
Does telephone counselling improve clinic adherence? Findings from a randomised controlled trial in a tertiary centre in Nigeria

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Abstract: Defaulting from scheduled outpatient clinic visit is common in all medical specialties and is particularly high in mental health clinics. Studies comparing phone call interventions and text-messaging regarding clinic attendance in clinical settings have reported conflicting results. This study assessed the effect of phone call-based adherence counselling on clinic attendance among outpatients with schizophrenia. A double-blind randomised

controlled trial was conducted among 86 adult outpatients. Participants in the control group received a short message service (SMS) from the researchers reminding them of their clinic appointment while participants in the intervention group received phone call-based adherence counselling in addition to SMS reminders. Remarkably higher number of participants in the intervention group attended the first clinic appointment compared with the control group. However, the difference was not statistically significant. There was no superiority of a combination of phone call-based brief adherence counselling and SMS over SMS alone in improving clinic attendance.

Keywords: telephone counselling; clinic attendance; schizophrenia; randomised controlled trial; short message service; SMS.

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1 Introduction

Schizophrenia is a grievous type of psychological illness that generates serious public health concern and is ranked as one of the most incapacitating diseases in the world (Chien et al., 2019). Several studies (Charlson et al., 2018; He et al., 2020) have illuminated the prominent position occupied by mental illnesses as cause of disease burden. Additionally, Rössler et al. (2005) and Charlson et al. (2018) described schizophrenia as one of the most devastating psychological disorders in terms of social disruption, suffering and cost of treatment. The onset of schizophrenia is typically in adolescence or early adult years and the illness often runs a chronic disabling course (Gogtay et al., 2011). It is characterised in general by characteristic distortions in the form and content of thinking, perception, mood and behaviour (Agostoni et al., 2021). The signs and symptoms of schizophrenia are diverse, encompassing almost every aspect of cognition (Agostoni et al., 2021; Green et al., 2019). As a result, persons with schizophrenia generally require continuous maintenance treatments over a long period to ensure complete recovery from illness (Yeomans et al., 2010). Regrettably, several patients with schizophrenia default from clinic attendance and this has huge consequences on their treatment outcomes.

Adherence to scheduled clinic appointments and prescribed medications are essential conditions for successful outpatient treatment in persons with schizophrenia (Centorrino et al., 2001; Thomas et al., 2018). This is because it affords the doctor the opportunity to assess, investigate, examine, and update patient's treatments. On the other hand, patients have the opportunity to discuss matters relating to their complaints, worries, side effects of medications and dosage.

Defaulting refers to missed, or non-adherence or failure to keep scheduled appointments (Adeponle et al., 2009). Gordon et al. (2010) defined defaulting as an appointment that was not attended or rescheduled at least two days before the given date. The latter is a less rigid definition when compared to the former because clients who call service centres to inform them of the difficulties they have keeping an initial date, will be re-scheduled for another day. They will not be considered as having defaulted from their clinic appointments.

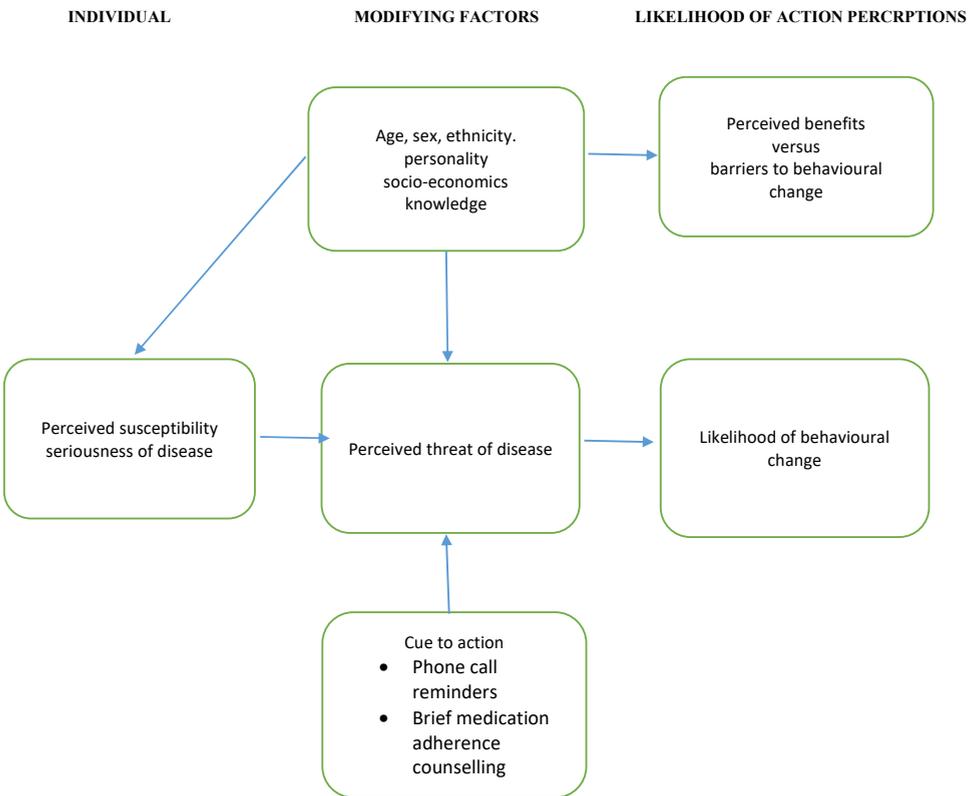
Non-adherence to scheduled outpatient clinic visits is particularly high in psychiatric clinics (Ambrose and Beech, 2006; Adelufosi et al., 2013). Missed appointments are associated with illness relapse, increased re-hospitalisation rates, increased healthcare costs due to illness exacerbation and increased potential for self-harm (Cheng et al., 2014). In spite of these enormous consequences, defaulting from mental health clinic visits is twice as high with psychiatric patients when compared to other medical specialties (Sadler et al., 2018). Additionally, non-adherence to clinic after initial hospitalisation significantly increases the risk of relapse and re-admission (Adelufosi et al., 2013). This results in poor utilisation of scarce administrative and medical resources

with consequent adverse patient health outcomes (Adelufosi et al., 2013; Sadler et al., 2018).

