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Text Messaging, Telephone, or In-Person Outpatient Visit to the Surgical Clinic: A Randomized Trial



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ABSTRACT

Introduction: Routine outpatient follow-up visits for surgical patients are a source of strain on health-care resources and patients. With the COVID-19 pandemic adding a new urgency to finding the safest follow-up arrangement, text message follow-up might prove an acceptable alternative to a phone call or an in-person clinic visit.

Methods: An open-label, three-arm, parallel randomized trial was conducted. The interventions were traditional in-person appointment, a telephone call, or a text message. The primary outcome was the number of postdischarge complications identified. The secondary outcomes were patient satisfaction with follow-up, future preference, default to follow-up, and preference to receiving medical information by text message.

Results: Two hundred eight patients underwent randomization: 50 in the in-person group, 80 in the telephone group, and 78 in the text message group. There was no difference in the number of reported complications: 5 (10%) patients in the in-person group, 7 (9%) patients in the text group, and 11 (14%) patients in the telephone group ($P = 0.613$). The preferred method of follow-up was by telephone (106, 61.6%). The least preferred was the in-person follow-up (15, 8.7%, $P = 0.002$), which also had the highest default rate (44%).

Conclusions: There was no evidence that text messages and telephone calls are unsafe and ineffective methods of follow-up. Although most patients are happy to receive results by text message, the majority of patients would prefer a telephone follow-up and are less likely to default by this method. Health-care systems should develop telehealth initiatives when planning health-care services in the wake of the COVID-19 pandemic.

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Introduction

The demand for telemedicine services has increased significantly in the era of the coronavirus (COVID-19) pandemic.¹ The use of telehealth services as a substitute for in-person consultations is not new but its utilization as a stand-alone method for outpatient consultations has increased.^{2,3} Virtual clinics can be conducted via a range of video conference platforms, telephone calls, or text messaging. During multiple surges of COVID-19 cases, telemedicine has been an essential substitute for in-person hospital visits, especially for patients for whom continuity of care is essential, such as patients who require or have undergone surgery. Virtual health-care services are being increasingly integrated into health-care systems as a strategy for maximizing the efficiency of service delivery.¹

Telehealth is less expensive for health-care providers, and for recipients, and improves health-care access^{4,5} while reducing avoidable readmissions, emergency department visits, and overtime reimbursements.^{6,7} The benefits of telemedicine have been observed across a range of different specialties⁸⁻¹⁴ and for surgical outpatient services.^{9,15-17} Patients also associate telehealth follow-up, especially text messaging, with increased information retention.^{8,10} Telephone calls to patients as a follow-up has been shown to be associated with reduced readmission rates of up to 80% among discharged patients after surgery.⁷ A previous study at our institution established that patients preferred telephone follow-up clinics to in-person outpatient visits.¹⁵ There is evidence, however, that text messages are preferred over other forms of communication because of their simplicity.¹⁸

Telephone calls are often offered to patients in place of an in-person appointment, but text messaging may be an alternative. No study has compared all the three in a randomized trial. This study's specific objectives were fourfold: to establish whether there was a difference in the identification of complications post discharge in patients being followed up by telephone, text message, and in-person; to determine if there was a difference in the patient's preference for the method of follow-up; to determine whether there was a difference in default rates between the three modalities; and to evaluate the patient's satisfaction with the different methods of follow-up.

Patients and Methods

This study was a single-center, open-label, three-arm parallel-group randomized controlled trial. The Consolidated Standards of Reporting Trials guideline for multiarm trials was observed,¹⁹ and the protocol was registered on clinicaltrials.gov (NCT04245020). Connolly Hospital is a publicly funded, university-affiliated, teaching hospital in Dublin, Ireland. It has a catchment of 370,000 people.²⁰ The hospital provides 24-h acute medical and surgical services. Ethical approval was granted by the research ethics committee in Connolly Hospital, Dublin.

Study participants

All patients had been admitted on an elective or emergency basis for diagnostics or therapeutic intervention, between October 2019 and March 2020. Patients were approached consecutively for recruitment based on the inclusion and exclusion criteria (Table 1) and gave informed consent prior to discharge from the hospital.

