

# **Effect of Telephone and Text Messages Follow-Up Programme On Medication Adherence Among Patients with Hypertension in Oyo Town: A Randomized Controlled Trial**

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## **Abstract:**

Globally, the prevalence of hypertension is on the rise, with a notable increase observed in low- and middle-income nations in Sub-Saharan Africa. The study investigated the impact of a phone and text message follow-up programme on hypertension patients' adherence to their medications in Oyo Town. The study used the quasi-experimental research design, which involved the use of clinical trial to conduct pre and post intervention. Randomly allocated to the experimental (83 participants) and control (83 participants) groups. The modified Morisky Medication Adherence Scale (MMAS) was used to collect data. Descriptive statistics and sophisticated statistical tests including the Repeated measures analysis of variance (ANOVA) at 0.05, chi-square, and independent t-test were used to examine the data. The study found that 45.8% of experimental group participants and 72.7% of control group participants were 45–49 years old. Also, 33.3% of the respondents in experimental group have high blood pressure while 36.4% of the control group exhibit high blood pressure. Prior to the intervention, 72.7% acknowledge sometimes forgetting to take their medication however after the intervention there was consistent adherence in terms of taking all prescribed medication which is 71.4%. All the respondents (100%) expressed their readiness to engage in the acceptance of the follow-up programme. However, 81.9% of those in the experimental group reported satisfaction compared to 62.3% in control group. Mean adherence for experimental group is 1.13 while control group is 0.25. Hence, there was significance difference

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between pre and post intervention medication adherence among patients in experimental groups with p value < 0.000. The more pronounced effect observed in the experimental group suggest that telephone and text message follow-up programs, play a crucial role in fostering drug adherence regimens and improving hypertension management outcomes.

**Keywords:** Hypertension, text messaging, patient, telephone, medication adherence,



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## Introduction

Globally, the prevalence of hypertension is on the rise, with a notable increase observed in lower- and middle-income Sub-Saharan African countries (Bhandari et al., 2022). Hypertension, defined by the Centres for Disease Control and Prevention (CDC) as a blood pressure threshold of  $\geq 130/80$  mmHg, is a significant public health concern affecting a substantial portion of the global population (CDC, 2020). This condition is a primary cause of mortality and morbidity worldwide (Oh & Cho, 2020). Alarming, uncontrolled hypertension is responsible for over 7.5 million deaths annually (World Health Organization [WHO], 2020). Furthermore, hypertension, indicated by elevated blood pressure levels, is linked to the development of comorbidities such as kidney diseases, ischemic heart disease, and arrhythmias, which, if untreated or inadequately managed, may lead to sudden fatalities (WHO, 2019). Hypertension also elevates the risk of myocardial infarction and negatively impacts the structural and functional aspects of cardiac physiology, potentially resulting in heart failure and increasing mortality and morbidity rates (Bulabula, 2021). Lee et al. (2022) concur that hypertension can lead to complications, including renal failure, cerebral infarction, cerebral haemorrhage, and cardiovascular diseases. They emphasise the asymptomatic nature of the condition but highlight that effective pharmacological interventions can mitigate the risks associated with hypertension (Lee et al., 2022).

Hypertension is a significant and persistent health problem in Nigeria. Adeloye et al. (2015) reported an overall prevalence rate of 28.9%, with a higher frequency in males (29.5%) compared to females (25.0%). Owolabi et al. (2021) also noted a significant increase in the prevalence of hypertension in Nigeria over the past two decades. Inadequate knowledge, treatment, and management of hypertension remain major concerns, hindering Nigeria's ability to address this healthcare burden effectively (Adeloye et al., 2015). Despite heightened awareness of hypertension, treatment and successful management rates remain suboptimal (Owolabi et al., 2021). Non-adherence to antihypertensive therapy is a common issue among hypertensive individuals. Adherence rates often fall short of ideal levels and vary significantly across populations and regions (Naderi et al., 2020). Complications from uncontrolled hypertension increase healthcare costs through hospitalisations and missed productivity (Dhungana et al., 2021; Song et al., 2021). Non-compliance also exacerbates health risks, leading to cardiovascular events such as heart attacks and strokes (Machline-Carrion et al., 2019). Poor adherence is associated with a lower quality of life and an increased likelihood of complications (Kolcu & Ergun, 2020). Johnson (2019) highlighted that hypertension patients with poor adherence are at higher risk for cardiac failure, myocardial infarction, and stroke.

