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Assessing the Benefits of Mobile Application-Based Psychoeducation for Patients with Schizophrenia: A Randomized Controlled Trial

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Abstract

A randomized controlled trial evaluated the efficacy of a mobile application–based psychoeducation program for improving treatment adherence and symptom management among 120 adult patients with schizophrenia. Participants were allocated to either the intervention group—receiving eight weeks of daily psychoeducational modules, symptom tracking, and therapeutic reminders via a smartphone app (n = 60)—or the control group—receiving routine care only (n = 60). Primary outcomes included medication adherence measured by the Medication Adherence Rating Scale (MARS) and symptom severity assessed with the Positive and Negative Syndrome Scale (PANSS). At eight weeks, the intervention group exhibited significantly higher MARS scores (mean ± SD: 24.2 ± 3.1 vs. 18.7 ± 4.5; $p < 0.001$) and lower total PANSS scores (68.5 ± 8.7 vs. 76.8 ± 10.2; $p < 0.001$) compared with controls. App usability and satisfaction were rated high (91% positive responses). No serious adverse events were reported. Findings demonstrate that mobile application–based psychoeducation enhances medication adherence and reduces symptom severity in schizophrenia, supporting its integration into standard outpatient care.

Keywords: mobile health; psychoeducation; schizophrenia.

Introduction

Schizophrenia is a chronic psychiatric disorder imposing substantial disability, with relapses commonly precipitated by poor medication adherence[1]. Psychoeducation is recommended by clinical guidelines to improve insight, treatment compliance, and assertive coping strategies[2]. Traditional delivery modes, however, are resource-intensive and limited in reach[3]. Recent advancements in mobile health (mHealth) have introduced the possibility of delivering psychoeducational content through smartphone applications, which may augment accessibility and engagement among patients with schizophrenia[4]. Meta-analyses indicate that digital interventions can effectively reduce symptom severity and improve psychosocial outcomes in psychotic disorders[5],[6].

Several pilot studies (2022–2023) have explored app-based interventions encompassing medication prompts, interactive modules, and telepsychiatric feedback, demonstrating preliminary improvements in adherence and symptom monitoring[7–9]. Yet, rigorous randomized controlled trials (RCTs) specifically assessing structured psychoeducation via mobile platforms in schizophrenia patients remain sparse[10].

This trial addresses this gap by evaluating a purpose-built psychoeducation app, designed in collaboration with psychiatrists, patients, and caregivers, offering daily learning modules, relapse risk alerts, and medication tracking over an eight-week period. Core outcomes include adherence (MARS), symptom severity (PANSS), user satisfaction, and treatment retention.

The hypothesis is that app-supported psychoeducation will yield superior improvements in adherence and clinical symptoms compared with standard care. This investigation provides contemporary evidence for scalable digital interventions in chronic psychiatric care.

Methodology

A prospective, parallel-group RCT was conducted between at a university-affiliated psychiatric outpatient Balochistan Institute of Psychiatry and Behavioural Sciences, Quetta . Adults aged 18–65 years meeting DSM-5 criteria for schizophrenia and stable on antipsychotic medication for at least one month were invited. Exclusion criteria included comorbid substance use, cognitive impairment preventing app use, or recent hospitalization (<4 weeks). Verbal informed consent was obtained under institutional ethics approval. Sample size estimation using Epi Info® (80% power; $\alpha = 0.05$) anticipated a 4-point MARS difference (SD 6), requiring 54 participants per group; 60 per arm were enrolled to allow for attrition. Participants were randomized (1:1) using block

randomization with allocation concealed in sealed envelopes. The intervention arm received access to a smartphone app featuring daily psychoeducational modules (15-minute readings/videos) covering illness insight, medication purpose, side-effect management, and relapse prevention. Daily medication reminders, symptom trackers, and relapse risk alerts based on self-reported changes were included. The control group received routine outpatient care including medication appointments and ad hoc psychoeducation. Baseline assessments included sociodemographics, MARS, and PANSS scores. Follow-up measures occurred at eight weeks by assessors blinded to group allocation. App usability and satisfaction were evaluated via a Likert-based survey. Primary outcomes were changes in adherence and total symptom scores. Between-group comparisons utilized paired t-tests and ANCOVA adjusted for age, illness duration, and baseline scores. Statistical significance was set at $p < 0.05$, and analyses executed in SPSS® v26.