Evidence-based intervention based on a sound theoretical framework are desirable to mitigate the challenges of non-adherence to clinic visits.

Evidence from previous systematic reviews (Zaixiang et al., 2021; Glanz and Bishop, 2010; Ammerman et al., 2002) have demonstrated that utilising specific theory in intervention studies can lead to more desirable outcomes than interventions designed without a theoretical framework (Ammerman et al., 2002; Glanz and Bishop, 2010; Zaixiang et al., 2021). Therefore, according to the health belief model (Zaidlin et al., 2020), it was hypothesised that patients with schizophrenia who were reminded about their susceptibility, the severity of their illness, benefits of taking medications and importance of attending clinics would be more likely to attend scheduled clinics than those who were not. The health belief model posits that cues are important for stimulating engagement in desirable behaviours that can improve health outcomes. Brief medication adherence counselling and phone call reminders were used as cues to action.

Figure 1 Illustration of the theoretical framework for this study (see online version for colours)



Source: Adapted from Stetcher and Rosenstock (1992) *The Health Belief Model*

1.1 Findings from related studies

While phone call interventions improve clinic attendance (Crable et al., 2020; Juliet et al., 2021), phone call-based counselling has been more importantly found to improve medication adherence and clinic attendance (Cook et al., 2009; Nieuwlaat et al., 2014). Counselling helps patients to understand the nature of their illnesses and find solutions to resolve or cope better with their situation (Picardi and Gaetano, 2014). More recent studies (Picardi and Gaetano, 2014; Basit et al., 2020) have shown that combining telephonic interventions with face-to-face consultations is as effective as regular face-to-face only clinic attendance for those patients who cannot attend clinics in person. In addition, these studies showed there were no significant differences between the modes in terms of therapeutic alliance, disclosure, empathy, attentiveness or participation little difference (Basit et al., 2020; Irvine et al., 2020; Curto et al., 2021).

McLean et al. (2016) in a systematic review showed that ‘reminder plus’ which provides additional information (e.g., orientation information, health information etc.) over and above date, time and location of appointment clinic visitation has been less studied.

In summary, there is no single solution to the problem of clinic default and medication non-adherence (Thomas et al., 2018; Curto et al., 2021). Designed interventions are tailored to the targeted patient population and address the risk factors contributing to disengagement from scheduled clinics for the individuals in that population. A combination of different interventional approaches are more effective than one-dimensional approach (Haddad and Sharma, 2007). Combining medication adherence counselling, phone call reminders and involvement of caregivers in this study is in line with this.

The objective of this randomised controlled trial was to determine the effects of phone call-based brief adherence counselling on clinic attendance among patients with schizophrenia and to ascertain if the effects will be sustained in the subsequent clinic visits. The results will inform implementation and wider use of mobile phone-based interventions for healthcare service delivery.

2 Materials and method

2.1 Participants

A double-blind randomised controlled trial was conducted at the Emergency and Assessment (E and A) Unit of the Federal Neuro-Psychiatric Hospital Benin City Nigeria, among 86 outpatients with schizophrenia. Participants were patients presenting to the hospital for the first time, diagnosed of schizophrenia, aged between 18–65 years and accompanied by a caregiver.

2.2 Operational definitions

- Clinic attendance: Attendance was defined in this study as a participant attending the Out-Patient clinic on the scheduled appointment date or not later than two days after the scheduled date.

- Newly diagnosed patients with schizophrenia: This was defined as patients presenting to the hospital for the first time and diagnosed with schizophrenia using the tenth edition of the

International Classification of Disease (ICD-10) and confirmed with the psychosis module of the Mini International Neuropsychiatric Interview (MINI).

2.3 *Instruments*

2.3.1 *Socio-demographic questionnaire*

A questionnaire was designed by the researcher to obtain the socio-demographic variables of patients such as age, gender, religion, level of education, employment status, living status, mobile phone number and caregiver information such as relationship to patient, occupation, level of education, mobile phone number, duration of untreated psychosis, and presence of physical co-morbidity.

2.3.2 *The psychosis module of the MINI version 6.0*

The MINI is a short structured diagnostic interview developed by V. Lecrubier and D.V. Sheehan. It is used for making diagnosis of major Axis I psychiatric disorders in the DSM-IV and ICD-10. Validation and reliability studies have been performed for the MINI and it has been found to have acceptably high validity and reliability in eliciting symptom criteria used in making ICD-10 diagnosis. Compared with the Composite International Diagnostic Interview (CIDI), kappa values were good or very good for most diagnosis (only simple phobia and generalised anxiety disorder fell below 0.50) (Sheehan et al., 1998). Sensitivity was at least 0.70 for all the values except panic, agoraphobia, simple phobia and lifetime bulimia. For all diagnoses, specificity was 0.70 or greater (Sheehan et al., 1998). The psychosis module of the MINI was used to confirm the diagnosis of each participant with schizophrenia.

