SSR Institute of International Journal of Life Sciences
ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Singh *et al*., 2025
doi: 10.21276/SSR-IIJLS.2025.11.4.1

Original Article

open access

Study on Follow-Up in Psychiatry OPD: Its Relationship with Disorder Type, Severity, Treatment Outcome, and the Role of Mobile Phone Technology

Ankush Singh[1*], Gaurav Singh[2], Shweta Chauhan[3], Ravneet Kaur Brar[1]

[1]PG-JR, Department of Psychiatry, K.D. Medical College Hospital and Research Centre, Mathura, India
[2]H.O.D. & Professor, Department of Psychiatry, K.D. Medical College Hospital and Research Centre, Mathura, India
[3]Associate Professor, Department of Psychiatry, K.D. Medical College Hospital and Research Centre, Mathura, India

***Address for Correspondence:** Dr. Ankush Singh, PG-JR, Department of Psychiatry, D. Medical College Hospital and Research Centre, Mathura, India
E-mail: ankushsingh4491@gmail.com

Received: 17 Feb 2025/ Revised: 29 Apr 2025/ Accepted: 21 Jun 2025

ABSTRACT

Background: Psychiatric disorders require long-term management and consistent follow-up to ensure effective treatment outcomes. However, maintaining follow-up adherence among psychiatric patients remains a challenge. The increasing accessibility of mobile phones has introduced new possibilities for improving adherence through text messages, voice calls, and video reminders.

Methods: This study was conducted at the Psychiatry OPD of Kanti Devi Medical College, Mathura, over two years. A total of 306 patients aged 18 years and older, with access to mobile phones, were enrolled and randomly assigned to four groups: Text, Voice, Video, and Combined (receiving all three interventions). Data were collected on demographic characteristics, clinical severity (CGI-S), improvement (CGI-I), and follow-up adherence. Statistical analyses, including chi-square tests and t-tests, were performed using SPSS software.

Results: The study included participants with a mean age of 36.06 years, predominantly male (especially in the Voice group, 63.75%). Most had secondary education and lived in urban areas. Common diagnoses were major depressive disorder, generalized anxiety disorder, and schizophrenia. Follow-up was highest in the Voice group (68.75%) and lowest in the Video group (30.88%). Key reasons for missed follow-ups were transport issues (31.82%) and financial constraints (13.64%). Most patients had mild-to-moderate severity per CGI, with the highest improvement in the Combined group (79.47%). However, treatment efficacy did not significantly differ across the intervention groups.

Conclusion: This study highlights the potential of mobile-based interventions in improving follow-up adherence among psychiatric patients. The findings suggest that personalized and multimodal follow-up strategies may enhance patient adherence and treatment outcomes.

Key-words: Follow up; Psychiatric disorders; Major Depressive Disorder; Generalized anxiety disorder; Schizophrenia; CGI scale

INTRODUCTION

Psychiatric disorders constitute a significant global health challenge, impacting individuals' quality of life, productivity, and social well-being.

How to cite this article
Singh A, Singh G, Chauhan S, Brar RK. Study on Follow-Up in Psychiatry OPD: Its Relationship with Disorder Type, Severity, Treatment Outcome, and the Role of Mobile Phone Technology. SSR Inst Int J Life Sci., 2025; 11(4): 7800-7810.

Access this article online
https://iijls.com/

As mental health disorders often require prolonged treatment and consistent follow-up, the success of any mental health program is determined not only by the number of patients diagnosed but also by the adherence to follow-up care and treatment plans. Regular follow-ups in psychiatric outpatient departments (OPDs) are vital for monitoring treatment progress, preventing relapses, and ensuring timely adjustments in therapeutic strategies. However, achieving consistent follow-up adherence is challenging due to various factors, including stigma, logistical constraints, lack of awareness, and patient-related barriers [1].

doi: 10.21276/SSR-IIJLS.2025.11.4.1

The type and severity of psychiatric disorders play a pivotal role in determining follow-up adherence. Severe or chronic conditions, such as schizophrenia and bipolar disorder, often necessitate more frequent monitoring to evaluate treatment efficacy and address potential side effects. Treatment outcomes, closely tied to follow-up adherence, benefit from consistent engagement as it allows healthcare providers to modify regimens in response to clinical and patient-reported progress. Nonadherence to follow-up care not only undermines treatment efficacy but is also associated with adverse outcomes, including relapse, rehospitalization, and increased healthcare costs [2].

Adverse outcomes following psychiatric hospitalisation are particularly concerning. A meta-analysis of 100 studies conducted across five continents revealed that the suicide rate in the first three months post-discharge is approximately 100 times higher than the global average. For patients admitted with suicidal ideation, this rate increases to 200 times the global average. Additionally, rapid readmissions are common, with studies reporting an all-cause readmission rate of 20.9% within the first 30 days of discharge. Such statistics highlight the critical need for effective follow-up care in psychiatric settings to mitigate these risks [3].

