

USE OF TELEPHONE REMINDER SYSTEM TO IMPROVE REVIEW ATTENDANCE OF PATIENTS WITH CLEFT LIP AND PALATE

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ABSTRACT

BACKGROUND: This study aimed to evaluate the effectiveness of telephone reminders in reducing non-attendance at early review visits following cleft repair surgery.

MATERIALS AND METHODS: Comparative interventional study that included 58 adult parents/caregivers who presented their children for cleft repair surgery. Subjects were randomized into two groups; (phone call group or control group). The outcome was whether the patient attended the review clinic or not. A semi-structured questionnaire was used to collect the necessary information.

RESULTS: There was a progressive decline in attendance between the 1st and 3rd review visits, similar for the two groups. At the 4th review visit, the trend of decline was sustained for the control group but reversed for the phone call group, although not statistically significant $p=0.292$. The overall attendance rate for the control and phone reminder groups were 48.5% and 51.5%, respectively ($p=0.469$). All the respondents who received phone calls considered phone call reminders helpful.

CONCLUSION: There was some improvement in clinic attendance with phone reminders at early review appointments after cleft repair surgery. The effect of a phone reminder system for patients attending a cleft review in this study area may be more important for the late review visit periods.

KEYWORDS: Orofacial cleft, Cleft repair surgery, Phone call reminder system, Review visit, Non-attendance.

INTRODUCTION

The optimum outcome of cleft management goes beyond a good surgical repair and requires follow-up review care at scheduled intervals that can span from childhood to adulthood. As opined by Nahai et al.; cleft patients are considered patients of the craniofacial center for life.¹ Unfortunately, attendance at scheduled review appointments following cleft repair is poor, according to a study done in Nigeria.² Missed attendance at scheduled review appointments is a global problem affecting all aspects of medical practice, with documented rates ranging between 3%-80%,^{2,3,4} and this appears to be increasing. Missed attendance at scheduled clinic review appointment presents a significant burden to the health care system and prevent optimal care for the patients.^{5,6}

Documented studies have reported a relatively higher default rate for cleft review (30%-80%) compared to other medical practices.^{2,7} This may be because the demand for attending scheduled review appointments is mainly on the caregivers since cleft surgery is usually carried out on infants.^{2,7}

Several documented research has looked at causes, and possible solutions to non-attendance and evidence have shown reminder systems to reduce non-attendance at clinic review visits effectively.^{8,9,10} Other successful interventions that have been documented in the literature include giving the patients choice of date, offering a reward for attendance, threatening sanctions for non-attendance, improved communication, and selective overbooking with varying success rates reported from different studies.^{9,10} Reminder system involves communicating with the patients either before the period of the scheduled appointment (pre-appointment reminders) or after a patient fails to keep an appointment (default reminders).¹¹

In recent times, a rapid improvement has been witnessed in communication globally, making access to information cheaper and more efficient.^{12,13} This has invariably made mobile health (mHealth) based intervention one of the promising tools deployed globally in recent times in achieving health objectives.¹² Several researchers, especially in the developed world, have harnessed this resource to improve the health care delivery system, including improved attendance at review visits.¹² This includes a mobile system (telephone calls, text messages), email, and internet to remind patients of scheduled appointments (reminder system).

The use of reminder systems in most hospitals, especially public or government hospitals in most developing nations, is still very scanty.^{14,15}

Access to mobile phones and other telecommunication services has expanded in the West African sub-region in the past few decades. Studies have shown that the mobile phone is the most commonly used ICT device in several countries in this sub region.^{12,16,17} With the mobile phone penetration in Nigeria rising to the range of 85 to 94 %^{16,17} and in Ghana to 132.8 % (some people have more than one mobile connection)¹⁸ this holds a bright prospect for easy, cheap, and relatively reliable communication with patients.¹²

This study aimed to evaluate the effectiveness of telephone reminders in reducing missed attendance at early review visits following cleft repair surgery. For this study, early review visits refer to review visits in the first six (6) months post cleft surgery.