2.3.3 *Positive and negative syndrome scale*

The positive and negative syndrome scale is used for measuring symptom severity of patients with schizophrenia. It was developed by Kay et al. (1987). It is a 30-item scale that comprises seven items for positive symptoms, seven items for negative symptoms and 16 items for general psychopathology. Ratings are made on a seven-point scale, ranging from absent (1) to extreme (7). It is a reliable and valid instrument (Kay et al., 1987, 1988) and one of the most widely used instruments in schizophrenia research (Nicotra et al., 2015; Obermeier et al., 2010).

2.4 *Method*

The participants in this study were blindly randomised into two groups (A and B).

- Group A Participants (patients and their caregivers) in this group received a short message service (SMS) that reminded them of the day, date, venue and time of their scheduled clinic appointment. The SMS was delivered automatically using a bulk SMS platform five days and two days before the

scheduled appointment. The SMS was repeated three times on the selected days in order to increase the probability of receiving the intervention. The intervention was considered as received if the delivery message on the automated bulk SMS platform reads ‘delivered’ after an SMS has been sent to the participants. The SMS that was sent read: “Good day Sir/Ma. This is to remind you of your appointment/the appointment of your relative at the Out-Patient Clinic of the Federal Neuro-Psychiatric Hospital Benin City, Nigeria at 9am on (day, date). Thank you”.

Group B Participants (patients and caregivers) in this group received a SMS reminder on the day, date, time and venue of their scheduled clinic appointments as previously described. In addition, they also received phone call-based brief medication adherence counselling (PC-BACS). The brief medication adherence counselling was done via phone calls at most five days after the first hospital visit, which averagely lasted for 6 minutes. This was adapted from a study by Liefoghe et al. (1999) and organised into the following sub-headings:

- description of illness and aetiology myths
- benefits of adherence and demerits of non-adherence
- caregiver role in medication supervision and keeping scheduled appointments
- questions/feedback from patient and/or caregiver.

2.5 Inclusion criteria

- 1 All new cases that presented to the Federal Neuropsychiatric Hospital Benin City, within the study period, diagnosed of schizophrenia as defined by the International Classification of Diseases 10th Edition (ICD-10) coded by F20-F39, and confirmed on the MINI-6.
- 2 Patients and caregivers who gave consent to participate in the study.
- 3 Patients and caregivers who had functional mobile phones and understood English language or Pidgin English, and caregivers must live with the patient.

2.6 Exclusion criteria

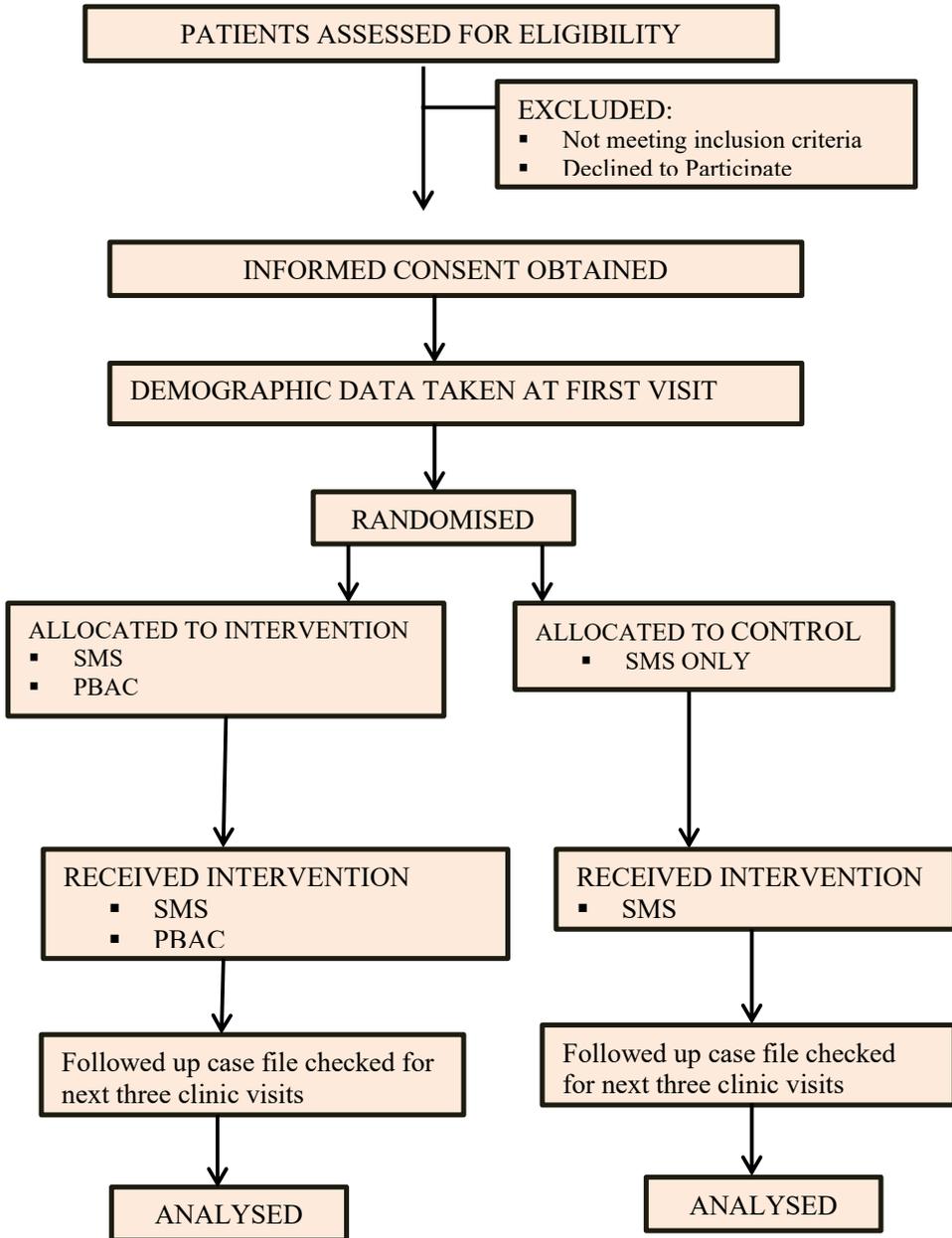
- 1 Patients and/or caregivers who did not have a functional mobile phone or who resided in an area where there was no mobile phone network coverage.
- 2 Patients that required admission for in-patient care.
- 3 Patients who did not present in company of a caregiver.