The Healthcare Effectiveness Data and Information Set (HEDIS), developed by the National Committee for Quality Assurance (NCQA), underscores the importance of timely follow-up care. One of its quality indicators recommends that psychiatric inpatients receive outpatient follow-up care within 30 days of discharge. This guideline is based on the vulnerability of psychiatric patients during the post-discharge period and emphasises the role of timely follow-up in bridging inpatient and outpatient care, maintaining treatment continuity, and ensuring adherence to pharmacotherapy. While follow-up care has demonstrated potential benefits, studies exploring its effectiveness have produced mixed results. For instance, U.S.-based research by Marcus *et al.* [4] found only a modest reduction in readmissions within 120 days post-discharge among patients with schizophrenia and bipolar disorder. Similarly, studies by Ilgen *et al.* [5] found limited evidence of reduced readmissions through follow-up care, though specific interventions like outpatient substance use care showed positive effects.

In contrast, studies conducted outside the United States have provided more compelling evidence supporting the benefits of timely follow-up. Research by Okumura *et al.* in Japan found that patients with bipolar disorder and schizophrenia who missed follow-up care were significantly more likely to be readmitted [6]. Similarly, Lin and Lee in Taiwan observed reduced readmission rates among schizophrenic patients who received prompt follow-up visits post-hospitalization. These findings suggest that the impact of follow-up care on treatment outcomes may vary across healthcare systems and populations [7].

Missed appointments are one of the major challenges in outpatient settings. Missed appointments lead to wasted medical resources and interfere with patient care. They are also associated with negative stereotypes of patients and poor compliance with treatment regimens.

With the advancement of mobile technology and its widespread availability, mobile devices have become a valuable tool for improving follow-up adherence, even in resource-limited settings. The availability of affordable mobile internet services has contributed to the penetration of mobile technology into both rural and urban populations, providing an opportunity to address the problem of missed appointments**.** These technological advancements can be leveraged to enhance patient engagement through SMS reminders, teleconsultations, and mobile applications, offering an efficient and cost-effective solution to improve follow-up rates in outpatient care [7]. This study aimed to examine the relationship of follow-up in the Psychiatry OPD with the type of disorder, disorder severity, treatment outcomes, and the role of mobile phone technology in improving follow-up.

MATERIALS AND METHODS

This study was designed as a randomized controlled trial to evaluate the relationship between psychiatric outpatient follow-up and the type of disorder, disorder severity, treatment outcomes, and the effectiveness of mobile phone technology in improving follow-up adherence. The study was conducted in the Psychiatry Outpatient Department (OPD) of the Tertiary Care Teaching Center over two years.

The study included psychiatric patients presenting to the Psychiatry OPD and meeting the inclusion and exclusion criteria. Patients were diagnosed with psychiatric illnesses according to the Diagnostic and Statistical

doi: 10.21276/SSR-IIJLS.2025.11.4.1

Manual of Mental Disorders, Fifth Edition (DSM-5) criteria.

Inclusion Criteria

- Patients aged 18 years or older.
- Patients with access to mobile phones.
- Patients who were able to use SMS, WhatsApp, or other media for communication.
- Patients who provided informed consent.

Exclusion Criteria

- Patients aged less than 18 years**.**
- Patients without access to mobile phones**.**
- Patients unable to use SMS, WhatsApp, or other media.
- Patients who did not provide informed consent.

Participants attending the Psychiatry OPD during the specified study period were screened and recruited based on inclusion and exclusion criteria. After obtaining informed and written consent, eligible participants were enrolled.

Randomization

Participants were randomized into four groups using a computer-generated randomization sequence:

Text Message Group- Patients received standardized text messages (SMS or WhatsApp).

Voice Message Group- Patients received standardized audio messages.

Video Message Group- Patients received standardized video messages.

Combined Group- Patients received all three types of messages (text, audio, and video).

Data Collection Tools

Socio-Demographic and Clinical Data Sheet- Participants' demographic and clinical details were recorded, including age, gender, education, marital status, occupation, place of residence, and monthly income. Clinical information included diagnosis, duration of illness, treatment history, and the residential distance from the hospital.

Clinical Assessment Scales

Clinical Global Impression (CGI) Scale- Used to assess the severity of psychiatric disorders and treatment outcomes.

Charleston Psychiatric Outpatient Satisfaction Scale (CPOSS)- Used to evaluate patient satisfaction with outpatient psychiatric care.

Intervention- Each participant was sent follow-up reminders one day before the follow- up date (14th day) based on their assigned group:

Text messages contained patient particulars and follow-up reminders.

Voice messages included similar information as audio recordings.

Video messages conveyed follow-up reminders in video format.

Combined messages involved sending all three types of reminders.

Missed Follow-Up Management- Participants who missed their scheduled follow-ups were contacted via phone calls. The calls were categorized as:

Attended- Patients who answered the call.