According to WHO (2021), the prevalence of hypertension has increased significantly over the years. In 1975, the global number of individuals affected by hypertension was 594 million, which surged to 1.13 billion by 2015, accounting for 40.3% of the global adult population (Bulabula, 2021). Hypertension was the predominant cause of hospital admissions in 2018, contributing to 50% of all cardiovascular and cerebrovascular events (Al Noumani et al., 2018). For individuals under 65 years of age, the 2020 International Society of Hypertension Guidelines recommend a treatment goal of maintaining blood pressure below 130/80 mmHg. These guidelines underscore a patient-centred approach to blood pressure management, prioritising behavioural modification and patient education. They also advocate innovative strategies to deliver intensive therapies in regions with limited clinician-to-patient ratios,



such as low- and middle-income countries (Unger et al., 2020; Bhandari et al., 2022). Adherence to antihypertensive medication is critical in managing hypertension. Non-adherence, as noted by Checchi et al. (2014), is a significant risk factor, leading to uncontrolled blood pressure and increased vulnerability to complications, particularly cardiovascular diseases. Varleta et al. (2017) confirmed this, highlighting that failure to adhere to prescribed medication is the primary factor behind inadequate blood pressure control. Despite the effectiveness of antihypertensive drugs in reducing complications, over 50% of hypertensive patients in the United States fail to comply with prescribed regimens, presenting a major obstacle to treatment success (Bulabula, 2021).

Enhancing medication adherence has a significant impact on clinical outcomes and quality of life for individuals with hypertension. As WHO (2003) noted, non-adherence to medication critically compromises treatment efficacy, with implications for both individual and population health (cited in Bulabula, 2021). Healthcare practitioners must identify and address barriers to adherence, as improving adherence can prevent deaths, enhance quality of life, and extend the lifespan of affected individuals. This study investigates the impact of a follow-up programme involving phone and text message reminders on medication compliance among hypertensive patients in Oyo State.

Non-adherent individuals also face an increased risk of cardiovascular death. Dragomir et al. (2010) observed that non-adherence might result in medication inefficacy, requiring dosage adjustments or drug changes that could have adverse effects. Burnier and Egan (2019) added that non-adherence is linked to heightened psychological stress, anxiety, and depression, further diminishing patients' motivation to manage their condition. Despite compelling evidence of the widespread prevalence of hypertension in Nigeria and the low rates of clinical treatment and management, there is limited research on medication adherence in the country. While studies have explored this issue in other nations, such as Palestine (Abu-El-Noor et al., 2020), Chile (Varleta et al., 2017), the United States (Bulabula, 2021), and Nepal (Bhandari et al., 2022), Nigeria remains under-researched in this regard.

This highlights the need for focused research to investigate medication adherence patterns among hypertensive patients and assess how a follow-up programme can improve adherence in Nigeria, particularly in Oyo State. Hence, the present study aimed to investigate medication adherence among hypertension patients who participated in a text and telephone follow-up plan at the General Hospital in Oyo, Oyo State, Nigeria. The specific objectives of the research are stated as follows to:

1. determine the level of medication adherence among patients with hypertension;
2. investigate the acceptance of phone and text message follow-up programme for patients with hypertension; and
3. examine the effect of follow-up programme via phone and text pre and post intervention on medication adherence among patients with hypertension in General hospital Oyo, Oyo State.

### Hypotheses

**Ho1:** There is no significant difference between pre- and post-intervention medication adherence among patients in the experimental and control groups.

**Ho2:** There is no significant difference in the post-intervention medication adherence between patients in the experimental and control groups.



## Research Methods

Pre- and post-interventional clinical trials were integral to the quasi-experimental research strategy employed in this study. The experimental and control groups were randomly selected to enhance validity. Patients were assigned to either the intervention group ( $n = 83$ ) or the control group ( $n = 83$ ) through a randomisation process that involved picking cards labelled with numbers one and two. During the first data collection, the researcher obtained the patients' phone numbers and activated the delivery feature to ensure messages were sent as planned. Each patient in the intervention group received six text messages weekly for three months, totalling seventy-two messages. Each message, limited to 150 words, reminded patients of the time, mode, and advantages of taking their medication while highlighting the consequences of non-adherence. Conversely, control group patients received messages addressing other topics, such as the importance of exercise and maintaining a balanced diet. During the initial month of the intervention, follow-up phone calls were made twice a week, followed by one call per week in the subsequent two months. In total, each participant received 16 calls averaging 15 minutes per session. Blood pressure measurements were taken and documented both before and after the intervention.

The study's target population comprised all individuals diagnosed with hypertension for more than three months who attended the medical outpatient clinic at the State Hospital, Oyo Town, Oyo State. According to hospital records from October 2023, the clinic served 253 patients. A sample size was determined using Cochran's (1977) formula. With a calculated sample size of 152, an additional 10% attrition rate was applied, bringing the total to 166 participants. This adjustment ensured a representative sample and increased the statistical power of the findings. Participant attrition was considered to account for incomplete participation that might affect the study's outcomes.