2.7 Allocation

The participants were randomised with a 1:1 allocation using www.randomiser.org by a psychiatrist who was not a part of the research team. A list of random numbers generated

in this process were assigned to the control group A (SMS only group) while numbers outside the list were assigned to group B (the PC-BACS plus SMS, group).

Figure 2 Flowchart for trial procedure (see online version for colours)



Notes: PBAC: phone call-based brief adherence counselling; SMS: short message service; trial registration.

2.8 Procedure at enrolment

Recruitment of participants was conducted by the researchers who were blind to the allocation sequence generation via the electronic randomiser. The aim of the study was clearly explained to the participants and their caregivers and a written informed consent was obtained. Where a patient could not provide informed consent, the consent of a caregiver was sought. The MINI was then used to confirm the diagnosis of participants. Those not confirmed by the MINI were excluded from the study. Thereafter, the socio-demographic questionnaire and PANSS was administered to each participant. The serial number that was assigned at recruitment, the case file number, the mobile phone number of the patient and relative and the appointment date for each patient was given to doctors who were blinded to the recruitment process and who matched them with the predetermined randomisation codes and allocated participants to either the SMS-only group (A) or phone call-based brief medication adherence counselling group (B). The appointment dates given to the participants were noted by the researchers in a diary.

2.9 Procedure at follow-up

The patients presenting for the first time are usually given appointments of between two and four weeks depending on the available slots at the records unit. The patients in group A received a text message from the researchers reminding them of the appointment, prior to the first outpatient visit only. The SMS was sent on the 5th and 2nd day prior to the appointment date. Participants in group B in addition to SMS, received PC-BACS as already described, prior to the first outpatient visit only. The researchers thereafter checked the case files of the participants (both group A and group B) to ascertain if they attended the outpatient clinic on the scheduled appointment dates or within two-days of the scheduled date for the next three consecutive visits. The interventions were given prior to the first outpatient visits only.

The proposed trial was submitted for registration to the Pan African Clinical Trial Registry on the 30th of January 2018. The trial was registered on the 13th of February 2018 with a unique trial number PACTR201802003029643.

2.10 Ethical consideration

Ethical approval was obtained from the Research and Ethics Committee of the Federal Neuro-Psychiatric Hospital Benin City (PH/A.864/VOL.XI/100), prior to commencement of the study. Written informed consent was obtained from patients and caregivers prior to participation in the study.

2.11 Data analysis

The data collected was analysed using the Statistical Package for Social Sciences (SPSS) Version 21. Continuous variables were summarised using mean and standard deviation. Frequencies were calculated for categorical variables. Chi-square was used to test the association between categorical variables and missed clinic appointments while student t-test was used to test the association between continuous variables and missed clinic appointments. The level of significance was set a-priori at $P < 0.05$.

3 Result

All participants in this study ($n = 86$, 100%) were accompanied by a caregiver. The caregiver was most often a parent ($n = 33$, 38.4%). All caregivers were employed and three-quarters of them had at least secondary level of education ($n = 65$, 75.6%). Almost half of the participants (48.8%) lived with their parents, 18.6% lived with their siblings, 15.1% lived with their spouses, 10.5% lived with other relatives and 3.5% lived with either their children or friends (Table 1).

Table 1 Family/caregiver related characteristics

<i>Variable</i>		<i>Frequency</i>	<i>Percentage</i>	<i>95%CI (%)</i>
Living status	With parents	42	48.8	37.9–55.9
	With siblings	16	18.6	11.0–28.4
	With friend	3	3.5	0.7–9.90
	With spouse	13	15.1	9–8.3–24.5
	With child	3	3.5	0.7–9.90
	With other relative	9	10.5	4.9–18.9
Caregiver relationship	Parent	33	38.4	28.1–49.5
	Sibling	27	30.1	21.8–42.3
	Spouse	9	10.5	4.9–18.9
	Child	6	7.0	2.6–14.6
	Other	11	14.0	6.6–21.7
Caregiver occupation	Manager	1	1.2	0.00–6.30
	Professional	18	20.9	12.9–31.0
	Technician/associated professional	7	8.3	3.3–16.1
	Clerical support staff	5	5.8	1.9–13.0
	Service sales workers	27	31.1	21.8–49.5
	Skilled agricultural workers	4	4.7	1.3–11.5
	Craft related workers	2	2.3	0.3–8.1
	Plant/machine operator	1	1.2	0.00–6.30
	Elementary occupation	19	22.2	13.9–32.3
	Armed forces	2	2.3	0.3–8.1
Caregiver educational level	No formal education	4	4.7	1.3–11.5
	Primary	17	19.7	12.0–29.8
	Secondary	28	32.6	22.8–43.5
	Tertiary	37	43.0	32.4–54.2

Participants in both intervention and control groups were effectively randomised as there were no significant differences between both groups in terms of age ($p = 0.45$), gender ($p = 0.67$), educational status ($p = 0.84$), employment status ($p = 0.34$), religion ($p = 0.31$), distance to hospital ($p = 1.00$), occupation ($p = 0.28$), marital status ($p = 0.61$) (see Table 2).