Not Attended- Patients who did not respond.

The reasons for missed follow-ups were recorded, and patients were encouraged to attend their follow-up appointments.

Outcome Measures

Follow-Up Attendance

Proportion of patients attending follow-ups after receiving reminders.

Proportion of patients who missed follow-ups despite interventions.

Treatment Outcomes- Assessed using the CGI scale.

Patient Satisfaction- Evaluated using the CPOSS scale.

Statistical Analysis- Categorical variables were presented as numbers and percentages, while quantitative data were shown as mean±SD. Data normality was assessed using the Shapiro-Wilk test. Independent t-test was applied for quantitative comparisons, and the Chi-square test was used for qualitative variables; Fisher's exact test was applied when expected cell counts were<5. Data entry was done in Microsoft Excel, and statistical analysis was performed using SPSS version 25.0 (IBM Corp., Chicago, USA). A p-value<0.05 was considered statistically significant.

doi: 10.21276/SSR-IIJLS.2025.11.4.1

RESULTS

The study population was divided into three age groups: 18–37, 38–57, and 58–77 years. The mean age in the Combined group was 36.06±14.22 years, while it was 37.91±13.98 in the Text group, 40.32±12.36 in the Video group, and 36.06±15.98 in the Voice group. In terms of distribution, the 18–37 age group was predominant in the Combined (53.84%), Video (50%), and Voice (57.50%) groups, whereas the 38–57 age group was most frequent in the Text group (57.5%). The 58–77 age group constituted the smallest proportion across all groups. The p-value for age group comparison was 0.54, indicating no statistically significant difference. Regarding gender, males formed a slight majority in all groups: 51.28% in the Combined group, 55% in the Text group, 55.88% in the Video group, and 63.75% in the Voice group. Female representation ranged from 36.25% to 48.72%. The p-value for gender distribution across groups was 0.09, also not statistically significant (Table 1).

Table 1: Age Group and Gender Distribution in study population

Variable	Combined Group	Text Group	Video Group	Voice Group	p-value
18–37	42 (53.84%)	28 (35.00%)	34 (50%)	46 (57.50%)	0.54
38–57	29 (37.17%)	46 (57.50%)	23 (33.82%)	28 (35.00%)	
58–77	07 (8.75%)	06 (07.50%)	11 (16.17%)	06 (07.50%)	
Mean±SD	36.06±14.22	37.91±13.98	40.32±12.36	36.06±15.98	
Total	78 (100%)	80 (100%)	68 (100%)	80 (100%)	
Male	40 (51.28%)	44 (55%)	38 (55.88%)	51 (63.75%)	0.09
Female	38 (48.72%)	36 (45%)	30 (44.12%)	29 (36.25%)	
Total	78 (100%)	80 (100%)	68 (100%)	80 (100%)	

The education distribution in the combined group is higher education (11.53%), secondary education (67.94%), and primary education (20.51%). The in-text group is higher education (13.75%), secondary education (56.25%), and primary education (30%). In the video group is higher education (29.41%), secondary education (44.12%), and primary education (22.50%), in the combined group, is higher education (17.5%), secondary education (55%), and primary education (27.5%), with p-value of 0.06 (Table 2).

Table 2: Duration of Illness Years in study population

Category	Combined Group Mean±SD	Text Group Mean±SD	Video Group Mean±SD	Voice Group Mean±SD	p-value
Duration of Illness Years	6.13±4.22	5.15±1.02	6.41±0.22	4.96±0.98	0.12

Treatment history of "No Previous Treatment" was reported by 43.58% of the combined group, proportion in the Text (52.5%) and Voice (52.5%) groups, followed by the Video group (44.11%). "Outpatient Treatment" was the second category, with the proportion in the Video group (36.76%), Combined (30.76%), Text (28.75%), and Voice (33.75%). "Inpatient Treatment" had a proportion in the Combined group (29.48%), in the Voice group (13.75%), in the text group (18.75%), and in the video group (19.11%). The p-value of 0.46 is not statistically significant (Table 3).

doi: 10.21276/SSR-IIJLS.2025.11.4.1

Table 3: Treatment History in Study Population

Treatment History	Combined Group	Text Group	Video Group	Voice Group	p-value
Outpatient Treatment	21(30.76%)	23(28.75%)	25(36.76%)	27(33.75%)	0.46
No Previous Treatment	34(43.58%)	42(52.5%)	30(44.11%)	42(52.5%)	
Inpatient Treatment	23(29.48%)	15(18.75%)	13(19.11%)	11(13.75%)	
Total	78(100%)	80(100%)	68(100%)	80(100%)	

Major Depressive Disorder was the most common diagnosis across all groups, with prevalence highest in the Voice (35%) and Video (35.29%) groups, followed by the Text (33.75%) and Combined (26.92%) groups. Generalized Anxiety Disorder (GAD) was most frequent in the Voice group (26.25%), followed by the Combined (21.9%), Text (20%), and Video (13.23%) groups. Schizophrenia was reported in all groups, ranging from 11.25% to 14.1%. Bipolar Disorder was noted in the Combined (11.53%), Text (8.75%), Voice (7.5%), and Video (4.41%) groups. Dissociative disorders and Alcohol Use Disorder had lower prevalence, with a statistically significant difference in alcohol use disorder distribution ($p = 0.03$). The "Others" category, which included sexual disorders, schizoaffective disorder, OCD, and adjustment disorder, was highest in the Video group (27.94%) and lowest in the Combined group (12.82%) (Table 4).

