



Evaluation of the outcome of “telephone clinic” in the follow-up of surgical patients: innovative use of technology for the convenience and improvement of service for patients

Yasir Bashir^{1,2^}, Mahmoud Musa Hussein Al-Awaysheh³, Bernadette McGovern⁴, Abidur Rahman⁵, Josh Olanyi⁵, Josh Skeens⁵, Tim Cronin⁵, Paul Neary²

¹Department of Surgery, The University of Dublin Trinity College, Tallaght Hospital, Dublin, Ireland; ²Department of Surgery, Tallaght Hospital, Dublin, Ireland; ³Faculty of Medicine, Mu'tah University, Mu'tah, Jordan; ⁴Colorectal Nurse Specialist, Tallaght University Hospital, Dublin, Ireland; ⁵Medical Student, Trinity College Dublin, Dublin, Ireland

Contributions: (I) Conception and design: Y Bashir, P Neary, B McGovern; (II) Administrative support: Y Bashir, B McGovern, MMH Al-Awaysheh, A Rahman, J Olanyi, J Skeens, T Cronin; (III) Provision of study material or patients: Y Bashir, P Neary, B McGovern, MMH Al-Awaysheh; (IV) Collection and assembly of data: B McGovern, MMH Al-Awaysheh, A Rahman, J Olanyi, J Skeens, T Cronin; (V) Data analysis and interpretation: Y Bashir, P Neary, B McGovern; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Mr. Yasir Bashir. 1 B Osprey Apartment, Naas, County Kildare, Ireland. Email: yasirb1@outlook.com.

Background: Government-funded health systems are the hallmarks of welfare states. They always suffer from over-burden and are underfunded. This results in painful waiting lists and long clinics. In order to reduce the suffering of patients attending surgical outpatient clinics, the innovative initiative of telephone clinics was taken five years ago. This study was conducted to assess success and find areas or groups requiring attention.

Methods: A retrospective analysis of a prospectively maintained database was done. The first 1,000 patients given an appointment from January 2015 in the telephone clinic were found using the Hospital In-Patient Enquiry (HIPE) reporting system. Characteristics regarding age, gender, and procedure performed were recorded and the effect of these characteristics on attendance and outcome of the clinic was analysed to find any relation.

Results: The mean age of the patients in the study was 50.6 years with 477 males and 523 females comprising 47.7% and 52.3% respectively. The largest group was of 402 given appointments to outline their endoscopic findings followed by 198 patients who underwent laparoscopic procedures like appendectomies, hernias, and adhesiolysis, etc. The analysis found that out of the patients who attended the telephone clinic, 71.5% were discharged after the first appointment. There was no relation found between attendance, discharge based on gender $P=0.51$ and 0.60 respectively. However, a statistically significant relation was found between attendance, discharges, and “Millennial generation” $P=0.029$ and 0.002 respectively.

Conclusions: Telephone clinics are a safe, cost-effective, convenient and patient-friendly alternative to conventional clinics. They were used frequently and effectively during coronavirus disease 2019 (COVID-19) pandemic to reduce transmission.

Keywords: Remote clinic; technology; telephone clinic; waiting time

Received: 23 February 2021; Accepted: 07 April 2023; Published online: 15 April 2023.

doi: 10.21037/map-21-1

View this article at: <https://dx.doi.org/10.21037/map-21-1>

[^] ORCID: 0000-0001-8902-8883.

Introduction

Surgical outpatient services comprise of new and follow-up patient appointments. Each outpatient clinic comprises roughly of around 30% new and 70% return patients (1) Historically every patient is seen for a personal consultation post-operatively even when the recovery is smooth and for follow-up of the patients. Patients are made to wait often in very confined spaces for prolonged period to have a brief consultation. Although it provides reassurance to the patient and perhaps satisfaction to the operating surgeon, it comes at a cost. The presence of an excessive number of such postoperative patients limits the capacity to see new referrals and progressively adds to the lead time in new referrals being seen.

To change what has become custom and practice in a system can often be a challenge. The concept of deviating from a face-to-face consultation to one based upon available technology is a paradigm change in traditional clinical practice. Technology continues to evolve and innovate at a dazzling pace. It is vital that we use it for the benefit of our patients where appropriate. All European countries have more than 1 phone per person of their population. In Ireland there are 5.7 million phones for a population of 4.5 million (2). Therefore, it seems that the humble telephone is an integral source of communication with our patients. Therefore, contacting patients by phone instead of bringing them to the hospital for verbal conversation seems like a reasonable idea.