Intervention

Patients were randomly assigned at a ratio of 1:1:1 into three parallel arms by block randomization using a random number sequence.²¹ Consent and randomization was carried out on the day of discharge. Block sizes were six and nine, and the investigators were blinded to this allocation using sealed envelopes. The interventions were telephone follow-up, text message follow-up, or in-person outpatient visit (the control arm). All interventions were performed at 6 wk following the discharge. The trial commenced before the COVID-19 pandemic, but the mandatory closure of all outpatient department (OPD) services during the first wave of the pandemic affected recruitment toward the end of the trial. At this time, the remaining patients recruited to the in-person arm were randomized to one of the other two arms.

For patients in the telephone call arm, the call was carried out from the hospital landline in a standardized format.

Table 1 – Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
16 y old and more.	Age under 16 y.
Could provide written consent.	Declined to participate.
Surgical admission for	Consent withheld.
Minor surgery	Not familiar or comfortable with using text messaging or did not have a phone that could receive a text message.
Elective or emergency surgery such as appendicectomy, hernia repair, thyroidectomy, and stab wounds	New or suspected diagnosis of malignancy.
Investigation or management of conditions such as nonspecific abdominal pain, head injury, and dysphagia	Further investigation required, such as endoscopy.
Attended for surveillance endoscopy for conditions such as colonic polyps or Barrett's esophagus	

Information pertinent to the underlying pathology and expectations at 6 wk were discussed. The call was made by a senior surgical trainee during regular working hours. If there was no response, a second attempt was made 1 wk later. If there was no response to this second attempt, this was classified as a default.

For patients in the text message arm, the text message was sent in a standardized format. They were provided with pertinent information about the underlying pathology and were asked a closed-ended question to assess whether they were well and satisfied with no further follow-up. The text message was sent from a dedicated secure smartphone that was locked in a secure hospital location. A senior surgical trainee read the response, and immediate action was taken if required. If there was no response via text message, a second text message was sent the following week. Again, if there was no response to this second attempt, this was classified as a default.

The control group attended an in-person appointment in the consultant-led outpatient clinic. The participants were seen by either a consultant or a nonconsultant hospital doctor as per the standard procedure. The investigators reviewed the patient's hospital record after their appointment. Irrespective of the allocation arm, participants were given the standard advice to attend their general practitioner or the emergency department in the event of a medical emergency or complication.

Outcomes

The primary outcome was the number of postdischarge complications identified at follow up (6–8 wk). The secondary outcomes were patient satisfaction with their follow up, future preference for follow-up, default to follow-up, and preference to receiving medical information by text message. Outcomes were assessed during the patient's follow-up visit and the subsequent satisfaction survey. All complications of Clavien-Dindo grade 1²² or greater were included. If participants had attended the hospital with complications, this was recorded in their charts. If patients had attended their general practitioner with complications, this was identified by participants self-reporting to the clinician. All medical records were maintained in paper-based charts. The investigators contacted all patients by telephone call 6 wk after their intervention to complete the satisfaction survey. This survey was adapted from a previously published trial.¹⁵ The questions are outlined in the Supplementary material.

Statistical analysis

Descriptive statistics were used to identify the participant characteristics and outcome measures. For the primary outcome, reported complications, a logistic regression model was run to explore potential differences between the groups (text, telephone call, and in-person) and results are presented as odds ratios, 95% confidence intervals (CIs), and *P*-values. An intention-to-treat (ITT) analysis including all randomized patients in the groups to which they were randomly assigned, regardless of their adherence or deviation, was conducted. A secondary analysis, a per-protocol (PP) analysis including only

patients compliant with the protocol, was conducted. For the secondary outcomes, logistic regression models or nominal models were run to explore potential differences between groups. A complete-case analysis was run of patients in the groups to which they were randomly assigned, followed by excluding patients who were lost to follow-up by the investigators. No adjustment for multiple comparisons was made when exploring secondary outcomes. All analysis was run in Stata v13 (Stata Statistical Software: Release 13; College Station, TX: StataCorp LP).

Sample size

Sample size calculation was based on a previous study in the institution that determined that 100 per group was sufficient to give a 90% power.¹⁵ The study recruitment was stopped prior to recruiting all 300 patients due to the cancellation of outpatient clinics and all elective procedures during the first wave of the COVID-19 pandemic in March 2020. All remaining patients recruited to the in-person arm but who had not yet received follow-up were subsequently randomized to either a telephone call or text message follow-up.