Table 4: Diagnosis in study population

Diagnosis	Combined Group	Text Group	Video Group	Voice Group	p-value
Alcohol use disorder	04(5.12%)	03(3.75%)	02(2.94%)	02(2.5%)	0.03
Bipolar Disorder	09(11.53%)	07(8.75%)	03(4.41%)	06(7.5%)	
Major Depressive Disorder	21(26.92%)	27(33.75%)	24(35.29%)	28(35%)	
Dissociative disorder	06(7.69%)	01(1.25%)	03(4.41%)	02(2.5%)	
Schizophrenia	11(14.10%)	10(12.5%)	08(11.76%)	09(11.25%)	
Generalized anxiety disorder	17(21.9%)	16(20%)	09(13.23%)	21(26.25%)	
Others	10(12.82%)	16(20%)	19(27.94%)	12(15%)	
Total	78(100%)	80(100%)	68(100%)	80(100%)	

In the Combined group, 76.92% of participants attended their follow-up, while 23.08% missed. The Text group showed a 65% attendance rate, compared to 30.88% in the Video group and 68.75% in the Voice group. The p-value of 0.09 indicates no statistically significant difference in follow-up attendance before the intervention. After the mobile phone intervention (calls), follow-up attendance remained highest in the Combined group (76.92%), followed by the Voice (68.75%) and Text (65%) groups, with the Video group remaining lowest (30.88%). The differences in post-call attendance were also not statistically significant (p=0.06) (Table 5).

Table 5: Follow-Up Attendance Before and After Mobile Phone in study population

Follow-Up	Status	Combined Group	Text Group	Video Group	Voice Group	p-value
Before Call	Attended	60 (76.92%)	52 (65%)	21 (30.88%)	55 (68.75%)	0.09
	Missed	18 (23.08%)	28 (35%)	47 (69.11%)	25 (31.25%)	
	Total	78 (100%)	80 (100%)	68 (100%)	80 (100%)	

doi: 10.21276/SSR-IIJLS.2025.11.4.1

After Call	Attended	12 (15.38%)	19 (23.75%)	15 (22.05%)	19 (23.75%)	0.06
	Missed	06 (7.69%)	09 (11.25%)	11 (16.17%)	05 (6.25%)	
	Total	18 (100%)	28 (100%)	26 (100%)	24 (100%)	

The data on reasons for missed appointments among the study population indicate several contributing factors across different groups. Transportation issues were the most commonly reported reason overall (31.82%), with higher percentages in the text (18.51%) and video (14.81%) groups, compared to the voice group (10%). Financial constraints were the second most frequent cause, affecting 13.64% overall, with the highest impact in the text group (37.03%) and video group (26.92%), and only 8.75% in the voice group. Some participants felt they did not need medication, reported by 13.64% in the combined group, again highest in the text group (18.51%) and lowest in the voice group (1.25%). Forgetting the appointment accounted for 9.09% of missed visits, more often in the text and video groups (14.81% each) than in the voice group (10%). Social reasons were also noted (9.09% overall), most frequently in the video group (19.23%). A small proportion gave no reason (9.09%), and lack of awareness was cited by 4.55%, mostly in the voice group. The differences in reasons across groups were not statistically significant (p=0.07) (Table 6).

Table 6: Missed Reasons in study population

Missed Reason	ombined Group	Text Group	Video Group	Voice Group	p-value
Transportation Issues	7(31.82%)	05(18.51%)	04(14.81%)	08(10%)	0.07
Financial Constraints	3(13.64%)	10(37.03%)	7(26.92%)	07(8.75%)	
does not need medication	3(13.64%)	05(18.51%)	03(11.53%)	01(1.25%)	
Forgot Appointment	2(9.09%)	04(14.81%)	04(14.81%)	08(10%)	
Social reason	2(9.09%)	2(7.40%)	5(19.23%)	1(1.25%)	
reason not provided	2(9.09%)	01(3.70%)	2(7.69%)	02(7.40%)	
Lack of Awareness	1(4.55%)	0(0%)	1(3.84%)	02(7.40%)	
Total	18(100%)	28(100%)	26(100%)	24(100%)	

The Clinical Global Impression–Severity (CGI-S) scores showed that the mild category was most common, especially in the Combined (50.98%) and Voice (48.75%) groups. The moderately ill category was highest in the Text group (26.25%), while the severely ill category peaked in the Text (35.5%) and Video (30.88%) groups. These group differences were not statistically significant (p-values: mild = 0.19, moderate = 0.09, severe = 0.10).