Results

Table 1. Baseline Characteristics (n = 120)

Characteristic	Intervention (n=60)	Control (n=60)	p-value
Age (years)	38.2 ± 10.4	37.5 ± 9.8	0.72
Male, n (%)	34 (57%)	32 (53%)	0.68
Illness duration (years)	8.1 ± 3.2	8.4 ± 3.5	0.63
Baseline MARS	16.3 ± 5.8	16.7 ± 5.5	0.74
Baseline PANSS	81.2 ± 12.1	80.5 ± 11.8	0.78

All baseline characteristics were balanced between groups.

Table 2. Primary Outcomes at 8 Weeks

Outcome	Intervention	Control	p-value
MARS score	24.2 ± 3.1	18.7 ± 4.5	<0.001
PANSS total score	68.5 ± 8.7	76.8 ± 10.2	<0.001
PANSS positive subscale	16.3 ± 2.9	19.1 ± 3.5	<0.001
PANSS negative subscale	18.7 ± 3.4	21.4 ± 4.0	0.001

Intervention participants showed significantly higher adherence and lower symptom severity.

Table 3. App Usability and Satisfaction (n = 60)

Measure	Percentage Positive Responses
App ease of use	93%
Content relevance	89%
Likely to continue use post-study	91%
Recommend to peers/family	87%

High usability and satisfaction were reported across all app domains.

Discussion

This RCT demonstrates that mobile app–based psychoeducation significantly improves medication adherence and reduces symptom severity in schizophrenia patients compared with standard care. The 5.5-point increase in MARS and 8.3-point reduction in PANSS underscore meaningful clinical improvements[1]. These findings align with a 2023 pilot RCT that reported enhanced adherence using mobile reminders but differed by integrating structured psychoeducational,content[11].

App effectiveness may be attributed to psychoeducation's role in increasing illness insight and the motivational impact of self-monitoring features[3–4]. The integration of symptom tracking and relapse alerts likely reinforced patient engagement, aligning with evidence linking self-management capabilities to better outcomes[12-14].

User satisfaction was high, with over 90% reporting positive usability and intent to continue use—comparable to 2022 meta-analytic findings on digital interventions for serious mental illness[6]. This suggests that well-designed, user-centric apps can be broadly acceptable and feasible in routine outpatient psychiatric care[15].

No serious adverse events were reported, corroborating safety observations from similar Health interventions. Notably, the digital format may mitigate traditional barriers to psychoeducation such as stigma, time constraints, and access[8].

Strengths of this study include randomization, blinding of outcome assessors, and standardized validated measures. Limitations include single-center setting, short duration, and the need for smartphone access and proficiency. Future multicenter trials with longer follow-up and cost-effectiveness analysis are warranted[9].

Integration of app-based psychoeducation could augment community mental health settings and foster patient autonomy, potentially mitigating relapse rates and rehospitalization over time[10].

Customization of content to cultural and literacy levels, and incorporation of clinician feedback loops, may enhance effectiveness[11].

Overall, these findings support mobile psychoeducation as an evidence-based augmentation to standard psychiatric treatment, offering scalable benefits with minimal resource investment[12–13].

Conclusion

Mobile application–based psychoeducation significantly improved medication adherence and reduced symptom severity among adults with schizophrenia, with high usability and no adverse events. This trial supports digital psychoeducation as an effective adjunct to routine care, warranting broader implementation and longitudinal evaluation.

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