Table 2 A comparison of socio-demographic characteristics of the phone call-based brief medication adherence group (SMSplus) and short message service only group (SMS)

Variable		SMS	SMSplus	Statistic	
		N (%)	N (%)	χ^2/t	P
Age class	18–25	11 (25.6)	11 (25.6)	2.67	0.45
	26–34	12 (27.9)	12 (27.9)		
	35–45	15 (34.9)	10 (23.3)		
	46–65	5 (11.6)	10 (23.3)		
	Mean age (SD)	33.91 (10.85)	36.30 (10.43)		
Gender	Male	24 (93.0)	21 (48.8)	0.17	0.67
	Female	19 (7.0)	22 (51.2)		
Educational status	NFE	1 (2.3)	1 (2.3)	1.44	0.84
	Primary	7 (16.3)	9 (23.0)		
	Secondary	21 (48.8)	22 (51.1)		
	Tertiary	13 (30.3)	11 (25.4)		
	Post tertiary	1 (2.3)	-		
Employment status	Employed	10 (23.3)	14 (32.6)	0.93	0.34
	Unemployed	33 (76.7)	29 (67.4)		
Religion	Christianity	40 (93.0)	42 (97.7)	1.05	0.31
	Islam	3 (7.0)	1 (2.3)		
Distance to hospital	<20 km	24 (55.8)	24 (55.8)	0.00	1.00
	>20 km	19 (44.2)	19 (44.2)		
Occupation	Professionals	2 (20.0)	-	8.60*	0.28
	Technicians	1 (10.0)	2 (13.3)		
	Clerical staff	1 (10.0)	1 (6.7)		
	Service and sales workers	2 (20.0)	3 (20.0)		
	Craft related trade	1 (10.0)	4 (26.7)		
	Elementary occupation	3 (30.0)	2 (13.3)		
	Armed forces	-	1 (6.7)		
	Agric related	-	2 (13.3)		
	Marital status	Never married	28 (65.1)		
	Widow(ed)	1 (2.3)	-		
	Married	8 (18.6)	11 (26.6)		
	Cohabiting	4 (9.3)	1 (2.3)		
	Divorced	1 (2.3)	1 (2.3)		
	Separated	1 (2.3)	2 (4.7)		

Note: *Pearson's chi-square

3.1 Socio-demographic and missed clinic appointments

There were no statistically significant differences between socio-demographic correlates and missed first, second and third clinic appointments for categorical data (Tables 3, 4 and 5).

Table 3 Socio-demographic and missed first appointment (categorical data)

Variable	Descriptor	Missed first appointment		Statistic	
		Yes: n (%)	No: n (%)	χ^2	P
Gender	Male	18 (52.9)	27 (51.9)	0.10	0.93
	Female	16 (47.1)	25 (48.1)		
Religion	Christianity	31 (91.2)	51 (98.1)	2.21	0.30
	Islam	3 (8.8)	1 (1.9)		
Level of education	Primary	8 (23.4)	10 (19.2)	3.36	0.19
	Secondary	13 (38.3)	30 (57.7)		
	Tertiary	13 (38.4)	12 (23.1)		
Employment status	Employed	10 (29.4)	14 (26.9)	0.06	0.80
	Unemployed	24 (70.6)	38 (73.1)		
Distance to hospital	≤20 km	18 (52.9)	30 (57.7)	0.18	0.66
	>20 km	16 (47.1)	22 (42.3)		
Physical co-morbidity	Absent	32 (94.1)	45 (86.5)	1.26	0.26
	Present	2 (5.9)	7 (13.5)		
Marital status	Never married	23 (67.6)	33 (63.5)	1.41	0.49
	Married/cohabiting	10 (29.5)	14 (26.9)		
	Divorced/separated/widowed	1 (2.9)	5 (9.4)		
Living with?	Parent/sibling/spouse/child	27 (79.4)	47 (75.0)	1.24	0.27
	Friends/other relative	7 (20.6)	5 (25.0)		
Relationship to caregiver	Parent/sibling/spouse/child	28 (91.3)	47 (85.7)	0.10	0.75
	Friend/other relative	6 (8.7)	5 (14.3)		
Years caregiver education	NFE	1 (2.9)	3 (5.8)	1.19	0.75
	Primary	8 (23.5)	9 (17.2)		
	Secondary	12 (35.3)	16 (30.8)		
	Tertiary	13 (38.3)	24 (46.2)		

Table 4 Socio-demographic and missed second appointment (categorical data)