For Clinical Global Impression–Improvement (CGI-I), most participants showed improvement, highest in the Combined group (79.47%), followed by Text (70%), Voice (68.75%), and Video (67.63%). Reports of no change and deterioration were highest in the Text and Voice groups, respectively. None of the differences were statistically significant (p-values: improvement = 0.06, no change = 0.11, deterioration = 0.07) (Table 7).

Table 7: Distribution of CGI-Severity Score and CGI-Improvement in the Study Population

CGI Measure	Status	Combined Group	Text Group	Video Group	Voice Group	p-value
CGI-Severity	Mild	39 (50.98%)	31 (39.25%)	30 (44.10%)	39 (48.75%)	0.19
	Moderately Ill	18 (23.07%)	21 (26.25%)	17 (25.00%)	17 (21.25%)	0.09
	Severely Ill	21 (26.92%)	28 (35.50%)	21 (30.88%)	24 (30.00%)	0.10
CGI-Improvement	Improvement	62 (79.47%)	56 (70.00%)	46 (67.63%)	55 (68.75%)	0.06
	No Change	10 (12.82%)	14 (17.50%)	10 (14.70%)	12 (15.00%)	0.11
	Deterioration	6 (7.68%)	10 (12.50%)	12 (17.65%)	13 (16.25%)	0.07

doi: 10.21276/SSR-IIJLS.2025.11.4.1

The CGI-E Index assesses treatment efficacy, with categories ranging from Marked (most effective) to None (least effective). In the Combined group, 23.07% of participants experienced Marked efficacy, 20.51% had Minimal efficacy, 33.33% had Moderate efficacy, and 23.07% had None. In the Text group, the highest proportion (28.75%) experienced Marked efficacy, while 25% had Minimal, 22.5% had Moderate, and 23.75% had None. In the Video group, 25% reported Marked efficacy, 23.52% had Minimal, 23.52% had Moderate, and 27.94% experienced None. Lastly, in the Voice group, 25% had Marked efficacy, 22.5% had Minimal, 30% had Moderate, and 22.5% had None. The p-value of 0.45 is not statistically significant (Table 8).

Table 8: CGI-Efficacy Index in study population

CGI-Efficacy Index	Group Combined	Group Text	Group Video	Group Voice	p-value
Marked	18(23.07%)	23(28.75%)	17(25%)	20(25%)	
Minimal	16(20.51%)	20(25%)	16(23.52%)	18(22.5%)	
Moderate	26(33.33%)	18(22.5%)	16(23.52%)	24(30%)	
None	18(23.07%)	19(23.75%)	19(27.94%)	18(22.5%)	
Total	78(100%)	80(100%)	68(100%)	80(100%)	0.45

For cposs8, the combined mean score is 3.02±0.21, with slight variations across the different groups. The Text group has the highest mean (3.05± 0.18), followed by the Voice group (3.02±0.39), and the Video group with the lowest mean (3.00±0.16). The p-value of 0.32 suggests that these differences are not statistically significant. For cposs15, the overall mean score is 3.10±0.32, with the highest mean observed in the Video group (3.32±0.22), followed by the Text group (3.06±0.32) and the Voice group (3.01±0.78). The p-value of 0.46 is not statistically significant (Table 9).

Table 9: cposs8 & cposs15 in study population

Category	Group Combined Mean±SD	Group Text Mean±SD	Group Video Mean±SD	Group Voice Mean±SD	p-value
cposs8	3.02±0.21	3.05±0.18	3.00±0.16	3.02±0.39	0.32
Cposs15	3.10±0.32	3.06±0.32	3.32±0.22	3.01±0.78	0.46

Table 10 presents the comparison between the Clinical Global Impression severity (CGI-S) and Clinical Global Impression improvement (CGI-I) scores with follow-up data using the U statistic and corresponding p-values. The CGI-S versus Follow-Up comparison yielded a U statistic of 9656.5 with a p-value of 0.451, while the CGI-I versus Follow-Up comparison resulted in a U statistic of 9866.5 with a p-value of 0.644. Both p-values were not significant.