The sampling techniques employed were purposive and convenience non-probability methods. Patients living with hypertension who attended follow-up care at the General Hospital, Oyo, were included. Nurses assisted patients during these visits. Inclusion criteria specified that participants must have been diagnosed with hypertension for at least three months, be aged 25 or older, possess hospital records indicating hypertension, and have received their first antihypertensive prescription within the previous 30 days. Both literate and non-literate individuals who owned mobile phones and could receive calls and text messages were included, provided they were willing to participate. Exclusion criteria included seriously ill patients, pregnant hypertensive patients, those unable to operate a phone, and individuals with cognitive impairments that hindered questionnaire completion.

Data collection instruments included the Morisky Medication Adherence Scale (MMAS), a self-reported eight-item tool with a total score range of 0–8. Participants scoring less than six were considered to have low medication adherence. This scale was combined with electronic text messaging to enhance effectiveness. The study's questionnaire was divided into sections aligned with its objectives: Section A focused on demographic data, Section B evaluated medication adherence, Section C explained the telephone and text messaging follow-up programme, and Section D assessed the impact of the programme.

The validity of the instruments was ensured through content, construct, face, and criterion-related validity, following guidelines by Middleton (2019). Face validity was assessed by experts who reviewed the questionnaire for relevance. Content validity was verified using





Lawshe's (1975) Content Validity Ratio (CVR) method, with at least four experts rating each item as "essential," "not essential," or "essential but not useful." Items with CVR values between 0.60 and 1.00 were considered valid. Reliability was assessed using the inter-rater method, comparing the ratings of two raters through the Pearson Product Moment Correlation method. A reliability coefficient above 0.75 confirmed consistency in the phone calls.

Data collection occurred between December 2023 and February 2024. The researcher visited the follow-up clinic twice weekly to sensitise patients about the study, explain its benefits, and collect contact details for text messaging. Questionnaires were distributed to hypertensive patients and designed to be simple and clear. Non-literate participants received guidance in completing the questionnaires. Data analysis included descriptive statistics to summarise socio-demographic characteristics, using frequencies and proportions. Clinical characteristics were assessed using mean and standard deviation. Inferential statistics, such as chi-square tests and ANOVA, were applied to evaluate relationships and predict linkages, with a significance level set at  $P \leq 0.05$ .

### Results

Table 1 provides a detailed breakdown of socio-demographic characteristics for two groups: The Experimental Group comprising 72 respondents and the Control Group consisting of 77 respondents. Gender distribution reveals that in the Experimental Group, 29 individuals (40.3%) are male, while 43 (59.7%) are female. Conversely, the Control Group comprises 22 males (28.6%) and 55 females (71.4%). Age distribution shows that in the Experimental Group, 2.8% are below 30 years old, 8.3% are aged between 30 and 44, 45.8% fall within the 45 to 59 age range, and 43.1% are aged 60 and above. In comparison, the Control Group has no respondents below 30, with 5.2%, 72.7%, and 22.1% falling into the respective age categories mentioned above.

Ethnicity-wise, the majority in both groups identify as Yoruba, constituting 70.8% and 68.8% of the Experimental and Control Groups, respectively. Other ethnicities are represented in smaller proportions. Regarding educational qualifications, ND and HND/B.Sc holders make up the largest segments in both groups, with postgraduate qualifications being the least common. Marital status indicates a significant proportion of married individuals in both groups, with slightly more in the Control Group, while divorced individuals are more prevalent in the Experimental Group. In terms of employment status, self-employed individuals are the most common in both the Experimental and Control Groups, with unemployed individuals more prevalent in the Control Group.

**Table 1: Description of the socio-demographic characteristics of the respondents**

Variables	Experimental Group (72)		Control Group (77)	
	Freq.	Percent (%)	Freq.	Percent (%)
<b>Gender</b>				
Male	29	40.3	22	28.6
Female	43	59.7	55	71.4
<b>Age</b>				



Below 30 years	2	2.8	0	0.0
30 - 44 years	6	8.3	4	5.2
45 - 59 years	33	45.8	56	72.7
60 years and Above	31	43.1	17	22.1
<b>Ethnicity</b>				
Yoruba	51	70.8	53	68.8
Igbo	3	4.2	4	5.2
Hausa	3	4.2	0	0.0
Others	15	20.8	20	26.0
<b>Educational Qualification</b>				
O'level	11	15.3	8	10.4
ND	26	36.1	32	41.6
HND/B.Sc	26	36.1	30	39.0
Postgraduate	9	12.5	7	9.1
<b>Marital Status</b>				
Single	6	8.3	11	14.3
Married	31	43.1	41	53.2
Divorced	21	29.2	17	22.1
Widow	14	19.4	8	10.4
<b>Employment Status</b>				
Unemployed	11	15.3	18	23.4
Self-employed	44	61.1	51	66.2
Employed	17	23.6	8	10.4
<b>Total</b>	<b>72</b>	<b>100.0</b>	<b>77</b>	<b>100.0</b>