METHODS:

This Comparative interventional study was carried out at

the cleft unit of a tertiary health facility in Ogun State, southwestern Nigeria, between June 2018 and December 2020. The facility is the only hospital in Ogun state that is in partnership with Smile train to offer management to patients with orofacial cleft deformity at no cost. Ethical approval was obtained from the hospital ethics committee with approval number SHH/EC/05/18/06. Informed consent was obtained from the patient or parent (or guardian) of the child with cleft deformity.

The inclusion criteria were adult patients (aged 18 years and above). Parents/legal guardians of paediatric patients (<18yrs) of patients for surgical repair of cleft lip or palate. Possession of one or more functional telephone lines, willingness to participate in the study. This include; the age of at least 10 weeks, a minimum weight of 5kg, and minimum haemoglobin of 10 gm/dL for cleft lip, while for cleft palate, the child must be at least 10 months, weigh at least 9kg, and have haemoglobin concentration of at least 10 gm/dL Excluded were those that declined to participate and cleft patients with underlying medical condition contraindicating surgery.

In this study, adult parents or legal guardians of the cleft patients are referred to as caregivers. A reminder system refers to phone calls to prompt patients to attend the scheduled review appointment following cleft lip or palate repair. Attendees refer to participants who turn up for the review visit during the clinic operating hours on the appointed date.¹⁵ Non-attendees refer to participants who attend on any other day other than their scheduled appointment day, changed or canceled the appointment, or did not turn up for the appointment.¹⁵

One intervention (reminder system) and a control were used for this study. The intervention involved phone calls to prompt patients to attend the review appointments, while for the control, no form of reminder for the review appointment was used.

Patients were randomly assigned to the two groups; (1) the intervention group and (2) the control group. An assistant not involved in patient recruitment and intervention generated the randomization list using a computer-generated randomization method (software: Research Randomizer, <http://www.randomizer.org/form.htm>).

The research assistant responsible for the recruitment of participants was blinded to the intervention; likewise, the patients were blinded to the details of the study concerning the review and reminder. The assigned intervention was revealed to the research assistant responsible for recruitment 72 hours before the scheduled appointment. Only one member of the research team was involved in making the phone calls, and the same standardized information was given in a language understood by the participants in the reminder group during the phone conversation to avoid unequal intervention. The calls were placed at random intervals that included working and non-working hours on different days. Successful contact was recorded; a voice message was not used when the respondent answered the phone call. Once a call was successful, no other call was made to that particular respondent again as a second reminder.

All the patients were managed following the standard protocol for managing cleft deformity. The same standardized technique was used depending on the type of cleft but regardless of the randomization or treatment group. Preoperative assessment, intra-operative

procedures, and post-operative management and instructions were not altered. After surgery, the patients were discharged on the 4th and 7th post-operative days for cleft lip and cleft palate repair, respectively (except when conditions or complications dictated otherwise). According to the protocol of the cleft team in our center, at discharge, patients were given an appointment for follow up review visit for 1st-week post-op, 3rd-week post-op, 7th-week post-op, 12th-week post-op, and 24th-week post-op, the frequency is then increased to 6 monthly until the patient turns 20 years. Follow-up reviews may be more frequent or exceed 20 years of age if there are other concerns or indications. This study used the first four post-operative review visits (1st week, 3rd week, 12th week, and 24th-week post-op) for evaluation.

The same standard post-operative instructions were given to all the patients/parents at discharge, including review dates, venue, and time. For the reminder group, calls (to prompt subjects to attend the scheduled review, including the appointment date, time, and venue) were sent to participants 72 to 48 hours before the scheduled appointment between 8 am and 8 pm at random intervals. The call was successful in all the respondents in the call group except in the 4th review, where 2 out of the 29 respondents could not be reached on the phone, and the control group did not have any form of reminder. (72 to 48 hours was chosen for the calls because patients would have ample time to organize their commitments to be able to accommodate the appointment). After the expected review date, calls were put through to the subjects that eventually did not attend the review to get the reasons for non-attendance.