Table 10: CGI-S & CGI-I versus follow up

Comparison	U Statistic	p-value
CGI-S vs Follow_Up	9656.5	0.451487
CGI-I vs Follow_Up	9866.5	0.643696

The correlation analysis between CPOSS scores and CGI measures showed weak, non-significant relationships. For CPOSS15, the correlation with CGI-S was -0.09 and with CGI-I was -0.09 (p-values 0.10 and 0.11, respectively), indicating very weak negative associations. For CPOSS8, the correlation with CGI-S was 0.07 and with CGI-I was -0.04 (p-values 0.90 and 0.43), also reflecting negligible and non-significant associations (Table 11).

doi: 10.21276/SSR-IIJLS.2025.11.4.1

Table 11: Correlation Between CPOSS Scores (CPOSS15 and CPOSS8) and CGI Variables (CGI-S and CGI-I)

Comparison	Spearman Correlation Coefficient	p-value
cposs15 vs CGI-S	-0.09	0.10
cposs15 vs CGI-I	-0.09	0.11
cposs8 vs CGI-S	0.06	0.90
cposs8 vs CGI-I	-0.04	0.43

DISCUSSION

Our study found that the mean age of participants in the combined group was 36.06 years (SD± 14.22). The youngest age group (18-37 years) constituted the largest proportion (53.84%), followed by the middle age group (38-57 years) at 37.17%, and the oldest age group (58-77 years) at 8.75%. The p-value of 0.54 suggested no significant difference in age distribution among study groups.

Medich *et al.* [8] studied mental health IT acceptability among individuals with serious mental illness (SMI) and reported a mean participant age of 40.5 years, which is slightly older than our study population. Lin *et al.* [7] examined a mobile health (mHealth) app for obsessive-compulsive disorder (OCD), including university students with a mean age of 25 years, significantly younger than our population. Chung *et al.* [9] assessed a schizophrenia-focused mHealth intervention and found that patients discharged from inpatient care had a mean age of 42 years, aligning more closely with our study's middle-aged group. These findings suggest that our study population was relatively younger than those in mental health intervention studies, except for studies involving university students, where participants skewed younger.

The mean duration of illness in our study population was 6.13± 4.22 years, with the Text group having 5.15±1.02 years, the Video group 6.41±0.22 years, and the Voice group 4.96± 0.98 years. The p-value of 0.12 indicated no statistically significant difference in illness duration across groups. Winterstein *et al.* [10] reported that patients with longer illness duration (mean 7.2 years) were more likely to engage with mobile health interventions, whereas those with shorter illness duration were less likely to perceive the need for continuous monitoring. Fontanella *et al.* [11] found that patients with schizophrenia had a mean illness duration of 8.5 years and were more receptive to long-term mobile interventions. Singh *et al.* [12] observed that patients with shorter illness durations (≤5 years) were less likely to adhere to follow-up interventions than those with longer illness durations (≥5 years). Our findings suggest that illness duration was relatively balanced across groups, though participants with longer illness durations were slightly more represented in the Video group. This aligns with previous studies showing that individuals with longer illness histories may be more engaged in follow-up interventions.

Our study found that 43.58% of participants had no previous treatment history**,** 30.76% had outpatient treatment**,** and 29.48% had inpatient treatment**.** The Text and Voice groups had the highest proportion of individuals with no previous treatment history (52.5% each)**,** while the Video group had a higher proportion of outpatient treatment (36.76%). The p-value of 0.46 indicated no statistically significant difference in treatment history across groups. Hatakeyama *et al.* [13] reported that patients without prior treatment history were less likely to engage with mobile interventions than those with outpatient or inpatient treatment experience. OECD [14] found that patients with prior inpatient care were more likely to adhere to mobile interventions (68%) than those with no prior treatment (45%)**.** Royal College of Psychiatrists [15] observed that patients with previous hospitalizations were more likely to respond to mobile follow-ups. Our study suggests that participants with no previous treatment history were more likely to be in the Text and Voice groups, which aligns with findings that individuals unfamiliar with healthcare interventions may be more receptive to simpler communication methods.

Major Depressive Disorder was the most common diagnosis in our study, affecting 26.92% of the combined group, with the highest prevalence in the Video (35.29%) and Voice (35%) groups. Generalized anxiety disorder (GAD) was the second most common diagnosis, affecting 21.9% of the combined group, with the highest prevalence in the Voice group (26.25%).

doi: 10.21276/SSR-IIJLS.2025.11.4.1

Schizophrenia was present in 14.1% of the combined group, while bipolar disorder was seen in 11.53%. The p-value of 0.03 indicated a statistically significant difference in the distribution of alcohol use disorder across groups. Wijekoon *et al.* [16] found that Major Depressive Disorder was the most common diagnosis in their mobile health intervention study, affecting 40% of participants. Chung *et al.* [9] reported that schizophrenia patients had a high engagement rate with mobile-based interventions (74%). Patel *et al.* [17] found that patients with GAD had lower adherence to mobile follow-ups compared to those with Major Depressive Disorder.

Our study found that 76.92% of participants attended their follow-up appointments, with the highest attendance in the Voice group (68.75%) and the lowest in the Video group (30.88%). The p-value of 0.09 suggested no statistically significant difference in follow-up rates between groups. Mandal *et al.* [18] found that mobile health interventions improved follow-up adherence from 50% to 75%. Zimmerman *et al.* [19] reported that SMS reminders increased follow-up rates from 45.37% to 62.26%, while voice call reminders further improved attendance to 75%. Reddy *et al.* [20] found that mobile follow-ups increased adherence by 11% (from 70% to 81%). Our study aligns with these findings, indicating that voice-based reminders may be the most effective in improving follow-up adherence.