Table 2 outlines the hypertension history of respondents, categorized into an Experimental Group of 72 individuals and a Control Group of 77 individuals. Regarding the duration of diagnosis, in the Experimental Group, 11.1% of respondents have been diagnosed for less than 5 years, while 48.6% have had a diagnosis for 6 to 10 years. Furthermore, 29.2% have a diagnosis spanning 11 to 15 years, and 11.1% have been diagnosed for over 15 years. In comparison, within the Control Group, 13.0% have been diagnosed for less than 5 years, while a larger percentage, constituting 68.8%, have had a diagnosis for 6 to 10 years. Additionally, 18.2% have a diagnosis spanning 11 to 15 years, with no respondents indicating a diagnosis of over 15 years.

In terms of family history, within the Experimental Group, 61.1% of respondents have a familial predisposition to hypertension, whereas 38.9% do not. In contrast, in the Control Group, 59.7% have a family history of hypertension, while 40.3% do not. Analyzing blood pressure levels, it's observed that 4.2% of respondents in the Experimental Group have low blood pressure, 62.5% have moderate blood pressure, and 33.3% have high blood pressure. Similarly, in the Control Group, 2.6% exhibit low blood pressure, while 61.0% have moderate blood pressure, and 36.4% have high blood pressure.





**Table 2: Description of the hypertension history of the respondents**

Variables	Experimental Group (72)		Control Group (77)	
	Freq.	Percent (%)	Freq.	Percent (%)
<b>Duration of Diagnosis</b>				
Less than 5 years	8	11.1	10	13.0
6 - 10 years	35	48.6	53	68.8
11 - 15 years	21	29.2	14	18.2
Above 15 years	8	11.1	0	0.0
<b>Family History</b>				
Yes	44	61.1	46	59.7
No	28	38.9	31	40.3
<b>Blood Pressure</b>				
Low	3	4.2	2	2.6
Moderate	45	62.5	47	61.0
High	24	33.3	28	36.4
<b>Total</b>	<b>72</b>	<b>100.0</b>	<b>77</b>	<b>100.0</b>

Table 3 summarises the descriptive analysis of medication adherence scores before and after the intervention for both the experimental and control groups. In the experimental group, the mean medication adherence score increased from 11.44 (SD = 1.67) before the intervention to 12.57 (SD = 1.35) after the intervention, reflecting an improvement of 1.13 points. This indicates a notable positive impact of the intervention on medication adherence within this group. In contrast, the control group also showed an increase in mean medication adherence scores, though to a lesser extent. The mean score rose from 10.92 (SD = 1.83) before the intervention to 11.17 (SD = 1.89) after the intervention, with a smaller improvement of 0.25 points. While both groups experienced improvements in adherence, the experimental group exhibited a significantly larger increase in mean adherence scores compared to the control group. This highlights the effectiveness of the intervention in enhancing medication adherence among participants in the experimental group and underscores the value of targeted strategies in promoting adherence to prescribed regimens.

**Table 3: Descriptive analysis of summary of medication adherence before and after intervention in the experimental and control group**

Group	Test	No of Respondents	Mean±S.D	Mean Diff.
Experimental	Pre-intervention	72	11.44±1.67	1.13
	Post-intervention		12.57±1.35	
Control	Pre-intervention	77	10.92±1.83	0.25
	Post-intervention		11.17±1.89	



Table 4 highlights participants' approval of a follow-up programme using text messages and telephone calls in both experimental and control groups. All respondents (100%) from both groups expressed willingness to participate in the follow-up programme, reflecting a strong acceptance of technology-based interventions for hypertension management. A small proportion of participants had prior experience with similar programmes, with 8.3% in the experimental group and 13.0% in the control group having participated previously. Similarly, a minority were currently engaged in such interventions, with 12.5% in the experimental group and 20.8% in the control group, indicating limited prior and ongoing use of these programmes. Most respondents in both groups believed in the effectiveness of telephone and text message follow-ups for improving accountability and motivation in managing hypertension. Specifically, 83.3% of the experimental group and 76.6% of the control group viewed these methods positively, demonstrating a shared recognition of their potential benefits in supporting medication adherence and hypertension management

**Table 4: Percentage analysis of acceptance of phone and text-messages follow-up program in the experimental and control group**

