Sağlık Akademisyenleri Dergisi
http://dergipark.gov.tr/sagakaderg

Araştırma / Research Article

Kısa mesaj ile poliklinik randevu hatırlatıcı bilgi gönderilmesi

Sending outpatient clinic appointment reminder information by short messages

İbrahim Hakan Bucak, Fatih Doğan, Habip Almis, Levent Songur, Mehmet Turgut

Adiyaman University, Adiyaman

Anahtar Kelimeler: Randevu, Kısa Mesaj Servisi, Hatırlatıcı

Key Words: Appointment,Short message service,Reminder

Yazışma Adresi/Address for correspondence: İbrahim Hakan Bucak, Adiyaman University, Adiyaman, ihbucak@hotmail.com

Gönderme Tarihi/Received Date: 26.02.2019

Kabul Tarihi/Accepted Date: 18.08.2019

Yayımlanma Tarihi/Published Online: 06.10.2019

ÖZET

Giriş ve Amaç: Poliklinik randevusuna katılmayan hastalar sağlık kaynaklarının etkin kullanımını engellemektedir. Bu durumun etkisini azaltmak için kısa mesaj servisi (SMS) ile poliklinik randevu hatırlatıcı bilgi gönderilmesi uygulaması oldukça yaygınlaşmıştır. Türkiye'de ilk kez üçüncü basamak bir hastanenin pilot uygulaması olarak, Merkezi Hekim Randevu Sistemi vasıtası ile Çocuk Sağlığı ve Hastalıkları poliklinik randevusu alan hastalara SMS ile randevu hatırlatıcı bilgi gönderildi. Bu çalışmada SMS ile randevu hatırlatıcı bilgi gönderilen döneme ait verilerin retrospektif değerlendirilmesi amaçlandı. **Gereç ve Yöntem:** Pediatri polikinlikleri için 01.04.2017-31.12.2017 tarihleri arasında MHRS vasıtası ile poliklinik randevusu alan ve SMS ile randevu hatırlatıcı bilgi gönderilen hastalar Çalışma Grubu olarak, 01.04.2016-31.12.2016 tarihleri arasında MHRS ile poliklinik randevusu alan ancak SMS ile poliklinik randevu hatırlatıcı bilgi gönderilmeyen hastalar Kontrol Grubu olarak çalışmaya dahil edildi. İki grup karşılaştırıldı. **Bulgular:** Çalışma grubunda ve kontrol grubunda muayene olan hastaların sayısı sırası ile 75279 ve 49531 idi. Çalışma grubunda 27416 hastanın, Kontrol Grubunda ise 11909 hastanın MHRS vasıtası ile randevu aldığı belirlendi. Çalışma grubunda 2120, Kontrol Grubunda 2151 hastanın poliklinik randevusuna katılmadığı belirlendi (p<0.01). SMS ile bilgilendirme yapılması sonucunda randevusuna katılan hastaların randevu alan hasta sayısına oranı % 81.9'dan % 92.2'ye arttığı tespit edildi. **Sonuç:** SMS ile poliklinik randevu hatırlatıcı bilgi gönderilmesi poliklinik randevusuna katılımı arttırıyor.

ABSTRACT

Objective and Aim: Patients who fail to attend outpatient clinic appointments hinder the efficient use of health resources. Sending outpatient clinic appointment reminder information by the short mail service (SMS) in order to reduce the impact of no-shows is now widespread. Appointment reminder messages were sent by SMS via the Central Physician Appointment System (CPAS) to patients with Pediatric Outpatient Clinic appointments as a first pilot measure in a tertiary hospital in Turkey. The purpose of this retrospective study was to examine data for the period in which reminder information was sent by SMS. **Materials and Methods:** Patients making pediatric outpatient clinic appointments via the CPAS between 01.04.2017 and 31.12.2017 and sent appointment reminder information by SMS were included as the study group (SG). Patients making pediatric outpatient clinic appointments via the CPAS between 01.04.2016 and 31.12.2016 but not sent appointment reminder information by SMS were enrolled as the control group (CG). The two groups were then compared. **Results:** The numbers of patients in the SG and CG were 75,279 and 49,531, respectively. We determined that 27,416 patients in SG and 11,909 in CG made appointments via the CPAS, and that there were 2120 no-shows in SG and 2151 in CG (p<0.01). Sending information via SMS increased the level of patients making appointments and attending them from 81.9% to 92.2%. **Discussion:** Sending appointment reminder information by SMS increases outpatient clinic appointment attendance.