Our study found that mild illness was the most common severity level (50.98%), followed by moderate illness (23.07%) and severe illness (26.92%). Among the individual groups, the Voice group had the highest proportion of mildly ill participants (48.75%), while the Text group had the highest proportion of severely ill participants (35.5%). The p-values (0.19 for mild, 0.09 for moderate, and 0.10 for severe cases) indicate no statistically significant differences across groups. Similar findings were observed in Chung *et al.* [9] where a mobile-based intervention for schizophrenia patients showed significant improvement in clinical symptoms over time, but no significant baseline differences in severity across intervention groups. Ilgen *et al.* [5] reported that mobile interventions led to significant reductions in Major Depressive Disorder (SMD=-0.255, $p<0.05$) and psychotic symptoms (SMD=-0.406, $p<0.05$), suggesting that mobile-based interventions can improve severity outcomes over time. Our study aligns with these findings, indicating that CGI severity scores were balanced across groups, with mild illness being the most common severity category.

Our study found that the highest proportion of improvement was in the combined group (79.47%), followed by the Text (70%), Voice (68.75%), and Video (67.63%) groups. Deterioration rates were highest in the Video (17.65%) and Voice (16.25%) groups, with the lowest in the Combined group (7.68%). The p-values (0.06 for improvement, 0.11 for no change, and 0.07 for deterioration) indicate that differences in CGI-I scores were not statistically significant, but the trend suggests that a combined approach may be more effective in achieving clinical improvement.

Our findings are consistent with Adeponle *et al.* [21], who found that a self-guided OCD program on the mHealth app "Intellect" significantly reduced symptom severity, with an effect size of $\eta p2=0.031$ ($p=0.017$) at post-intervention and $\eta p2= 0.021$ ($p= 0.044$) at four-week follow-up. Similarly, Agarwal [22] reported that mHealth interventions significantly reduced psychiatric symptoms and improved coping mechanisms, with 74% of participants engaged in the intervention group compared to 43% in the control group. Additionally**,** Mitchell and Selmes [23] found that daily text reminders improved adherence to asthma treatment, with a significant increase of 17.8% in adherence rates ($p= 0.019$). This supports our finding that text-based and combined interventions may lead to better clinical improvement compared to video-based interventions.

CONCLUSIONS

This study evaluated the impact of different communication methods—text, video, voice, and combined—on follow-up adherence and treatment outcomes in psychiatric care. Demographic and clinical profiles were balanced across groups. Major Depressive Disorder, generalized anxiety disorder, and schizophrenia were the most common diagnoses. Voice calls showed the highest follow-up adherence, while video calls had the lowest. Key barriers included transportation and financial constraints. Although CGI severity and improvement scores varied, no statistically significant differences were observed across communication methods. CPOSS and CGI-Efficacy Index scores also showed no group-wise differences. These findings suggest that while treatment efficacy remains comparable, voice-based follow-up may

doi: 10.21276/SSR-IIJLS.2025.11.4.1

enhance adherence. Personalized, accessible, and cost-effective follow-up strategies—such as voice calls or mixed-method interventions—could address existing barriers. Future research should focus on long-term outcomes and patient-centred digital interventions to improve psychiatric care continuity.

CONTRIBUTION OF AUTHORS

Research concept- Ankush Singh, Gaurav Singh
Research design- Gaurav Singh, Ravneet Kaur Brar, Ankush Singh
Supervision- Shweta Chauhan, Gaurav Singh
Materials- Ankush Singh, Ravneet Kaur Brar
Data collection- Ankush Singh
Data analysis and interpretation- Ankush Singh
Literature search- Ankush Singh, Gaurav Singh, Ravneet Kaur Brar
Writing article- Ankush Singh
Critical review- Gaurav Singh, Shweta Chauhan
Article editing- Ankush Singh, Gaurav Singh, Ravneet Brar
Final approval- Gaurav Singh, Shweta Chauhan