In a similar endeavour, the concept of admitting every patient a day pre-operatively (3) which was the norm of surgical practice two decades ago has slowly altered in most hospitals. It is now replaced by day case surgery in specific patient groups and day of surgery admissions even for major cases thereby changing how we can deliver surgery in a more efficient and cost-effective manner. Patients are pre-assessed by phone consultation; follow-up nurse lead specialist interaction is undertaken over the phone and liaison with primary health services conducted in a similar fashion. have improved a great deal along with the understanding of health and health related issues among the public. With the ever-increasing access to internet-based information and the development of an ever-increasing connected world it would seem intuitive that we utilise the humble telephone to introduce a system that would decrease pressure on secondary and tertiary care centres. This not only will make these centres more productive but will make sure that patients in need are taken of in an efficient and prompt manner.

With the tsunami of an ever-increasing waiting list for surgical outpatients, we introduced a new concept of a virtual or telephone clinic nearly 5 years ago for the routine follow-up of surgical patients. It has not only reduced the waiting lists but also reduced the need of patients to visit hospital personally and reduce the cost to hospital and patient as well. Previously patients had to wait hours before being seen by doctor, while all they often needed was a verbal reassurance and interaction to inform the clinician that they are doing well (4). We wanted to assess the success and functionality of our virtual clinic. We collected data for last 3 years of patients who were booked for the virtual clinic and analysed the data. We assessed the viability of a running a virtual clinic and tried to identify subgroups of patients where the virtual clinic was the most successful. Aim of the study is to evaluate the effectiveness of tele clinic and find out sub groups of patients who are more likely not to attend so targeted approach for improvement can be used. We present the following article in accordance with the STROBE reporting checklist (available at <https://map.amegroups.com/article/view/10.21037/map-21-1/rc>).

Methods

Inclusion and exclusion criteria

After any procedure the patient is assessed for the suitability of telephone clinic by the treating clinician. Patients with language barrier, hearing disorder, major surgical procedures and learning difficulties are excluded. Patients are booked for the telephone clinic after confirming their phone number like normal office-based clinic and they receive an official appointment with date and time of the phone call.

Procedure

On the date of clinic, clinician gets the list of patients on telephone clinic with time of appointment and the patient records in a clinic room with telephone and computer to access patient records. Clinicians call the patient on telephone number provided by the patient and after confirming name, date of birth and address discuss the clinical condition or give the results of test.

Data collection

This is a retrospective observational study analysing a prospectively maintained database using the Hospital In-

Table 1 Relation of attendance in the clinic and discharge at first clinic with gender, age and millennial group was analysed using Chi-square

Division of patients	Variables	Yes	No	P value
Attended clinic	Male	404	73	0.51
	Female	435	88	
	Upto 60 years	553	128	0.001*
	Above 60 years	286	33	
	Millennial	250	62	0.029*
Discharge after 1 st appointment	Male	287	190	0.60
	Female	323	200	
	Upto 60 years	421	260	0.43
	Above 60 years	189	130	
	Millennial	213	99	0.002*
	Not a millennial	397	291	

*, represent statistically significant relation.

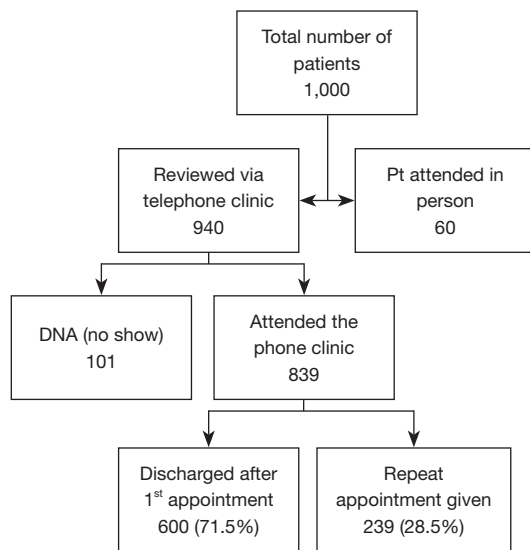


Figure 1 Flowchart of the results of patients given appointment for telephone clinic. Pt, patients.