DATA COLLECTION:

A researcher-administered semi-structured questionnaire designed for the purpose was used to obtain relevant information from the participants at the review appointment. Information collected includes; age, gender, address of residence, socioeconomic status, highest educational attainment, functional phone number(s) of patient/parent (or legal caregiver), treatment received, any intra or post-operative complication, satisfaction at discharge, date of the review.

Other information collected is the date and time of reminder call, successful or not successful call, if the call did not go through, the reason for non-success, review appointment kept or missed, whether a call was received or not. The patient/caregiver that received a reminder call and confirmed the appointment but eventually did not show up were noted. For those that received a call, information was obtained about satisfaction with the reminder and mode of reminder and whether they would prefer other methods of being reminded.

DATA ANALYSIS:

Data of all the enrolled 58 subjects were available with adequate information for analysis. Data were analyzed using Statistical Package for Social Sciences (SPSS Inc, Chicago, USA) version 21.0, and results were presented in tables and figures and expressed as mean and SD (Standard Deviation). The statistical association was determined using the Chi-square test for categorical variables. Student's t-test and variance analysis (ANOVA) was used for the continuous variables. A *p*-value of less than 0.05 was considered to be statistically significant.

RESULTS:

The median age of the patients was 7.5 months, with an inter-quartile range of 4 months and 19.5 months. The minimum age was three (3) months, while the maximum was 10years (120months). The average age of the parent/caregiver was 31.41 ± 5.81 years. Their minimum

age was 20 years, while the maximum was 45 years.

All the respondents in the two groups were adult parents of children born with a cleft defect. The respondents' demographic data were comparable in the two groups (Table 1).

Table 1: Socio-Demographic Characteristics and Medical information Distribution Table of Patients and their Caregivers

SocioDemographic	Call n = 29 (%)	No call n = 29 (%)
Gender of Patient		
Male	15 (51.7)	7 (24.1)
Female	14 (48.3)	22 (75.9)
Gender of Caregiver		
Male	2 (6.9)	1 (3.4)
Female	27 (93.1)	28 (96.6)
Religion of Caregivers		
Christianity	17 (58.6)	19 (65.5)
Islam	12 (41.4)	10 (34.5)
Caregivers' Educational Qualification		
Primary	3 (10.2)	5 (17.2)
Secondary	13 (44.8)	10 (34.5)
University/Polytechnic/College of Education	13 (44.8)	14 (48.3)
Area of Residence		
Within Abeokuta	10 (34.5)	13 (44.8)
Outskirt of Abeokuta	1 (3.4)	6 (20.7)
Outside Abeokuta	18 (62.1)	10 (34.5)
Diagnosis		
Unilateral Cleft Lip	8 (27.6)	6 (20.7)
Unilateral Cleft Lip and Palate	9 (31.0)	11(37.9)
Bilateral Cleft Lip	0 (0.0)	2 (6.9)
Bilateral Cleft Lip and Palate	3 (10.3)	3 (10.3)
Isolated Cleft Palate	8 (27.6)	4 (13.8)
Tessier 7 Cleft	1 (3.4)	1 (3.4)
Oronasal Fistula	0 (0.0)	1 (3.4)
Nasal cleft	0 (0.0)	1 (3.4)
Treatment Received		
Cleft Lip Repair	15 (51.7)	15 (51.7)
Cleft Palate Repair	14 (48.3)	12 (41.4)
Nasal Cleft Repair	0 (0.0)	1 (3.4)
Lip Pit Repair	0 (0.0)	1 (3.4)
Experience with Treatment Received		
Satisfied	26(89.7)	28 (96.6)
Not Satisfied	3 (10.3)	1 (3.4)

The type of cleft, treatment received and experience with treatment were comparable for both groups (Table 1). All the respondents in the two groups were given the same appointment regime to attend the review visits.

