykes et al., 2008; Freeman et al., 2017). Thus, the present intervention seems to have holistic benefits, in improving symptomatology and reducing distress level. This finding supports previous evidence that psychosocial interventions in addition to pharmacological treatment are more effective than medication alone (Naeem et al., 2016; Morrison et al., 2014). The results underscore the need for a multicomponent treatment approach focusing on not only the improvement of acute psychotic symptoms but also the improving and social, occupation functioning and quality of life.

Clinical implications: Psychosocial support add on wit pharmacological treatment can reflected more better outcome as compare to the relay on only medications. The cognitive behavior therapy, techniques for behavioral activation, and emotion regulation strategies are effective in strengthen functioning and quality of life. The delivery of culturally sensitive, contextually adapted therapy can result in better outcomes for treatment adherence and consistency. The families of schizophrenic patients were encouraged to support patients by psychoeducation them about the symptoms and its associated factors.

Limitations and Future Directions

The key limitations of the study are: the sample size is relatively small which limits generalizability. In Future, multicenter trials are needed with the adaptation of including family session and assess the durability of treatment effects.. Second, the outcome assessmet were assessed on a shorter period exact only after the intervention. Assessing functioning, quality of life, and real-world outcomes would strengthen validity in future research long-term changes and treatment benefits should also be assessed at 6 and 12 months. Moreover, cost-effectiveness of the intervention should be evaluated for scaling up interventions in low resources settings.

Conclusion

This current study offers suggested the feasibility of the intervention learning through play plus that a structured, culturally adapted psychosocial intervention can significantly reduce positive, negative, and general psychopathology symptoms among patients with psychosis. The integration of psychosocial intervention with standard care improves clinical outcomes, improved wellbeing and quality of life. These study findings emphasize the importance of culturally adapted psychosocial interventions combined with pharmacological treatment in low resource settings for improved clinical outcomes. Further development, implementation, and evaluation of culturally sensitive interventions will be required for the continued effort toward improving outcomes for individuals with psychosis worldwide.

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