Results

A total of 208 patients underwent randomization. Initially, 69 (33%) were randomized to the in-person follow-up group, 70 (33%) to the text group, and 69 (33%) to the telephone group. Once the OPDs were closed due to COVID-19 restrictions, 19 of those who had been randomized to OPDs were rerandomized by the same technique, 8 to the text group, and 11 to the telephone group. Therefore, in total, there were 50 (24%) assigned to the in-person group, 78 (38%) to the text group, and 80 (39%) to the telephone group. This is outlined in the Consolidated Standards of Reporting Trials flow diagram (Fig.). The patient characteristics are outlined in Table 2. The procedures carried out are outlined in the Supplementary materials.

Primary outcome

There were 23 (11%) reported complications in the study population. Outcomes are outlined in Table 3. Five (10%) complications were noted in the in-person group, 7 (9%) in the text group, and 11 (14%) in the telephone group. There was no evidence of a difference in reported complications between the groups in the ITT analysis ($P = 0.613$) (Table 4). There were 18 Clavien-Dindo grade 1 complications and 5 grade 3 complications. Two patients required further surgical procedures relating to the initial complaint, one required surgery for an inguinal hernia recurrence, and the second required a further skin lesion excision. Twelve patients had wound-related issues including infection, seroma, and wound dehiscence. The remaining complications were ongoing rectal bleeding, persistent mass following lipoma excision, extravasation of propofol to extravascular space, and seven patients required follow-up for ongoing pain. All complications were captured by the follow-up at 6–8 wk. No further complications were identified from the satisfaction questionnaire.