Attendance of review visits in the two groups showed a progressive decline which was similar between the 1st and 3rd review visits. At the 4th review visit, however, the trend of decline was sustained for the no-call (control) group but reversed for the reminder group, in which there was an increase in attendance over the previous (3rd) review visit (Fig 1).

Overall, out of the participants who received a phone call, 51.5% attended all four(4) review appointments. Of the participants who did not receive phone calls, 48.5% attended, but the difference was not statistically significant (p=0.469).

The reasons for non-attendance were similar for both groups except for "forgetfulness," which was more in the control group, especially in the 4th review. (Table 2).

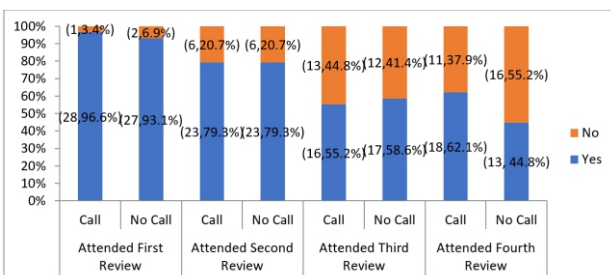


Figure 1: Stacked Chart showing Attendance of Parents/caregivers at review visits

Table 2: Reason for Non-Attendance Distribution Table

Reason for Non-Attendance	1st Review		2nd Review		3rd Review		4th review	
	Call	No Call	Call	No Call	Call	No Call	Call	No Call
Baby/Carer ill	1(100.0)	1(50.0)	1 (16.7)	1 (16.7)	2 (15.4)	3 (25.0)	2 (18.2)	2 (12.5)
Forgot Appointment	0 (0.0)	0 (0.0)	0 (0.0)	1 (16.7)	0 (0.0)	1 (8.3)	0 (0.0)	4 (25.0)
Travelled	0 (0.0)	0 (0.0)	0 (0.0)	2 (33.3)	2 (15.4)	2 (16.7)	2 (18.2)	2 (12.4)
Financial Constraint	0 (0.0)	1(50.0)	3 (50.0)	1 (16.7)	4 (30.7)	1 (8.3)	0 (0.0)	0 (0.0)
Transportation Difficulty	0 (0.0)	0 (0.0)	1 (16.7)	0 (0.0)	0 (0.0)	1 (8.3)	0 (0.0)	0 (0.0)
Busy at Work	0 (0.0)	0 (0.0)	1 (16.7)	1 (16.7)	3 (23.1)	3 (25.0)	2 (18.2)	5 (31.3)
Lockdown	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (15.5)	1 (8.3)	3 (27.3)	3 (18.8)
Non Response	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (7.1)	0 (0.0)	2 (18.2)	0 (0.0)

Regarding the acceptability of the intervention, the calls were successful in all the reviews except for two patients in the 4th review. None of the parents/caregivers reported being disturbed by the call. They all considered the phone call reminder useful and would like to be reminded of their appointment in the future. Apart from phone use as a

reminder, some respondents also want text messages (n = 5; 15.5 %) to be included in channels for reminding patients of their appointment. The majority (n = 19; 65.5%) would like to be reminded two days before the appointment date. The details are presented in table 3 below.