INTRODUCTION

No-show patients who fail to attend despite having outpatient clinic appointments hinder the effective functioning of health services worldwide and also cause problems such as financial losses, manpower waste, and delays in diagnosis and treatment (1-4). Studies in developed and developing countries show that this occurs in many parts of the world (1,2). No-show patients represent 9.3% of total polyclinic appointments in the United Kingdom, leading to reported annual financial losses of 225 million sterling (3). Forgetfulness, poor health, confusion of examination times and dates, inadequate follow-up on the part of individuals concerned with health care, and family- and work-related conditions all prevent individuals attending polyclinic examinations (2,5). Mobile phone use permits direct, instant, and ubiquitous communications (1). Sending short messages has become a widespread means of overcoming this problem (2,4,6).

Outpatient clinic appointment systems occupy a very important place within the health system. Effective functioning of the appointment system allows patients to

make appointments for specific times and dates without having to visit the hospital in person (without leaving their homes or workplaces). In our previous study in which we analyzed data for the Central Physician Appointment System (CPAS), no-shows constituted 23% of patients making appointments via the CPAS (7).

The purpose of this study was to perform a retrospective evaluation of data for sending outpatient clinic appointment reminder information via SMS to patients making appointments through the CPAS in the Pediatric Health and Diseases clinics of a tertiary hospital in Turkey.

MATERIALS AND METHODS

In order to increase attendance among patients with outpatient clinic appointments, since 01.04.2017 an University Training and Research Hospital has sent appointment reminder information via SMS at 20:00 one day beforehand to the mobile phone numbers given by patients making appointments via the CPAS. The Pediatric Health and Diseases clinics were selected as the pilot department for this initiative since their rate of no-show patients was similar to that for all hospital polyclinics in our previous study concerning the central physician appointment system (7). Additional costs were prevented by using SMS purchased by the hospital on a package basis. This study evaluated data for patients sent appointment reminder information by SMS in a retrospective manner.

Patients making pediatric outpatient clinic appointments via the CPAS between 01.04.2017 and 31.12.2017 and sent appointment reminder information by SMS were enrolled as the study group (SG). Patients making pediatric outpatient clinic appointments via the CPAS between 01.04.2016 and 31.12.2016 but not sent appointment reminder information by SMS were enrolled as the control group (CG). The two groups were further evaluated by being subdivided into three-month periods. The period 01.04.2017-30.06.2017 was defined as Group 1-SG, 01.04.2016-30.06.2016 as Group 1-CG, 01.07.2017-30.09.2017 as Group 2-SG, 01.07.2016-30.01.2016 as Group 2-CG, 01.10.2017-31.12.2017 as Group 3-SG, and 01.10.2016-31.12.2016 as Group 3-CG (Figure 1).

Legal permission for the study was granted by the hospital administration (No. 53911808-000-7983). Ethical committee approval was also obtained (No. 2018/2-10).

Since the Pediatric Health and Diseases clinics were selected as the pilot department, other departments for which outpatient clinic appointments were made via the CPAS were excluded. Patients from the pediatric cardiology, endocrinology and neurology sections, which operate as a side branch of the Pediatric Health and Diseases clinics but for which appointments could not be made via the CPAS, were also excluded from the study.

Data were analyzed on SPSS (IBM, version 21.0, Chicago, IL) software. The two rates test was used to compare the two groups (SG and CG). p values < 0.05 were regarded as statistically significant.

RESULTS

Analysis of SG revealed that 75,279 patients underwent outpatient clinic examinations between 01.04.2017 and 31.12-2017, while analysis of CG revealed that 49,531 patients underwent examinations between 01.04.2016 and 31.12.2016. The 51.9% increase in the space of one years in the numbers of patients examined was particularly notable. The appointment quota set aside for the CPAS was 13,500 in CG and 47,289 in SG ($p<0.01$). The proportions of patients making appointments via the CPAS to numbers of patients examined were 36.4% in SG and 24% in CG ($p<0.01$). When we analyzed whether or not SMS increased appointment uptake, the proportions of numbers of patients attending appointments to number of appointments made via the CPAS were 81.9% in CG and 92.2% in the study group ($p <0.01$). When we compared groups 1-SG and 1-CG, groups 2-SG and 2-CG, and groups 3-SG and 3-CG, we observed a