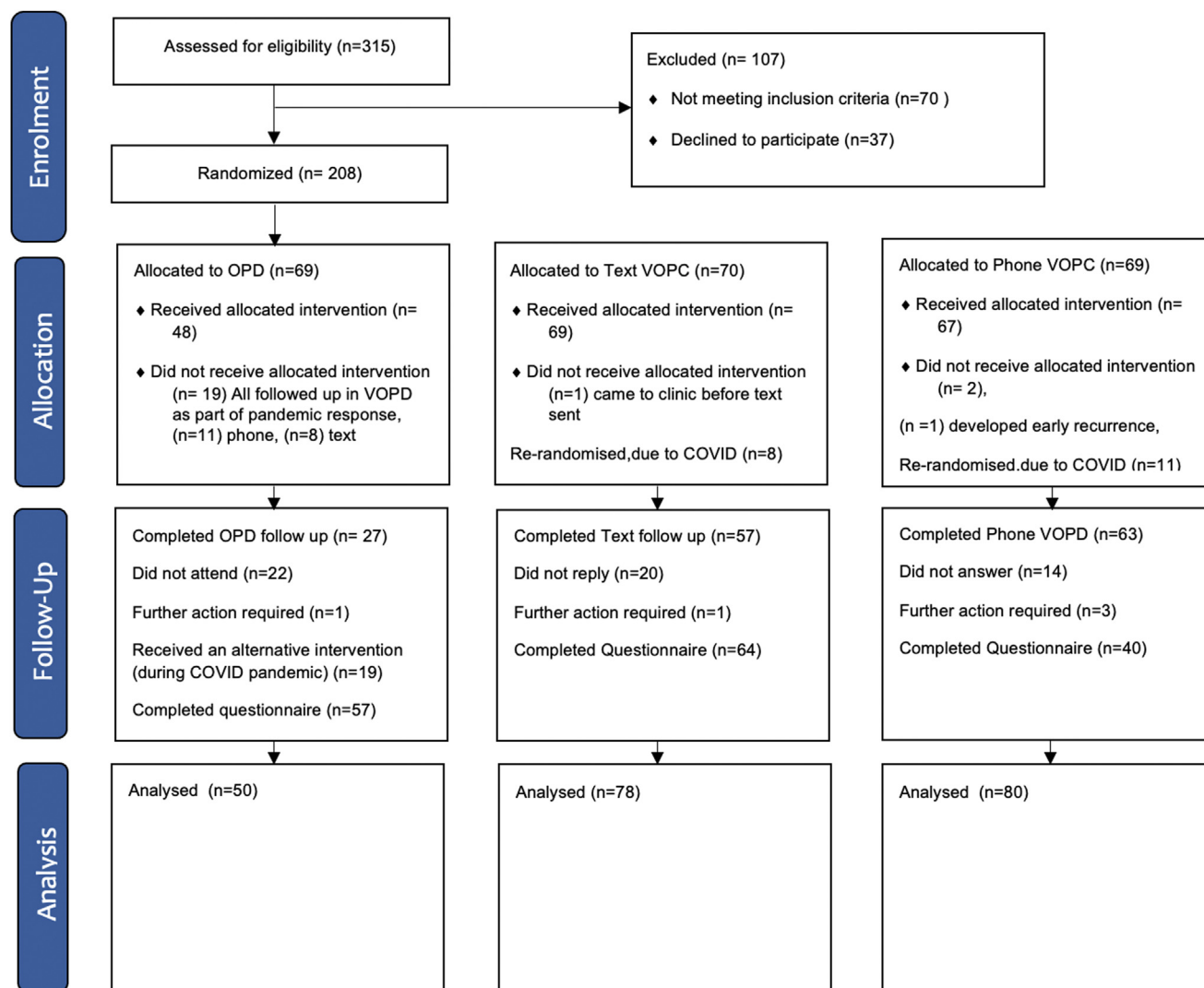


Fig. – Flow diagram of participant enrollement, allocation, follow-up and analysis.

A secondary PP analysis was conducted including only patients compliant with the protocol. Overall, 13 patients were noncompliant with the study protocol, of which 11 had been assigned to the text group. Of these, 10 requested to be seen in person in the OPD instead of receiving the text message. A further patient was followed up in person in the endoscopy unit, having attended for a repeat esophageal dilatation for a benign stricture. In the telephone group, one patient was given an appointment to attend the OPD in error, and a second patient requested an in-person follow up. There was no statistical difference in reported complications between the groups ($P = 0.713$).

Secondary outcomes

Default rate

The overall number of defaulters was 56, of which 22 were in the in-person group (44%), 20 in the text message group (26%), and 14 in the telephone group (18%). There was a difference between in-person and the phone group, with the odds of a

lower default rate in the phone group (odds ratio = 0.32; 95% CI: 0.15-0.69; $P = 0.004$) but not between the in-person and text group ($P = 0.059$).

Patient satisfaction

Due to the small number of unsatisfied and very unsatisfied responses, as seen in Table 3, the variable was recategorized for the purposes of analysis. A binary variable was created with the categories satisfied (consisting of the categories satisfied and very satisfied) and unsatisfied (consisting of the categories unsatisfied, very unsatisfied, and do not know). Missing responses were omitted. A logistic regression model was used (Table 4). There was no difference in patient satisfaction between the groups in the ITT analysis ($P = 0.371$) or PP analysis ($P = 0.396$).

Willingness to receive medical information by text

Ninety-two percent of participants were willing to receive medical information by text message (Table 4). There was a

Table 2 – Patient characteristics.

Variable	OPD (n = 50) (%)	Text (n = 78) (%)	Telephone (n = 80) (%)	Overall, n (%)
Age (years), mean (SD)	48.7 (16.5)	45.2 (13.9)	43.8 (14.9)	
Gender				
Female	24 (48)	34 (44)	32 (40)	90 (43)
Male	26 (52)	44 (56)	48 (60)	118 (56)
Elective or emergency				
Emergency	9 (18)	14 (18)	11 (14)	34 (16)
Elective	41 (82)	64 (82)	69 (86)	174 (83)
Category of surgery				
Cat 1-minor surgery	19 (38)	26 (33)	31 (39)	76 (36)
Cat 2-elective or emergency surgery	24 (48)	42 (54)	36 (45)	102 (49)
Cat 3-admitted for investigation of conditions, head injury, dysphagia etc.	0	0	1 (1)	1 (0.5)
Cat 4-endoscopy	7 (14)	10 (13)	12 (15)	29 (14)
LOS (days), n (%)				
1	38 (76%)	62 (80%)	68 (85%)	
2	10 (20%)	9 (12%)	8 (10%)	
>2	2 (4%)	7 (8%)	4 (5%)	

SD = standard deviation; LOS = length of stay.

difference in willingness to receive medical information by text between the groups ($P = 0.04$), the most notable being between the telephone group and the text message group, with the text group showing a 16 times higher willingness to receive medical information via text (95% CI: 1.92-139.28; $P = 0.011$).