Variable	Descriptor	Missed second appointment		Statistic	
		Yes: n (%)	No: n (%)	χ^2	P
Gender	Male	31 (57.4)	14 (43.8)	1.50	0.22
	Female	23 (42.6)	18 (56.2)		
Religion	Christianity	50 (92.6)	32 (100)	5.13	0.29*
	Islam	4 (7.4)	-		
Level of education	No formal education	2 (3.7)	-	0.28	0.60
	Primary	13 (24.1)	3 (9.3)		
	Secondary	23 (42.6)	20 (52.5)		
	Tertiary	16 (38.6)	9 (28.2)		
Employment status	Employed	14 (25.9)	10 (31.3)	0.14	0.70
	Unemployed	40 (74.1)	22 (68.8)		
Distance to hospital	≤20 km	31 (57.4)	17 (53.1)	1.26	0.26
	>20 km	23 (42.6)	15 (46.9)		
Physical co-morbidity	Absent	32 (94.1)	45 (86.5)	3.89	0.14
	Present	2 (5.9)	7 (13.5)		
Marital status	Never married	39 (72.2)	17 (53.1)	0.53	0.47
	Married/cohabiting	12 (23.3)	12 (37.6)		
	Divorced/separated/widowed	2 (3.5)	3 (9.3)		
Relationship to caregiver	Parent/sibling/spouse/child	46 (85.2)	29 (90.6)	0.89	0.35
	Friends/other relative	8 (14.8)	3 (9.4)		
Living with?	Parent/sibling/spouse/child	45 (83.3)	29 (90.6)	3.54	0.31
	Friend/other relative	9 (16.7)	3 (9.4)		
Years caregiver education	NFE	1 (1.9)	3 (9.4)	11 (20.4)	6 (18.7)
	Primary	11 (20.4)	6 (18.7)		
	Secondary	20 (37.0)	8 (30.8)		
	Tertiary	22 (40.7)	15 (41.1)		

Note: *Fisher' exact test

There was a statistically significant difference in the mean duration of untreated psychosis between participants who attended their first clinic appointments compared to those who missed their first clinic appointments. ($p = 0.03$; 95% CI: -254.88-(-16.08) (Table 6).

No statistically significant difference between other socio-demographic and clinical variables (continuous data) and missed first, second and third clinic appointments (Tables 7 and 8).

Over two-thirds ($n = 30$; 69.8%) in the intervention group and slightly more than half ($n = 22$; 51.2%) in the control group attended their first clinic appointments. Though more participants in the intervention group attended their first clinic appointment compared with the control group, the difference was not statistically significant ($p = 0.08$)

Table 5 Socio-demographic and missed third appointment (categorical data)

Variable	Descriptor	Missed second appointment		Statistic	
		Yes: n (%)	No: n (%)	χ^2	P
Gender	Male	37 (58.7)	8 (34.8)	3.87	0.05
	Female	26 (41.3)	15 (65.2)		
Religion	Christianity	59 (93.7)	23 (100)	6.66	0.22*
	Islam	4 (6.3)	-		
Level of education	No formal education	2 (3.2)	-	0.74	0.42
	Primary	15 (23.8)	1 (4.3)		
	Secondary	27 (42.8)	16 (69.5)		
	Tertiary	19 (30.2)	6 (26.2)		
Employment status	Employed	16 (25.4)	8 (34.8)	0.17	0.68
	Unemployed	47 (74.6)	15 (65.2)		
Distance to hospital	≤20 km	36 (57.1)	12 (52.2)	0.22	0.64
	>20 km	27 (42.9)	11 (47.8)		
Physical co-morbidity	Absent	57 (90.5)	20 (87.0)	3.22	0.20
	Present	6 (9.5)	3 (13.0)		
Marital status	Never married	43 (68.3)	13 (56.5)	0.47	0.49
	Married/cohabiting	17 (26.9)	7 (30.4)		
	Divorced/separated/widowed	2 (3.2)	3 (12.9)		
Relationship to caregiver	Parent/sibling/spouse/child	54 (85.7)	21 (90.6)	0.72	0.40
	Friends/other relative	9 (14.3)	2 (9.4)		
Living with?	Parent/sibling/spouse/child	53 (83.3)	21 (90.6)	3.54	0.31
	Friend/other relative	10 (16.7)	2 (9.4)		
Years caregiver education	NFE	1 (1.6)	3 (13.0)	13 (20.6)	4 (17.3)
	Primary	13 (20.6)	4 (17.3)		
	Secondary	22 (34.9)	6 (26.0)		
	Tertiary	27 (42.9)	10 (43.7)		

Note: *Fisher' exact test

Table 6 Socio-demographic and clinical correlates of missed first appointment (continuous data)

Variables	Missed first appointment		Statistics			
	Yes	No	t	df	P	95%CI
	Mean (SD)	Mean (SD)				
Age	33.35 (11.05)	35.71 (12.36)	-0.89	84	0.37	-7.58-2.87
Duration of untreated psychosis (weeks).	122.68 (205.85)	258.85 (306.72)	-2.26	84	0.03	-254.88-(-16.08)
PANSS positive	21.26 (7.46)	20.96 (7.97)	-0.18	84	0.86	-3.12-3.75
PANSS negative	22.06 (9.88)	21.71(10.97)	-0.57	84	0.57	-3.32-5.98
PANSS general	35.47 (11.92)	34.18 (14.42)	-0.43	84	0.67	-4.65-7.23
PANSS total	78.79 (23.99)	75.84 (27.36)	-0.51	84	0.61	-8.53-14.43

Table 7 Socio-demographic and clinical correlates of missed second appointment (continuous data)

Variables	Missed first appointment		Statistics			
	Yes	No	t	df	P	95%CI
	Mean (SD)	Mean (SD)				
Age	35.13 (12.44)	35.06 (11.95)	-0.03	84	0.98	-5.38-5.51
Duration of untreated psychosis (weeks).	193.85 (295.11)	222.78 (235.64)	-0.47	84	0.64	-151.98-94.13
PANSS positive	21.35 (7.81)	20.72 (7.58)	0.37	84	0.71	-2.79-4.06
PANSS negative	22.11 (10.21)	19.69 (10.88)	1.04	84	0.30	-2.22-7.07
PANSS general	35.31 (13.27)	33.62 (13.63)	0.57	84	0.57	-4.25-7.63
PANSS total	78.78 (25.45)	74.00 (26.50)	0.83	84	0.41	-6.69-16.24