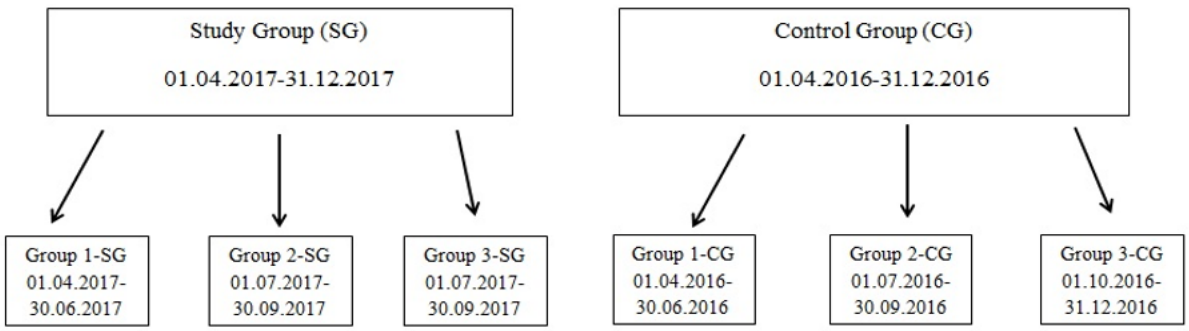

Figure 1. Distribution of groups by study periods.

statistically significant increase in the number of patients attending appointments made via the CPAS (p<0.01). In addition, ratios of numbers of appointments made via the CPAS to capacity set aside for the CPAS were 57.9% in SG and 88.2% in CG, showing that appointment quotas reserved for the CPAS remained unfilled. The study data are shown in Table 1.

DISCUSSION

No-show patients are one of the main reasons for inefficient use of resources within the health system. No-show patients increase appointment waiting times, and result in increased care service costs, ineffective use of equipment and health personnel, decreased patient satisfaction, loss of physician time and, most importantly of all, delayed diagnosis and treatment for patients (8). SMS has been actively employed in the health system in several studies; examples include informing orthodontic patients about oral hygiene, reminders concerning the human papillomavirus vaccination dosage in patients with human immunodeficiency virus, increasing treatment compliance in patients with tuberculosis, improving the personal management of diabetic patients, and increasing compliance with acne treatment (9-14).

The CPAS has been actively used in Turkey since 2010 (15). The individual can select any future date for appointments made via the CPAS. Patients using the system for outpatient clinic appointments record their phone numbers onto the system, thus permitting an SMS to be sent at 20:00 the day before the examination booked. Previous publications have reported a no-show rate of 9-30% (6,8,16,17). In a previous study of ours, the no-show rate for appointments made via the CPAS was 23% (7). The mean figure for the Pediatric Health and Diseases Department, where the pilot study for sending appointment reminders via SMS was initiated, was also 23%, the same as the mean value for the other departments, and this department was selected for that reason (7). With the exception of a study by Önür ST et al. in Turkey which they performed in a specific disease outpatient clinic and sent SMS messages to patients who had been examined once and were scheduled to re-attend, there have to date been no studies in which general outpatient clinic appointment reminders have been sent by SMS (18). Our study is thus the first of this kind.

In terms of studies in which SMS has been used in Turkey, Sancaktutar AA et al. investigated reminding ureteral stent removal in urology patients, Çelik S et al. investigated insulin administration techniques and glycemic control in diabetic patients, Uysal MA et al. investigated asthma control, and Bucak IH et al. considered the reporting of abnormal laboratory results (19-22). Again in Turkey, Önür ST et al. reported sending reminders of outpatient clinic examinations by SMS to smoking cessation outpatient clinic patients and that this increased participation rates (18).

Examination of the previous literature shows that sending outpatient clinic appointment reminders by SMS increases appointment attendance rates (1,2,6,16,17,23-26). Our own study shows that the level of patients making appointments through the CPAS and attending those appointments increased significantly in SG (92.2%) compared to CG (81.9%) (p<0.01).

The proportion of patients examined in the Pediatric Health and Diseases clinic to patients making appointments via the CPAS was 36.4% in SG and 24% in CG, showing that SMS reached only limited numbers of patients. This suggests that if all outpatient clinic examination appointments were given through the CPAS, the number of individuals contacted via SMS would rise. In addition, the quota of outpatient clinic appointments set aside for the CPAS was 13,500 in CG and 47,289 in SG, also showing that the quotas were increased.

Table 1. Data obtained in the study

	Total Number of Outpatient Clinic Examinations	CPAS Quotas	P	Number of Appointments Made	p	Number of patient Attending Appointments	P	Number of No-Shows	p
Group 1-Study	24695	15588	<0.01	7808	<0.01	7308	<0.01	500	<0.01
Group 1-Control	13961	3276		3157		2530		627	
Group 2-Study	25252	15909	<0.01	9439	<0.01	8750	<0.01	689	<0.01
Group 2-Control	15015	3096		3049		2433		616	
Group 3-Study	25332	15792	<0.01	10169	<0.01	9238	<0.01	931	<0.01
Group 3-Control	20555	7128		5703		4795		908	
Total Study Group	75279	47289	<0.01	27416	<0.01	25296	<0.01	2120	<0.01
Total Control Group	49531	13500		11909		9758		2151	

Study group; all patients in a 9-month period in 2017, Control Group; all patients in a 9-month period in 2016. CPAS; Central Physician Appointment System

The single-center nature of the study and the fact it was conducted in only one hospital department may be regarded as limitations. We also think that the findings could be changed by arranging more than one SMS reminder at different intervals, rather than one single SMS at a fixed time point.