Patient Enquiry (HIPE) reporting system. Characteristics of the first 1,000 patients who were given appointments for the telephone clinic from January 2015 were analysed. Information about gender, age and type of procedure were collected. The outcomes of interest which were recorded

includes attendance, discharged, or need to be rebooked for repeat office-based clinic.

Statistical analysis

SPSS version 24 (IBM corporation USA licenced 1989, 2015) was used for statistical analysis of collected data. Chi-squared and Student’s *t*-test were done to evaluate correlation of demographics with outcomes.

Ethical statement

The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by Ethics Committee of St James and Tallaght [REC: 2020-06 Chairman’s Action {15}] and informed consent was not required as anonymised data were collected.

Results

The first 1,000 patients who were given appointment from January 2015 were included. The mean and median age of the patients in the study was 50.6 and 50.0 years respectively. The youngest patient included was 17 and eldest was 89 years old. Distribution can be seen in *Table 1*, while the flowchart of patients followed up in the clinic is shown in *Figure 1*.

The largest group of patients was of 402 which included patients who were given an appointment in order to outline results of histology of their endoscopic findings. This was either to give results of histology of benign appearing pathologies or assessing outcome following banding or injection sclerotherapy for haemorrhoids. This cohort constituted 40.2% patients. The remaining patients were those that had undergone a laparoscopic procedure. These included laparoscopic appendectomy, laparoscopic cholecystectomy, laparoscopic herniorrhaphy, laparoscopic adhesiolysis and diagnostic laparoscopy (198 patients). The final group of patients had local excision of skin lesions and included patients with excision of local lesions, incision & drainage of abscesses and pilonidal excision respectively (153 patients). This distribution of patients among groups can be seen in *Figure 2*.

Nine hundred and forty (94%) patients, after receiving appointment, were reviewed via a phone call while 60 (6%) patients in total, mis-interpreted the appointment instructions and showed up in person. These outliers were reviewed as normal in an office-based clinic; 839 (83.9%)

patients attended the clinic, while 161 (16.1%) failed to attend or did not receive the phone call; 610 (61.0%) patients out of 1,000 were discharged after the first appointment while 390 (39.0%) were given a second appointment or were booked for office-based clinic. When we exclude the 16.1% patients who did not receive the phone call, 600 (71.5%) of 839 patients were discharged after their telephone consultation. There were 477 males and 523 females comprising 47.7% and 52.3% patients respectively. This can be seen in *Figure 3*.

Further analysis was done to identify if there was any relationship between non-attenders and those that were discharged after consultation using the available dataset variables. Gender does not seem to play any role in attendance as Chi-squared test showed no significant difference between males and female attending the clinic (P=0.51). Gender was not related to the possibility of being discharged after the first clinic appointment as no significant relation was with Chi-squared test between gender and

discharge (P=0.606). All the statistics is explained in *Table 2* as below.

Analysis was performed to find if there was a relationship between age and nonattendance. Student's *t*-test found that there was a relation between age and nonattendance. A younger age profile has a significant relationship with nonattendance at the clinic (P=0.0002). There was also a statistically significant relation with younger age and possibility of discharge after first telephone clinic (Student's *t*-test P=0.02).

The patients were subdivided into groups depending on their age. This was to ascertain the age group with highest possibility of being discharged from clinic and higher attendance of clinic appointments attendance. Analysis showed that there was no statistically significant difference by Chi-squared test between discharge among patients above or below 60-year age (P=0.445). But statistically significant more patients by Chi-squared test attended the telephone clinic above 60-year age than below it (P=0.001). We use 60 years as a marker as it is the age of retirement in most departments. We had this hypothesis that patients below this age will be less likely to attend the clinic and more likely to be discharged but it was rejected.