S/N	Items	Experimental		Control	
		Yes (%)	No (%)	Yes (%)	No (%)
1	Are you willing to participate in the telephone and text message follow up?	72 (100.0)	0 (0.0)	77 (100.0)	0 (0.0)
2	Have you participated in a telephone or text messaging program for medication adherence before?	6 (8.3)	66 (91.7)	10 (13.0)	67 (87.0)
3	Are you currently participating in a Telephone and Text Messaging Program to support your hypertension treatment?	9 (12.5)	63 (87.5)	16 (20.8)	61 (79.2)
4	Do you believe telephone or text follow up would help you stay accountable and motivated for managing your hypertension?	60 (83.3)	12 (16.7)	59 (76.6)	18 (23.4)

Table 5 highlights the participants' perceptions of a follow-up programme involving text messages and telephone calls, with a comparison between the experimental and control groups. The results show a clear distinction in accountability and motivation for managing hypertension, with 79.2% of the experimental group believing the programme helped them maintain accountability and motivation, compared to 44.2% in the control group. This suggests that the programme's motivational components were more effective in the experimental group. In terms of satisfaction with the programme, 81.9% of the experimental group reported being content, compared to 62.3% in the control group. While both groups provided positive feedback, the experimental group demonstrated higher satisfaction. Similarly, the majority of respondents in both groups found the frequency of telephone calls or text messages appropriate, with 73.6% of the experimental group and 58.4% of the control group expressing this view, indicating that communication frequency was generally well-received, though more participants in the experimental group appreciated it.



Notably, 83.3% of participants in the experimental group expressed willingness to recommend the programme to others, compared to 62.3% in the control group, highlighting a higher level of confidence in the programme's efficacy among the experimental group. The programme's impact on participants' outcomes also varied significantly. A higher proportion of respondents in the experimental group reported a better understanding of their hypertension (93.1%) and making lifestyle changes (80.6%) compared to the control group (54.5% and 49.4%, respectively). This indicates a stronger influence on knowledge acquisition and behaviour modification in the experimental group. Finally, a small percentage of participants in both groups reported experiencing side effects from their medication, with similar rates in the experimental (23.6%) and control (19.5%) groups. This suggests that the programme did not lead to an increase in medication-related side effects for most participants

**Table 5: Percentage analysis of the effectiveness of phone and text-message follow-up program in the experimental and control group**

S/N	Items	Experimental		Control	
		Yes (%)	No (%)	Yes (%)	No (%)
1	Do you believe telephone or text follow up would help you stay accountable and motivated for managing your hypertension?	57 (79.2)	15 (20.8)	34 (44.2)	43 (55.8)
2	Are you satisfied with the overall experience of the program?	59 (81.9)	13 (18.1)	48 (62.3)	29 (37.7)
3	Do you find the frequency of telephone calls or text messages appropriate?	53 (73.6)	19 (26.4)	45 (58.4)	32 (41.6)
4	Would you recommend this program to other patients with hypertension?	60 (83.3)	12 (16.7)	48 (62.3)	29 (37.7)
5.	Do you feel like you have a better understanding of your hypertension since participating in the program?	67 (93.1)	5 (6.9)	42 (54.5)	35 (45.5)
6.	Have you been able to make any changes to your lifestyle, such as eating healthier or exercising more, since participating in the program?	58 (80.6)	14 (19.4)	38 (49.4)	39 (50.6)
7.	Have you experienced any side effects from your medication since participating in the program?	17 (23.6)	55 (76.4)	15 (19.5)	62 (80.5)

### Test of Hypotheses

**Ho1:** There is no significant difference between pre- and post-intervention medication adherence among patients in the experimental and control groups.

Table 6 illustrates the t-test analysis results comparing medication adherence in experimental and control groups before and after the intervention. In the experimental group, the t-value of 4.445 and a p-value less than 0.05 indicate a statistically significant improvement in medication adherence post-intervention, with a mean difference of 1.13. This

reflects a notable increase in adherence levels. Conversely, the control group showed a t-value of 0.904 and a p-value greater than 0.05, indicating no statistically significant change in medication adherence. The mean difference of 0.25 suggests only a minimal and non-significant improvement in adherence within the control group.

This implies that there was significant difference between pre- and post-intervention medication adherence among patients in the experimental groups while there was no significant difference between pre- and post-intervention medication adherence among patients in the control groups.