Preference for future follow-up

More patients expressed a preference for telephone follow-up (106, 61.6%) than text message follow-up (51, 29.6%) or in-person appointment (15, 8.7%). Using a nominal logistic regression model, there was a difference between the groups ($P = 0.002$). Patients in the text message group were

Table 3 – Primary and secondary outcomes.

Variable	OPD (n = 50) (%)	Text (n = 78) (%)	Telephone (n = 80) (%)	Overall, n (%)
Reported complications, n (%)				
Yes	5 (10%)	7 (9%)	11 (14%)	23 (11)
No	45 (90%)	71 (91%)	69 (86%)	185 (89%)
Patient satisfaction with follow-up n (%)				
Very satisfied	15 (30%)	47 (60%)	38 (48%)	100 (48%)
Satisfied	11 (22%)	17 (22%)	21 (26%)	49 (24%)
Unsatisfied	1 (2%)	2 (3%)	0	1 (0.5%)
Very unsatisfied	1 (2%)	0	0	1 (0.5%)
Do not know	0	3 (4%)	1 (1%)	4 (2%)
Missing	22 (44%)	9 (12%)	20 (25%)	51 (25%)
Willingness to receive medical information by text, n (%)				
Yes	31 (62%)	63 (81%)	27 (34%)	121 (58)
No	4 (8%)	1 (1%)	7 (9%)	12 (6%)
Missing	15 (30%)	14 (18%)	46 (58%)	75 (36%)
Follow-up preference in the future, n (%)				
Text	14 (28%)	30 (38%)	7 (9%)	51 (25%)
Telephone call	27 (54%)	36 (46%)	43 (54%)	106 (51%)
Clinic appointment	2 (4%)	3 (4%)	10 (13%)	15 (7%)
Missing	7 (14%)	9 (12%)	20 (25%)	36 (17%)
Default rate	22 (44%)	20 (26%)	14 (18%)	56 (27%)

Table 4 – Logistic regression analysis of outcomes, reported complications, patient satisfaction, and willingness to receive medical information by text.

Variable	ITT (n = 208)			PP (n = 195)		
	N	OR (95% CI)	P-value	N	OR (95% CI)	P-value
Reported complications						
OPD (reference)	50	1.00		50	1.00	
Text message	78	0.88 (0.27-2.97)	0.846	67	0.73 (0.20-2.66)	0.628
Phone call	80	1.43 (0.47-4.41)	0.528	78	1.17 (0.37-3.73)	0.786
Patient satisfaction						
OPD (reference)	28	1.00		28	1.00	
Text message	69	0.98 (0.18-5.40)	0.986	58	1.03 (0.18-6.04)	0.966
Phone call	60	4.54 (0.39-52.3)	0.225	60	4.54 (0.39-52.30)	0.225
Willingness to receive medical information by text						
OPD (reference)	35	1.00		35	1.00	
Text message	64	8.13 (0.87-75.83)	0.066	55	1.00*	
Phone call	34	0.50 (0.13-1.89)	0.305	34	0.50 (0.13-1.89)	0.305

* All participants were willing to receive medical information by text message.

significantly more likely to express a preference for a text follow-up (95% CI: 3.09-65.97; $P < 0.01$) and less likely to prefer a telephone call (relative risk reduction 0.20; 95% CI: 0.08-0.50; $P < 0.01$) when compared with other groups ([Supplementary Material, Table 3](#)).

Discussion

In this randomized controlled trial, we found no difference in the detection rate of postdischarge complications between the three arms of the study. Our results suggest that text messaging and telephone contact provides a similar opportunity for detection of complications to an in-person follow-up protocol.

We found a significant advantage to text messaging and telephone calls over in-person assessments in having lower default rates, with the lowest default rate seen in the telephone call arm (18%), followed by the text messaging arm (26%), while the highest default rate was seen in the in-person group (44%). The default rate reported here is higher than that recorded previously in our institution (18.6%).¹⁵ This may be explained by several factors. In our study, a higher number of patients underwent minor surgery when compared to Healy *et al.* (36% versus 23.4%, respectively). Outpatient follow-up was notified to the patient by letter only, and we also enforced a strict protocol for a follow-up as outlined above. In contrast, we had more opportunities to contact the participants for the satisfaction questionnaire resulting in an 82.6% response rate. Our default rate is consistent with the finding that only 8.7% of patients expressed a preference for an in-person follow-up in the future.