Table 3: Acceptability of the intervention

	1st Review	2nd Review	3rd Review	4th review
Phone call 1 success				
Successful	29 (100.0)	29 (100.0)	29 (100.0)	27 (93.1)
Not Successful	-	-	-	2 (6.9)
were you disturbed by the phone call 1				
No	28 (96.6)	26 (89.7)	23 (79.3)	20 (69.0)
Non Response	1 (3.4)	3 (10.3)	6 (20.7)	9 (31.0)
How were you disturbed				
Non-Applicable	-	-	-	-
Did you consider reminder s useful				
Yes	28 (96.6)	26 (89.7)	23 (79.3)	20 (69.0)
Non Responses	1 (3.4)	3 (10.3)	6 (20.7)	9 (31.0)
I would like to be reminded of your appointment in the future				
Yes	28 (96.6)	26 (89.7)	23 (79.3)	20 (69.0)
Non Responses	1 (3.4)	3 (10.3)	6 (20.7)	9 (31.0)
If yes, what type of reminder				
Phone call	27 (96.4)	25 (96.2)	23 (100.0)	20 (100.0)
Text Message	1 (3.6)	1 (3.8)	-	-
Why would you not want to be reminded of your appointment				
Not Applicable	-	-	-	-
Would you recommend the use of a reminder				
Yes	28 (96.6)	26 (89.7)	23 (79.3)	20 (69.0)
Non Responses	1 (3.4)	3 (10.3)	6 (20.7)	9 (31.0)
Would you prefer another reminder to a phone call?				
Yes	5 (17.2)	3 (10.3)	1 (3.4)	
No	23 (79.3)	23 (79.4)	22 (75.9)	20 (69.0)
Non Responses	1 (3.4)	3 (10.3)	6 (20.7)	9 (31.0)
Other Types of Reminder				
Text Message	5 (100.0)	3 (100.0)	1 (100.0)	0
How many days before the review visit would you like a reminder?				
1 day	4 (13.8)	5 (17.2)	7 (24.1)	2 (6.9)
2 days	15 (51.7)	19 (65.5)	13 (44.8)	13 (44.9)
3 days	9 (31.0)	2 (6.9)	3 (10.3)	5 (17.2)
Non Responses	1 (3.4)	3 (10.3)	6 (20.7)	9 (31.0)

No significant relationship was found between parent/caregiver attending review and reminding them of their appointments (Table 4).

Table 4: Chi-Square showing relationship between the groups and Parent/caregiver Attending review

Patient Attended Review	Groups		Total	χ^2	p-value
	Call	No call			
1st Review				0.352	1.000
Yes	28 (96.6)	27 (93.1)	55 (94.8)		
No	1 (3.4)	2 (6.9)	3 (5.2)		
Total	29 (100.0)	29 (100.0)	58 (100.0)		
2nd Review				0.000	1.000
Yes	23 (79.3)	23 (79.3)	46 (79.3)		
No	6 (20.7)	6 (20.7)	12 (20.7)		
Total	29 (100.0)	29 (100.0)	58 (100.0)		
3rd Review				0.070	1.000
Yes	16 (55.2)	17 (58.6)	33 (56.9)		
No	13 (44.8)	12 (41.4)	25 (43.1)		
Total	29 (100.0)	29 (100.0)	58 (100.0)		
4th review				1.732	0.292
Yes	18 (62.1)	13 (44.8)	31 (53.4)		
No	11 (37.9)	16 (55.2)	27 (46.6)		
Total	29 (100.0)	29 (100.0)	58 (100.0)		

DISCUSSION

The present study was designed to evaluate the effectiveness of telephone reminders in improving non-attendance at review visits following cleft repair surgery. The study did not find any significant difference between those that had telephone reminders of their appointment and those that had no form of reminder. This is at variance with the findings from previous studies that have reported reminder systems to be effective in improving appointment attendance across a range of health care settings and patient population subgroups.^{8,14,15} An earlier survey from Nigeria that looked at reasons for non-attendance at cleft review visits did not find forgetfulness as one of the factors responsible for missed attendance in cleft patients.⁷ Since reminder systems are predicated on the assumption that patients might forget the appointment, it is, therefore, logical to interpret studies that find reminder system useful with this assumption in mind.