The second age group which was analysed was of millennials which by definition is the generation which was born after 1980 (5,6). Analysis showed that there was statistically significant relation by Chi-squared test between discharge rates and patients of millennial generation (P=0.002). Statistically significant relation was found between patients of millennial generation and nonattendance to the telephone clinic by Chi-squared test (P=0.03). This was the age group that was identified as the

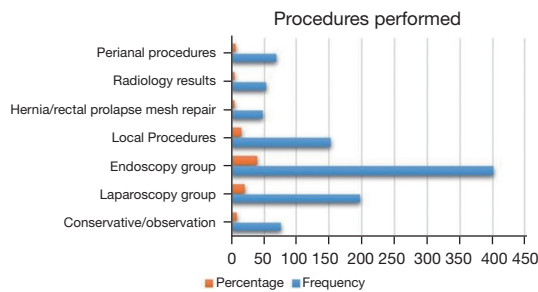


Figure 2 Procedures of patients given appointment for telephone clinic. Endoscopy group was the largest group with 402 patients followed by laparoscopy group with 198 patients.

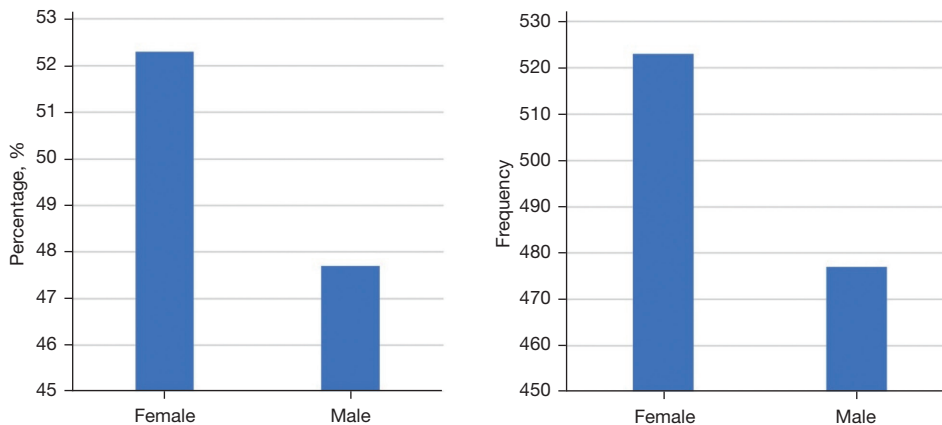


Figure 3 Gender distribution: 477 males and 523 females comprising 47.7% and 52.3% patients, respectively.

Table 2 Descriptive values of the data

Values	Results
Number of patients	1,000
Age, years	
Mean \pm SD	50.6 \pm 17.39
Median [range]	50.0 [17–89]

SD, standard deviation.

most likely cohort to get discharge after first clinic but least likely to show up to clinic (7). So targeted efforts should be made to make sure that they attend clinic.

Discussion

Telephone clinic which started as a tool in our facilities to provide ease of contact and avoiding travel for patients who have high percentage of success after procedure but also helping in follow-up after an intervention. This tool equipped us to continue providing high quality care during the pandemic of coronavirus disease 2019 (COVID-19) and due to our experience, we hit the ground running and kept providing facilities to our patients.

Twenty first century is the century of technology and communication. The use of technology in the field of medicine has brought a revolution in providing better results, comfort and improvement in patient care (8). Healthcare systems all around the world are under strain due to increase in demand and the spiralling cost of healthcare. These challenges are further complicated due to the reality of an ever-increasing number of aged patients accessing health care on a regular basis (9). There is a constant effort by the healthcare providers to decrease the cost of healthcare without compromising on the quality of care. Sometimes these efforts are also motivated to produce the best result by changing the attitude or concept of population under care. We continually strive to change concepts and practices in medicine in order to improve patient care. These efforts should always be undertaken in cognisance of the available evidence to support such changes.

The introduction of a telephone clinic for follow-up of our surgical patients was an innovative move made by Tallaght University Hospital five years ago. The rationale behind the introduction of the telephone clinic was to cut the cost of health provision, reduce the waiting time and also to facilitate the patients by abolishing the need

to physically come to the hospital for a follow-up surgical clinic. Patients felt that telephone follow up was more convenient in terms of travel time. This often meant not having to drive many miles to attend clinic for follow-up and not having to wait around to see the doctor at the hospital (10). We performed a study to analyse outcome of this innovative approach and to evaluate the success and acceptance of change by the general patient population.