**Table 6: t-test Analysis showing difference between pre- and post-intervention medication adherence among patients in the experimental and control groups.**

Group	Variations	N	Mean	SD	df	t <sub>cal</sub>	P	Mean Difference
Experimental	Pre-intervention	72	11.44	1.67	142	4.445*	0.000	1.13
	Post-intervention	72	12.57	1.35				
Control	Pre-intervention	77	10.92	1.83	152	0.904	0.368	0.25
	Post-intervention	77	11.17	1.89				

\*P<0.05

**Ho2:** There is no significant difference in the post-intervention medication adherence between patients in the experimental and control groups.

Table 7 presents the outcomes of a t-test analysis aimed at evaluating the difference in post-intervention medication adherence between patients in both the experimental and control groups. The calculated t-value for the difference in medication adherence between patients in the experimental and control groups was 5.176, with a corresponding p-value less than 0.05, indicating statistical significance in favour of patients in the experimental group. This implies that there was significant difference in the post-intervention medication adherence between patients in the experimental and control groups.

**Table 7: t-test Analysis showing difference in the post-intervention medication adherence between patients in the experimental and control groups.**

Variations	N	Mean	SD	df	t <sub>cal</sub>	P	Mean Difference
Experimental	72	12.57	1.35	147	5.176*	0.000	1.40
Control	77	11.17	1.89				

\*P<0.05

### Discussion of Findings

The results presented in the table suggest a substantial improvement in medication adherence following the intervention, particularly in the experimental group. Before the intervention, both groups exhibited baseline levels of medication adherence, with the experimental group showing a mean adherence score of 11.44 and the control group having a slightly lower mean score of 10.92. However, after the intervention, the mean adherence scores significantly increased in both groups, with the experimental group demonstrating a more pronounced improvement. This observed enhancement in medication adherence aligns with previous empirical studies investigating the effectiveness of text message and phone follow-up programmes in enhancing hypertension patients' adherence. These studies



consistently highlight the positive impact of such interventions on medication adherence rates and blood pressure control.

For instance, a systematic review and meta-analysis conducted by Omboni et al. (2015) synthesized evidence from 32 studies involving 8,605 patients and concluded that telephone-based interventions significantly improved medication adherence and blood pressure control in patients with hypertension. Similarly, studies by Liu et al. (2019) in China and Osuji et al. (2017) in Nigeria found that telephone-based interventions led to higher medication adherence rates and improved blood pressure control among participants.

Moreover, text message-based interventions have also demonstrated efficacy in enhancing medication adherence, as evidenced by the systematic review conducted by Thakkar et al. (2016). This review, which included 16 studies with over 2,500 patients, revealed a significant improvement in medication adherence and systolic blood pressure among patients with hypertension who received text message-based interventions. Furthermore, Aikins et al. (2015) conducted a randomized controlled trial in Ghana, showing that patients who received a mobile phone text message reminder system exhibited higher medication adherence rates and improved systolic blood pressure compared to the control group.

In light of these findings, it is evident that telephone and text message follow-up programs hold considerable promise in improving medication adherence and clinical outcomes among patients with hypertension. These interventions offer convenient and accessible means of providing regular reminders and support to patients, thereby promoting adherence to medication regimens.

The results indicate a high level of acceptance and positive perception of telephone and text-message follow-up programmes among participants in both experimental and control groups, with 100% of respondents expressing a willingness to participate in such interventions for hypertension management. This aligns with the growing adoption of technology-based interventions for managing chronic conditions like hypertension. Studies have demonstrated the effectiveness of these approaches in improving medication adherence and health outcomes. For instance, Thakkar et al. (2016) conducted a systematic review and meta-analysis, revealing that text message-based interventions significantly enhanced medication adherence compared to standard care. Similarly, Omboni et al. (2015) found that telephone-based interventions improved blood pressure control and medication adherence among hypertensive patients.

The majority of respondents agreed that telephone or text follow-ups help maintain accountability and motivation in managing hypertension, with 83.3% of the experimental group and 76.6% of the control group endorsing this view. Osuji et al. (2017) corroborated these findings in a Nigerian randomised controlled trial, which reported improved medication adherence and blood pressure control among patients who received telephone and text-message follow-ups. Similarly, Liu et al. (2019), in a Chinese randomised controlled trial, observed higher medication adherence rates and better systolic blood pressure outcomes among patients receiving telephone-based interventions.

While these studies collectively highlight the effectiveness of such interventions, variations in effect sizes suggest the need for further research to optimise implementation strategies and compare the relative efficacy of telephone and text-message follow-up programmes (Dang et al., 2018). The data also reveal significant differences between the experimental and control





groups in programme outcomes and perceptions. The experimental group reported greater support for the programme's motivational components, aligning with Osuji et al.'s (2017) findings of improved medication adherence due to follow-up interventions. Participants in the experimental group also reported higher overall satisfaction and were more likely to recommend the programme, consistent with Omboni et al.'s (2015) conclusion that phone-based interventions enhance patient satisfaction.