Table 8 Socio-demographic and clinical correlates of missed third appointment (continuous data)

Variables	Missed first appointment		Statistics			
	Yes	No	t	df	P	95%CI
	Mean (SD)	Mean (SD)				
Age	35.21 (12.50)	34.83 (11.57)	0.12	84	0.89	-5.56-6.32
Duration of untreated psychosis (weeks).	181.67 (280.582)	267.48 (258.90)	-1.28	84	0.20	-219.07-47.45
PANSS positive	21.49 (7.67)	20.09 (7.79)	0.75	84	0.46	-2.32-5.14
PANSS negative	21.49 (7.67)	20.09 (7.79)	0.74	84	0.46	-3.19-6.97
PANSS general	35.06 (13.11)	33.65 (14.02)	0.43	84	0.67	-5.08-7.91
PANSS total	78.25 (25.01)	73.57 (28.17)	0.74	84	0.46	-7.84-17.22

3.2 Comparison of clinic attendance rates between intervention and control groups

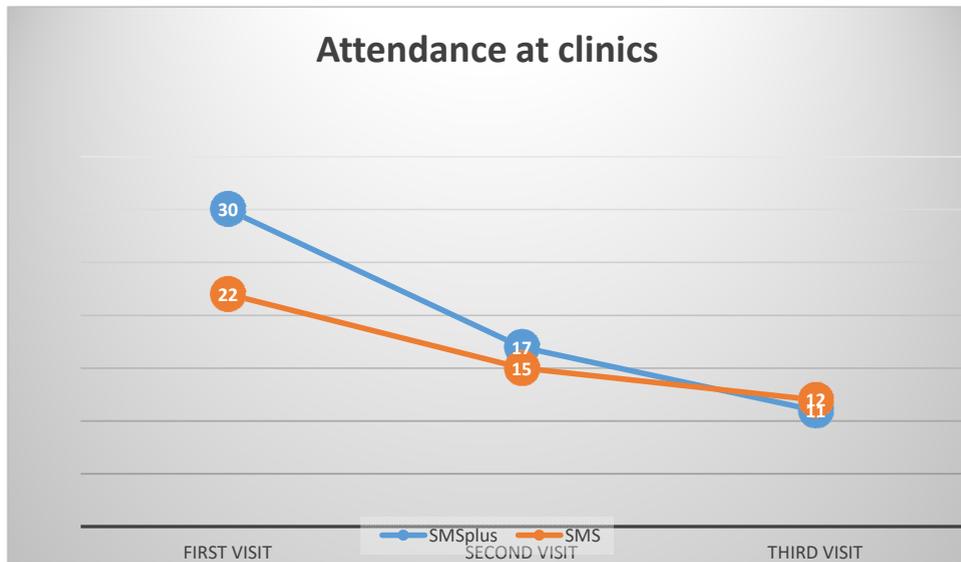
Over two-thirds ($n = 30$; 69.8%) in the intervention group and slightly more than half (51.2%) in the control group attended their first clinic appointments. Though more participants in the intervention group attended their first clinic appointment compared with the control group, the difference was not statistically significant ($p = 0.08$).

Table 9 Clinic attendance rates

Clinic visit	SMSplus			SMS			Statistic
	Present	N (%)	95%CI	Present	N (%)	95%CI (%)	
First ($n = 43$)	Present	30 (69.8)	54.9-81.4%	Present	22 (51.2)	36.8-65.4	$X^2 = 3.11$, $p = 0.08$
	Absent	13 (30.2)		Absent	21 (48.8)		
Second ($n = 30$)	Present	17 (56.7)	39.2-72.6%	Present	15 (68.2)	47.3-83.6	
	Absent	13 (43.3)		Absent	7 (31.8)		
Third ($n = 17$)	Present	11 (64.7)	41.3-82.4%	Present	12 (80.0)	54.8-92.9	
	Absent	6 (35.3)		Absent	3 (20.0)		

The proportion of participants that attended their second clinic appointments decreased further to 17 (56.7% of first clinic attendees) in the intervention group and 15 (68.2% of first clinic attendees) in the control group respectively. By their third clinic appointments, only 11 participants in the intervention group and 12 participants in the control group, attended clinic appointments. This is illustrated in the line graph plot.

Figure 3 Proportion of attendance at clinic visits in the intervention and control groups (see online version for colours)



4 Discussion

In this study, the rate of attendance at first clinic visit was slightly higher following phone-plus reminders compared to SMS-only reminders even though the difference was not statistically significant ($p = 0.08$). This is similar to findings in previous studies (Roberts et al., 2007; Ledgerwood et al., 2008; Perron et al., 2010). This indicates that direct personal contact with a patient may be more effective than a machine generated message. A telephone call may be perceived as better than an automated text message for a number of reasons. Firstly, telephone calls are more intimate, allowing real time emotional exchanges, release of emotional tensions and allow instant feedback. For delivery of research interventions, it is easier to confirm that interventions were received by respondents when phone calls are made. Also, the respondents have the chance to express their experience with the treatment, satisfaction or dissatisfaction with regards to interventions received, and even reschedule clinic appointment where facilities permit. On the other hand, in research involving SMS only, investigators cannot guarantee that the intended interventions were delivered or read by recipients due to lack of instant feedback.