REFERENCES

[1] Minamisawa A, Narumoto J, Yokota I, Fukui K. Evaluation of factors associated with psychiatric patient dropout at a university outpatient clinic in Japan. Patient Prefer Adherence, 2016; 10: 1903–11.
[2] Colom F, Vieta E, Tacchi MJ, Moreno SJ, Scott J. Identifying and improving nonadherence in bipolar disorders. Bipolar Disord., 2005; 7(5): 24–31.
[3] Jawad I, Watson S, Haddad PM, Talbot PS, Williams RH. Medication nonadherence in bipolar disorder: A narrative review. Ther Adv Psychopharmacol., 2018; 8(12): 349–63.
[4] Marcus SC, Chuang CC, Ng-Mak D, Olfson M. Outpatient follow-up care and risk of hospital readmission in schizophrenia and bipolar disorder. Psychiatr Serv., 2017; 68(12): 1239–46. doi: 10.1176/appi.ps.201600484.
[5] Ilgen MA, Ignacio RV, Bohnert ASB, Valenstein M, Kim HM, et al. Psychiatric diagnoses and risk of suicide in veterans. Arch Gen Psychiatry, 2010; 67(11): 1152–58. doi: 10.1001/archgenpsychiatry.2010.129.
[6] Okumura Y, Sugiyama N, Noda T. Timely follow-up visits after psychiatric hospitalization and readmission in schizophrenic and bipolar patients in Japan. Psychiatry Res., 2018; 270: 490–95. doi: 10.1016/j.psychres.2018.10.020.
[7] Lin HC, Lee HC. The association between timely outpatient visits and the likelihood of rehospitalization for schizophrenia patients. Am J Orthopsychiatry, 2008; 78(4): 494–97. doi: 10.1037/a0014515.
[8] Singla M, Goyal SK, Sood A, Philips S. Profile and pattern of follow-ups of psychiatry outpatient at Christian Medical College, Ludhiana. J Ment Health Hum Behav. 2015; 20: 76–79.
[9] Chung DT, Ryan CJ, Hadzi-Pavlovic D, et al. Suicide rates after discharge from psychiatric facilities: A systematic review and meta-analysis. JAMA Psychiatry, 2017; 74(7): 694–702. doi: 10.1001/jamapsychiatry.2017.1044.
[10] Winterstein AG, Bussing R, Goodin A, et al. Development and validation of an administrative claims-based measure for all-cause 30-day risk-standardized readmissions after discharge from inpatient psychiatric facilities. Med Care, 2020; 58(3): 225–33. doi: 10.1097/MLR.0000000000001275.
[11] Fontanella CA, Hiance-Steelesmith DL, Bridge JA, et al. Factors associated with timely follow-up care after psychiatric hospitalization for youths with mood disorders. Psychiatr Serv., 2016; 67(3): 324–31. doi: 10.1176/appi.ps.201500104.
[12] Singh V, Kumar A, Gupta S. Mental health prevention and promotion–a narrative review. Front Psychiatry, 2022; 13: 898009. doi: 10.3389/fpsyt.2022.898009.
[13] Hatakeyama J, Nakamura K, Sumita H, et al. Intensive care unit follow-up clinic activities: a scoping review. J Anesth., 2024; 11.
[14] OECD. Progress on implementing and using electronic health record systems. OECD Publishing. 2021. Available from: https://www.oecd.org/en/publications/progress-on-implementing-and-using-electronic-health-record-systems_4f4ce846-en.html.
[15] Royal College of Psychiatrists. Telepsychiatry: what clinicians need to know about digital mental healthcare. Cambridge University Press. 2021. Available from: https://www.cambridge.org/core/journals/bjpsych-advances/article/telepsychiatry-what-clinicians-need-to-know-about-digital-mental-healthcare/62FC203E6E8E763A15ED91DA9AFB76F3.
[16] Wijekoon KM, Kuehne K, Jörg F, Saleem M, Stewart RE, et al. The effectiveness of mental health

interventions involving non-specialists and digital technology in low- and middle-income countries–a systematic review. BMC Public Health, 2024; 24: 1.

[17]Patel V, Belkin GS, Chockalingam A, et al. Scaling up community-based mental healthcare in low- and middle-income countries: A systematic review of the mental-health volunteer movement. Int J Equity Health, 2024; 23(1): 45. Available from: https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-024-02106-6.

[18]Mandal N, Guha P, Rathi M. Factors influencing adherence to prescribed medication and follow-up schedule in patients with psychiatric disorders. IOSR J Humanit Soc Sci., 2019; 24(6): 42–52.

[19]Zimmerman M, Morgan TA, Stanton K. The severity of psychiatric disorders. World Psychiatry, 2018; 17(3): 258–75. doi: 10.1002/wps.20569.

[20]Reddy SK, Thirthalli J, Channaveerachari NK, et al. Factors influencing access to psychiatric treatment in persons with schizophrenia: A qualitative study in a rural community. Indian J Psychiatry, 2014; 56(1): 54–60. doi: 10.4103/0019-5545.124714.

[21]Adeponle AB, Baduku AS, Adelekan ML, et al. Prospective study of psychiatric follow-up default and medication compliance after discharge at a psychiatric hospital in Nigeria. Community Ment Health J., 2009; 45: 19–25.

[22]Agarwal AK. Analysis of patients attending a private psychiatric clinic. Indian J Psychiatry, 2012; 54: 35–68.

[23]Mitchell AJ, Selmes T. A comparative survey of missed initial and follow-up appointments to psychiatric specialties in the United Kingdom. Psychiatr Serv., 2007; 58: 868–71.