Globally telephone clinics have been used successfully for follow up of patients after different interventions. Several studies have been published to manifest the success of such interventions (11-13). One study demonstrated that contacting patients directly using telephone as compared to sending literature and information through the post resulted in 42.7% patients agreeing and consenting for a procedure as compared to 24.1% with postal communication alone (14). In other study, it has proven to be a safe alternative and nurse led telephone follow-up clinics are helping in the reduction of toxicity with chemotherapy and improving satisfaction in colorectal cancer patients (15). We are currently using the provision of the telephone clinic for benign diseases only. Our study revealed a very high 83.9% attendance rate among patients booked for telephone clinic. At initiation of the telephone clinic, hospital administration assessed patient satisfaction using Likert scale and found 90% satisfaction rate. However only 30% of the patients attending the clinic participated in the survey (16). A randomised controlled trial performed in a similar study to compare satisfaction among patients attending a clinic based follow-up to patients who were followed using telephone clinic found no difference in satisfaction rates among two entities (17). Similar results in safety and satisfaction have been reported by multiple other studies (11-13,18).

In a population of 4.5 million, there are more than half a million patients in Ireland waiting to be seen by specialist doctors. Waiting lists are a problem faced all countries with a publicly funded health system, such as Spain, Australia, New Zealand, Canada, the Netherlands, Ireland and the UK (19). Any effort to reduce the waiting time will also have to deal with the problem of nonattendance at the clinics. Any change in the practice of follow-up in clinics should also be assessed for non-attenders. Our study found out that there were 16.1% patients who did not show up at the appointment. A large Irish study found that there were overall 16.8% nonattendance rates in a large group of appointments that was sent out to patients. But on closer review, it was found that 21% of review patients did not show up for their follow up clinic (1,20-22). As

have been previously shown by multiple studies, the most common reason for missed appointments is the resolution of symptoms (23,24). These patients are less likely to make an effort to come to hospital but as our study revealed they are more likely to answer the telephone clinic thus a better attendance rate of 83.9% was seen. Other international studies also recorded no show rates of 22.8% to 28.6% thus confirming the effectiveness of this new modality (20,22,25).

Our study is a retrospective study with reliance of results on patient documents and no feed-back from patients whether they appreciate this new way of communication or not. Extreme care has to be taken while contacting patients through phone and have to make sure you are talking to patient by confirming date of birth and address as violations of General Data Protection Regulation (GDPR) could be done by not doing so. Elderly patients and hard at hearing patients could not be included in study due to mode of communication.

Conclusions

Invented by Antonio Meucci [1849] and patented by Alexander Graham Bell over 100 years ago [1876] the humble telephone continues to be an integral part of our lives. In an era of smart phones, Bluetooth and internet it is this relatively simple device that keeps us all interconnected and its usage continues to evolve on a rapid basis. Its effective application has provided the basis a telephone based virtual clinic in our centre for over five years. Telephone clinics are safe, cost-effective, convenient and a patient friendly alternative to conventional clinics. Careful selection of patients is essential for the success of these clinics. Minor procedures, day cases, endoscopy follow-up or histology results and laparoscopic appendicectomies can be followed-up in this clinic. Interestingly our data identifies the “millennials” as the group least likely to attend yet are most likely to benefit most from this system. This cohort is reflective of the current era of interconnectivity and rapid technology assimilation yet need to be targeted to ensure their engagement. Safety, benefit and effectiveness of this technique was brought more to the forefront and used in COVID-19 pandemic, where it resulted in dispensing of health care without increasing risk of transmission of disease.

Acknowledgments

Funding: None.

Footnote

Reporting Checklist: The authors have completed the STROBE reporting checklist. Available at <https://map.amegroups.com/article/view/10.21037/map-21-1/rc>

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <https://map.amegroups.com/article/view/10.21037/map-21-1/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by Ethics Committee of St James and Tallaght [REC: 2020-06 Chairman’s Action {15}] and informed consent was not required as anonymised data were collected.

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doi: 10.21037/map-21-1

Cite this article as: Bashir Y, Al-Awaysheh MMH, McGovern B, Rahman A, Olanyi J, Skeens J, Cronin T, Neary P. Evaluation of the outcome of “telephone clinic” in the follow-up of surgical patients: innovative use of technology for the convenience and improvement of service for patients. *Mesentery Peritoneum* 2023;7:2.