While the purpose of the reminder phone calls/SMS was to prevent patients from forgetting appointments, the purpose of counselling delivered via phone calls in this

study was to make patients want to attend clinic appointments by helping them recognise and resolve ambivalence about changing their behaviour and build internal motivation to attend their treatment sessions. This is in tandem with the health belief model used to craft the interventions in this study (Abraham and Sheeran, 2015). Montes et al. (2012) evaluated an SMS-based strategy for enhancing adherence to medications in schizophrenia. They observed that improvement in adherence among patients assigned to the intervention group remained significantly greater than those on routine clinical care within the six months follow-up. However, the effect of the intervention was not sustained after the external stimulus (SMS) was removed. This is similar to the findings in this study. The possible reason for the attenuation of the effects of phone call-based intervention in this may be as follows; first, a one-off intervention may be insufficient to influence the formation of the habit to attend clinic appointments as scheduled. A repetitive stimulus is required to guarantee behaviour in consonance with learning theories (Mairs et al., 2011). Another possible reason for the observed attenuation in the effects of phone-plus intervention in subsequent visits may be that participants had difficulties other than forgetting, for instance financial challenges, negative attitudes towards treatment, poor insight etc. Thus, it may be difficult to attribute the clinic default in the second and third visits in absolute terms to withdrawal of the intervention only.

Contingency management interventions utilising a combination of reward (for example free consultations, free drugs or investigations etc.) and reinforcement (for example telephone reminders) by providing financial or other incentives for appointment attendance in addition to reminders may be more appropriate in resolving these difficulties. For example, giving patients free consultations after a certain number of paid visits in addition to reminders may help reduce non-attendance not due to forgetting date of appointment.

Globally, policy makers, clinicians and researchers increasingly highlight the importance of meeting the treatment needs of persons with severe mental illness such as schizophrenia (Anderson et al., 2014). Regrettably, defaulting from clinics after initial commencement is common and this phenomenon has several implications in clinical and economic terms. In clinical terms, defaulting from outpatient clinic attendance is associated with relapse, re-hospitalisation, poor mental functioning, increased suicidal behaviours, simultaneous poor adherence to medications for co-morbid conditions, increased mortality and increased risk of harm to the patient and others (Green et al., 2019; Abraham and Sheeran, 2015; Montes et al., 2012; Mairs et al., 2011; Anderson et al., 2014). The duration of untreated psychosis is increased and patients may take a longer time to achieve symptom remission. These consequences may be explained in part by the fact that untreated psychosis is neurotoxic (Thomas et al., 2018; Anderson et al., 2014).

Economically, in a low/middle income country like Nigeria, there is paltry budgetary allocation to service delivery for health related issues and proper utilisation of this grossly inadequate resource allocation may be further dissipated by missed scheduled clinic attendance. Appointments then have to be rescheduled or patients may present on days when health professionals need to attend to other patients thus increasing patient waiting time. On the part of the patient/caregivers, healthcare costs are increased due to re-hospitalisation, negative healthcare outcomes and increased time to remission even after restarting treatment (Montes et al., 2012). This constitutes a drain on scarce

financial resources. For the healthcare facilities, missed appointments cause decreased revenue and inefficient use of resources.

There was a statistically significant difference in the mean duration of untreated psychosis between participants who attended their first clinic appointments compared to those who missed their first clinic appointments. Participants with greater duration of untreated psychosis were more likely to miss their first clinic appointments than those with lesser mean duration of untreated psychosis. This is similar to findings in previous studies (Black et al., 2001; Polari et al., 2011). There are possible reasons for this finding. First, patients with long duration of untreated psychosis may experience more severe positive and negative symptoms, lack good judgment and insight regarding the benefits of continuing treatment in a health facility after initial contact. Secondly, ignorance about the chronicity of mental illness may make patients and/or caregivers default after initial contact with a treatment facility. Thirdly, the neurotoxic effect of untreated psychosis may hinder patients from taking the best decisions regarding their treatment (McGlashan, 2006). Finally, the side effects of medications may give subjective experience of worsening of symptoms on the part of the patient and treatment may be viewed as ineffective. This may lead them to discontinue their medications and default from subsequent clinic visits.

4.1 Limitation

There was no room for rescheduling of clinic appointments for those that had unforeseen reason(s) for defaulting.

4.2 Conclusions

While the weighty challenge of non-adherence to scheduled outpatient clinics amongst patients with mental disorders is by now common knowledge, countries like Nigeria continually fail to confront this issue with the seriousness it deserves. Defaulting from outpatient clinics increases the suffering of persons with mental illnesses in physical, social and psychological terms. Therefore, interventions must be designed to mitigate the suffering of patients with mental illnesses as well as their carers. Poor resource allocation to mental health in low and middle income countries means that transitioning to sustainable and cost effective interventions is most desirable. This study has shown that telephone counselling interventions are effective in improving adherence to scheduled clinic appointments and may be slightly more effective than SMS only interventions. Telephonic reminders may be used alone or in combination with other interventions to reduce the burden of non-adherence in psychiatric outpatient clinics. In addition, findings from this study show that a one-off intervention may be inadequate to overcome the challenge of missed clinic appointments. Frequent reminders may be more helpful in sustaining the effects of telephone counselling on clinic attendance.

Governments, policy makers and other stake holders in Nigeria should facilitate the passage and implementation of the new mental health bill in order to increase access to mental health services. This increased access to care will help reduce the duration of untreated psychosis and guarantee adequate protection of the rights of persons with schizophrenia and other psychological illnesses.

Future studies on clinic attendance could further explore the reasons for non-adherence to out-patient clinic visits.

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Data availability statement

The data that support the findings of this study are available from the corresponding author – upon reasonable request.

Disclaimer

The authors own the views expressed in this submitted article; and not an official position of the institution.

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