In the post-operative review of cleft patients, other reasons have been implicated for missed attendance, such as illness, busyness at work, financial reasons, transportation problems, etc.⁷ Another dimension to a missed appointment in cleft surgery is parent/caregiver apathy. Once the cleft has been repaired, and the obvious defect causing the aesthetic challenge is no longer present, most people may not see the need to continue attending follow-up visits, especially when it may involve time or financial commitment.⁷

Overall, a progressive decline in attendance was noted among the 2 groups, with each subsequent review appointment up to the 3rd. This agrees with a previous study that reported a progressive decline in cleft clinic review appointments throughout their study.¹⁹ Another report from the National Health service in 2001 also declared a progressive decline in attendance with subsequent review appointments.²⁰

In this present study, however, an increase in attendance over the previous visit was noted at the 4th review appointment in the reminder group compared to the control group that witnessed a further decline in

attendance at the 4th review appointment, although the difference was not statistically significant.

The longer the time interval between the time a review appointment is given and the time to attend the review, the higher the chance of forgetting. This 24-week interval (between the 3rd and 4th appointment) may partly explain the observed progressive decline in attendance. This fact is further buttressed in the result obtained in this study. One of the main reasons given by the majority of respondents who failed to attend the 4th review visit in the control group was "forgetfulness." In contrast, non gave this reason among respondents in the reminder group.

Similarly, during the 1st to 3rd review, forgetfulness was not a common (16.7% and 8.3% for 2nd and 3rd visit respectively in the control group) reason respondents in the two groups for missing the review appointment. Some reasons for non-attendance are genuinely unavoidable, but a number of other reasons may be corrected through appropriate interventions such as the use of reminders to prevent forgetfulness. The increase in attendance noted in the 4th review in this study can most likely be attributed to the use of reminders. A reminder system on attendance of review visits may be more beneficial for the latter part of review appointments when the time interval before the date of review is so wide as to make forgetfulness very likely. However, further studies involving early and late review appointments will be necessary to confirm this assertion.

At the 4th review appointment, about 40 % of reminded respondents did not turn up for the review visit. This figure is higher than those reported in a number of previous studies^{14,21} but similar to the findings in the study of Leong et al. in Malaysia that reported that about 40% of respondents did not keep to their appointments despite reminders.¹⁵ As suggested by Leong et al., this could be due to a lack of familiarity with the appointment system. This may especially be so in less developed nations where people are not so much used to the culture of keeping appointments.²² In the study of Leong et al., 48% of non-attendees were reported to have visited on days other than the scheduled appointment date. It is possible that some of the respondents that were reminded in this study attended the review at dates other than the scheduled date of appointment. However, we did not look at whether respondents attended the review on dates other than the appointed date.

One of the possible drawbacks of the phone call is its possibility of being intrusive or disturbing to some people, especially during working hours. However, none of the respondents in this study felt disturbed by the phone call reminder. Almost all of the respondents claimed they were receiving a review reminder from a healthcare system for the first time and praised the "novel" idea claiming that it showed the healthcare system truly cared about their wellbeing and generally encouraged its use. This finding is consistent with previously reported studies.²³⁻²⁵ Few of our respondents preferred text to phone reminders claiming that sometimes they cannot pick up their calls, especially when busy at work, but can usually check their text messages at convenient times of the day.

Some authors have suggested that reminders should be sent early at the appropriate time for it to be effective. This allows patients to organize commitments properly and therefore increases the likelihood of attendance, proper rescheduling, or cancellation of the appointment.^{26,27} In

spite of this, evidence in the literature does not suggest any negative impact on attendance behavior when reminders are made 1-7 days before the appointment date.⁸ In the present study, most respondents preferred to be reminded two days before the appointment date.

Limitation: we did not check for the economic aspect of phone usage and whether the use of multiple phone calls could have been more effective.

CONCLUSION: This study did not demonstrate any significant improvement in clinic attendance using phone reminders at early review appointments after cleft repair surgery. We, however, found some improvement in clinic attendance with phone call reminders at the latter part of the review appointment in this study. The effect of a phone reminder system for patients attending a cleft review in this study area may be more important for the late review visit periods. As cleft review visits span a long time in the patient's life, the reminder system may be a very important inclusion as part of protocols in cleft care. The study also demonstrated that respondents embraced phone reminders, although few preferred SMS. There is a need for further studies to explore this and to develop a standardized protocol for a reminder system.

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