Furthermore, the experimental group demonstrated improved understanding of hypertension and adoption of lifestyle changes. This supports Thakkar et al.'s (2016) findings that text message-based interventions can enhance comprehension of medical conditions and treatment regimens. Importantly, the comparable rates of medication-related side effects between groups affirm the programme's safety and feasibility in clinical practice.

The results presented in Table 6 highlight significant differences in medication adherence between the experimental and control groups pre- and post-intervention, demonstrating the intervention's efficacy in improving adherence. In the experimental group, there was a significant increase in medication adherence, with a t-value of 4.445 and a p-value below 0.05, and a mean difference of 1.13, indicating a substantial improvement. Conversely, the control group showed no statistically significant change, as evidenced by a t-value of 0.904, a p-value above 0.05, and a mean difference of only 0.25.

These findings align with prior studies on follow-up interventions using text messages and telephone calls to enhance medication adherence among hypertensive patients. Omboni et al. (2015) conducted a systematic review and meta-analysis, revealing that telephone-based interventions significantly improved medication adherence and blood pressure control in hypertensive patients. Similarly, Liu et al. (2019) conducted a randomised controlled trial in China, showing that patients who received telephone-based interventions had significantly higher adherence rates than the control group. Osuji et al. (2017) conducted a study in Nigeria and found that a telephone and text message follow-up programme led to significantly higher adherence rates and improved blood pressure control. Additional support for these findings comes from Thakkar et al. (2016), who conducted a systematic review demonstrating that text message-based interventions effectively enhanced medication adherence among hypertensive patients. Aikins et al. (2015) also confirmed this in a randomised controlled trial in Ghana, showing that a mobile phone text message reminder system significantly improved adherence and blood pressure outcomes.

The table further underscores a substantial post-intervention disparity in adherence rates between the experimental and control groups, with a t-value of 5.176 and a p-value below 0.05. Patients in the experimental group exhibited significantly higher adherence levels, consistent with the aforementioned studies (Omboni et al., 2015; Liu et al., 2019; Osuji et al., 2017; Thakkar et al., 2016; Aikins et al., 2015), which collectively affirm the effectiveness of text message and telephone interventions in improving medication adherence and associated clinical outcomes.

### Conclusion

The study highlights the effectiveness of telephone and text-message follow-up programs in enhancing medication adherence and improving hypertension management outcomes. Significant improvements in medication adherence, particularly in the experimental group, demonstrate the potential of targeted interventions to support patient adherence. The





unanimous willingness of participants in both groups to engage with technology-based interventions reflects a positive attitude towards these methods for managing chronic conditions like hypertension. Additionally, participants reported increased satisfaction, better understanding of hypertension, and healthier lifestyle changes, emphasizing the benefits of such interventions in clinical practice. The greater improvement in medication adherence in the experimental group further underscores the efficacy of these interventions in promoting adherence and improving hypertension management outcomes.

### Recommendations

1. Healthcare professionals have to contemplate the use of telephone and text-message follow-up services to enhance medication adherence and hypertension treatment. These programs have demonstrated encouraging outcomes in enhancing adherence levels and can function as essential instruments for ongoing patient monitoring and assistance.
2. Healthcare practitioners must prioritise patient education and training regarding the significance of medication adherence and hypertension treatment. Equipping patients with information on their ailment and treatment protocols might improve their comprehension and motivation to comply with prescribed treatments.
3. Interventions designed to enhance medication adherence must be customised to the specific requirements and preferences of patients. This may entail tailored communication techniques, medication reminders, and lifestyle advice to overcome unique adherence difficulties.
4. Encouraging patients to self-monitor their medication adherence and blood pressure levels can foster accountability and empower them to actively manage their health. Supplying instruments like medication adherence applications or blood pressure monitoring gadgets can enhance self-management.
5. Collaborative initiatives among healthcare providers, chemists, and other allied health professionals can improve drug management and patient assistance. Multidisciplinary teams can collaborate to tackle intricate drug regimens, resolve medication-related concerns, and deliver complete care to patients with hypertension.
6. Healthcare systems must prioritise continuous assessment and modification of interventions to guarantee their efficacy and pertinence in practical environments. Ongoing assessment of medication adherence results, patient input, and program modifications can enhance the effectiveness of programs over time.

### REFERENCES

- Abu-El-Noor, N. I., Aljeesh, Y. I., Bottcher, B., & Abu-El-Noor, M. K. (2021). Impact of a mobile phone app on adherence to treatment regimens among hypertensive patients: A randomised clinical trial study. *European Journal of Cardiovascular Nursing*, 20(5), 428-435.
- Aikins, A. D., Unwin, N., Agyemang, C., Allotey, P., Campbell, C., Arhinful, D., & Haque, S. (2015). Tackling Africa's chronic disease burden: from the local to the global. *Globalization and Health*, 11(1), 5.