Running an OPD is costly, both for the patient and for the hospital. Patients traveling to an outpatient clinic may have to bear the burden of loss of work hours and childcare and transport costs. These social determinants of health can be more important than health-care or lifestyle choices in influencing health outcomes. There is evidence from the

United Kingdom that more socioeconomically deprived populations wait longer for treatment in secondary care and achieve worse outcomes.²³ Virtual outpatients can offset this burden as has been shown in the United Kingdom where the 111 service employs trained health-care associates to follow-up patients,²⁴ thereby reducing the workload of doctors and nurses. As most patients prefer a virtual outpatient follow-up, we can achieve a higher level of patient engagement, a lower default rate, and increased patient satisfaction levels by substituting telehealth strategies for suitable cases. The COVID-19 pandemic has hastened the adoption of virtual clinics across a range of specialties.^{25,26} Our study provides evidence for the preference for virtual clinic and text messaging and therefore supports the continuation of such strategies in the postpandemic era. The use of virtual follow-up (either through text messaging or telephone call) is safe, acceptable to patients, and cost-effective.

A vital function of the OPD is to provide patients with the results of their investigations such as blood results and histology reports. In this study, most participants were willing to receive their treatment results via text message. Our study found no evidence that text messaging was an unreliable method of providing information to patients. Although we found that a higher number of patients expressed a preference for a telephone call, we suggest that both strategies are complementary and should be incorporated into future health-care systems to provide an efficient service with a high patient satisfaction rating.

The strengths of our study include its randomized design and the inclusion of a broad range of general surgery conditions and procedures which are generalizable to many general surgery services. To our knowledge, this is the first randomized trial to compare these three methods of outpatient follow-up. There are some limitations to our study. First, as the study was terminated prematurely due to COVID-19 restrictions, it is underpowered for primary and secondary outcomes. Second, despite attempts to standardize follow-up, the study was conducted in a clinical environment by several

investigators, which introduces the risk of observation bias. Also, due to the nature of the study, neither the investigators nor participants were blinded to the intervention arm into which they had been randomized.

In conclusion, both text messaging and telephone calls appear to be safe and effective methods of patients follow-up. Patients generally preferred telephone calls for follow-up and were less likely to default, but the majority preferred to receive medical information via text. Furthermore, text messages were associated with a high level of patient satisfaction and a lower default rate than in-person follow-up. Health-care systems should consider retaining and further developing these telemedicine techniques when planning future health-care delivery.

Supplementary Materials

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jss.2022.07.013>.

Author Contributions

T.N.W., A.A., A.K., and P.M.C. contributed to design. P.M.C., A.K., C.O.R., and N.M. contributed to data collection. F.B., P.M.C., and A.K. contributed to data analysis. P.M.C. and A.K. contributed to manuscript writing. P.M.C., A.K., T.N.W., A.K., F.B., C.O.R., N.M., M.M., and M.A. contributed to manuscript edits.

Disclosure

None declared.

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Ethics

This research was approved by the research ethics committee in Connolly Hospital, Dublin.