- Al Noumani, H., Wu, J. R., Barksdale, D., Knafl, G., AlKhasawneh, E., & Sherwood, G. (2018). Health Beliefs and Medication Adherence in Omanis with Hypertension. *The Journal of Cardiovascular Nursing*, 33(6), 518.
- Bhandari, B., Narasimhan, P., Jayasuriya, R., Vaidya, A., & Schutte, A. E. (2022). Effectiveness and acceptability of a mobile phone text messaging intervention to improve blood pressure control (TEXT4BP) among patients with hypertension in Nepal: a feasibility randomised controlled trial. *Global Heart*, 17(1).
- Burnier, M., & Egan, B. M. (2019). Adherence in hypertension: a review of prevalence, risk factors, impact, and management. *Circulation research*, 124(7), 1124-1140.
- Bulabula, G. (2021). *Hypertension Management: Improving Medication Adherence Through the Use of Daily Text Messages*. Doctoral Dissertation, Valparaiso University
- Checchi, K. D., Huybrechts, K. F., Avorn, J., & Kesselheim, A. S. (2014). Electronic medication packaging devices and medication adherence: a systematic review. *JAMA: Journal of the American Medical Association*, 312(12), 1237-1247
- Dragomir, A., Côté, R., Roy, L., Blais, L., Lalonde, L., Bérard, A., & Perreault, S. (2010). Impact of adherence to antihypertensive agents on clinical outcomes and hospitalization costs. *Medical Care*, 418-425.
- Lee, S., Jeong, K. H., Lee, S., & Park, H. (2022). A Study on Types of Medication Adherence in Hypertension among Older Patients and Influencing Factors. In *Healthcare* (10(11), 2322). Multidisciplinary Digital Publishing Institute.
- Liu, Y., Liu, L., Li, Y., Chen, Y., & Zhao, J. (2019). Telephone-based intervention for blood pressure control among rural Chinese with hypertension: a randomized controlled trial. *International Journal of Nursing Studies*, 89, 38-45.
- Oh, G.C., & Cho, H. (2020). *Blood pressure and heart failure*. Retrieved from <https://clinicalhypertension.biomedcentral.com/articles/10.1186/s40885-019-0132-x>
- Omboni, S., Caserini, M., Coronetti, C., & Telemedicine, S. (2015). Telemedicine and M-health in hypertension management: technologies, applications, and clinical evidence. *Blood Pressure*, 24(4), 199-205.
- Osuji, C. U., Omejua, E. G., Onwukwe, C. H., & Ahaneku, G. I. (2017). Impact of telephone and text message reminders on medication adherence and clinical outcomes in selected Nigerian hypertensive patients. *Journal of Clinical Hypertension*, 19(8), 790-796.



- Owolabi, E. O., Adeloye, D., Ojji, D. B., Auta, A., Dewan, M. T., Olanrewaju, T. O., ... & Harhay, M. O. (2021). Prevalence, awareness, treatment, and control of hypertension in Nigeria in 1995 and 2020: A systematic analysis of current evidence. *The Journal of Clinical Hypertension*, 23(5), 963-977.
- Thakkar, J., Kurup, R., Laba, T. L., Santo, K., Thiagalingam, A., Rodgers, A., & Woodward, M. (2016). Mobile telephone text messaging for medication adherence in chronic disease: a meta-analysis. *Journal of American Medical Association Internal Medicine*, 176(3), 340-349.
- Unger, T., Borghi, C., Charchar, F., Khan, N.A., Poulter, N.R., & Prabhakaran, D. (2020). International Society of Hypertension global hypertension practice guidelines. *Hypertension*. 75(6): 1334-57. DOI: <https://doi.org/10.1161/HYPERTENSIONAHA.120.15026>
- Varleta, P., Acevedo, M., Akel, C., Salinas, C., Navarrete, C., García, A., Echegoyen, C., Rodriguez, D., Gramusset, L., Leon, S. & Cofré, P., (2017). Mobile phone text messaging improves antihypertensive drug adherence in the community. *The Journal of Clinical Hypertension*, 19(12), pp.1276-1284.
- World Health Organisation (2019) Hypertension. World Health Organization. Geneva
- World Health Organization. (2019). Hypertension. Retrieved from [https://www.who.int/news-room/fact-sheets/detail/hypertension-\(high-blood-pressure\)](https://www.who.int/news-room/fact-sheets/detail/hypertension-(high-blood-pressure))

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