REFERENCES

1. Bokolo Jnr Anthony. Use of telemedicine and virtual care for remote treatment in response to COVID-19 pandemic. *J Med Syst.* 2020;44:1–9.
2. Kadir MA. Role of telemedicine in healthcare during COVID-19 pandemic in developing countries. *Telehealth Med Today.* 2020;5.
3. Hoffman DA. Increasing access to care: telehealth during COVID-19. *J Law Biosci.* 2020;7:1–15.
4. Arkwright BT, Leslie M, Light M. Telehealth finance variables and successful business models. *Telehealth Med Today.* 2019;4:33–59.
5. Delgoshaei B, Mobinizadeh M, Mojdekar R, Afzal E, Arabloo J, Mohamadi E. Telemedicine: a systematic review of economic evaluations. *Med J Islam Repub Iran.* 2017;31:754–761.
6. Negarandeh R, Zolfaghari M, Bashi N, Kiarsi M. Evaluating the effect of monitoring through telephone (Tele-Monitoring) on self-care behaviors and readmission of patients with heart failure after discharge. *Appl Clin Inform.* 2019;10:261–268.
7. Nettleton J, Jelski J, Ahmad A. Reducing readmissions and improving patient experience following urological surgery, through early telephone follow-up. *BMJ Open Qual.* 2020;9:533.
8. Hoffman JJS, Pelosini L. Telephone follow-up for cataract surgery: feasibility and patient satisfaction study. *Int J Health Care Qual Assur.* 2016;29:407–416.
9. Daniels SA, Kelly A, Bachand D, et al. Call to care: the impact of 24-hour postdischarge telephone follow-up in the treatment of surgical day care patients. *Am J Surg.* 2016;211:963–967.
10. Vance S, Fontecilla N, Samie FH, Patel V, Lewin JM. Effect of postoperative telephone calls on patient satisfaction and scar satisfaction after Mohs micrographic surgery. *Dermatol Surg.* 2019;45:1459–1464.
11. Fagerlund AJ, Holm IM, Zanaboni P. General practitioners' perceptions towards the use of digital health services for citizens in primary care: a qualitative interview study. *BMJ Open.* 2019;9:e028251.
12. Chen DW, Davis RW, Balentine CJ, et al. Utility of routine postoperative visit after appendectomy and cholecystectomy with evaluation of mobile technology access in an urban safety net population. *J Surg Res.* 2014;190:478–483.
13. Rosbe KW, Jones D, Jalisi S, Bray MA. Efficacy of postoperative follow-up telephone calls for patients who underwent adenotonsillectomy. *Arch Otolaryngol Head Neck Surg.* 2000;126:718–721.
14. Pippi R, Pietrantonio A, Patini R, Santoro M. Is telephone follow-up really effective in early diagnosis of inflammatory complications after tooth extraction? *Med Oral Patol Oral Cir Bucal.* 2018;23:e707–e715.
15. Healy P, McCrone L, Tully R, et al. Virtual outpatient clinic as an alternative to an actual clinic visit after surgical discharge: a randomised controlled trial. *BMJ Qual Saf.* 2019;28:24–31.
16. Asiri A, AlBishi S, AlMadani W, ElMetwally A, Househ M. The use of telemedicine in surgical care: a systematic review. *Acta Inform Med.* 2018;26:201–206.
17. Eisenberg D, Hwa K, Wren SM. Telephone follow-up by a midlevel provider after laparoscopic inguinal hernia repair instead of face-to-face clinic visit. *J Soc Laparoendosc Surg.* 2015;19:1–4.
18. Romine A, Elizabeth Publisher S. *Improving Melanoma Patient Knowledge And Follow-Up Adherence at a Southwest Urban Dermatology Clinic Item Type Text; Electronic Dissertation.* 2020. Tucson, AZ: The University of Arizona Libraries; 2020. Available at: <http://hdl.handle.net/10150/641388>. Accessed April 26, 2021.
19. Juszczak E, Altman DG, Hopewell S, Schulz K. Reporting of multi-arm parallel-group randomized trials: extension of the CONSORT 2010 statement. *JAMA.* 2019;321:1610–1620.
20. Connolly HSE. Hospital Blanchardstown - HSE.ie. HSE.ie. 2020. Available at: <https://www.hse.ie/eng/services/list/3/acutehospitals/hospitals/connolly/>. Accessed October 18, 2020.

21. Randomness and Integrity Services Ltd. RANDOM.ORG - true random number service. 2021. Available at: <https://www.random.org/>. Accessed April 26, 2021.
22. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. *Ann Surg*. 2004;240:205–213.
23. Bradshaw J, Bloor K, Doran T. ESPN thematic report on inequalities in access to healthcare. 2018. Available at: https://ec.europa.eu/social/main.jsp?pager.offset=35&advSearchKey=ESPNhc_2018&mode=advancedSubmit&catId=22&policyArea=0&policyAreaSub=0&country=0&year=0. Accessed June 13, 2021.
24. Pope C, Turnbull J, Jones J, Prichard J, Rowsell A, Halford S. Has the NHS 111 urgent care telephone service been a success? Case study and secondary data analysis in England. *BMJ Open*. 2017;7:e014815.
25. Gilbert AW, Billany JCT, Adam R, et al. Rapid implementation of virtual clinics due to COVID-19: report and early evaluation of a quality improvement initiative. *BMJ Open Qual*. 2020;9:e000985.
26. Mehrotra A, Ray K, Brockmeyer DM, Barnett ML, Bender JA. Rapidly converting to “virtual practices”: outpatient care in the era of covid-19. 2020. Available at: <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0091>. Accessed August 15, 2021.