CONCLUSION

Our study confirms previous reports that some outpatient clinic appointments result in no-shows. Our findings indicate that sending appointment reminders by SMS can increase attendance rates and allow outpatient clinical services to be used more effectively.

REFERENCES

1. Car J., Gurol-Urganci I., de Jongh T., Vodopivec-Jamsek V., Atun R., (2012), Mobile phone messaging reminders for attendance at healthcare appointments, Cochrane Database of Systematic Reviews, 2; (7): CD007458.
2. Boksmati N., Butler-Henderson K., Anderson K., Sahama T., (2016), The Effectiveness of SMS Reminders on Appointment Attendance: a Meta-Analysis, Journal of Medical Systems, 40(4): 90.
3. Hallsworth M., Berry D., Sanders M., Sallis A., King D., Vlaev I., Darzi A., (2015), Stating Appointment Costs in SMS Reminders Reduces Missed Hospital Appointments: Findings from Two Randomised Controlled Trials, PLoS One, 10(9): e0137306. doi: 10.1371/journal.pone.0137306.
4. Junod Perron N., Dao M.D, Righini N.C, Humair J.P, Broers B., Narring F., Haller D.M, Gaspoz J.M., (2013), Text-messaging versus telephone reminders to reduce missed appointments in an academic primary care clinic: a randomized controlled trial, BMC Health Services Research, 13: 125. doi: 10.1186/1472-6963-13-125.
5. Martin C., Perfect T., Mantle G., (2005), Non-attendance in primary care: the views of patients and practices on its causes, impact and solutions. Fam Pract, 22(6): 638-643.
6. Sawyer S.M, Zalan A., Bond L.M., (2002), Telephone reminders improve adolescent clinic attendance: a randomized controlled trial, Journal of Paediatrics and Child Health, 38(1): 79-83.
7. Bucak I.H, Almis H., Dogan F., Turgut M., (2018), A Retrospective Analysis of Central Physician Appointment System Data in a Tertiary Health Center in Turkey, Telemedicine and e-Health, 24(3): 216-221.
8. McLean S.M., Booth A., Gee M., Salway S., Cobb M., Bhanbhro S., Nancarrow S.A., (2016) Appointment reminder systems are effective but not optimal: results of a systematic review and evidence synthesis employing realist principles, Patient Preference and Adherence, 10: 479–499.
9. Bowen T.B., Rinchuse D.J., Zullo T., DeMaria M.E., (2015), The influence of text messaging on oral hygiene effectiveness, The Angle Orthodontist, 85(4): 543-548.
10. Keeshin S.W, Feinberg J., (2017), Text Message Reminder-Recall to Increase HPV Immunization in Young HIV-1-Infected Patients, Journal of the International Association of Providers of AIDS Care, 16(2): 110-113.
11. Liu Q, Abba K, Alejandria M.A., Sinclair D., Balanag V.M., Lansang M.A.D., (2014), Reminder systems to improve patient adherence to tuberculosis clinic appointments for diagnosis and treatment, Cochrane Database of Systematic Reviews, 11: 1–59.
12. Strandbygaard U., Thomsen S.F., Backer V., (2010), A daily SMS reminder increases adherence to asthma treatment: a three-month follow-up study, Respiratory Medicine, 104(2): 166-171.
13. Dick J.J., Nundy S., Solomon M.C, Bishop K.N., Chin M.H., Peek M.E., (2011), Feasibility and usability of a text message-based program for diabetes self-management in an urban African-American population, Journal of Diabetes Science and Technology, 5(5): 1246-1254.
14. Boker A., Feetham H.J., Armstrong A., Purcell P., Jacobe H., (2012), Do automated text messages increase adherence to acne therapy? Results of a randomized, controlled trial, Journal of the American Academy of Dermatology, 67(6): 1136-1142.
15. https://www.mhrs.gov.tr/Vatandas/hakkimizda.xhtml (Last accessed: March 14, 2017)
16. Reekie D., Devlin H., (1998), Preventing failed appointments in general dental practice: a comparison of reminder methods, British Dental Journal, 185(9): 472-474.
17. Hashim M.J, Franks P., Fiscella K., (2001), Effectiveness of telephone reminders in improving rate of appointments kept at an outpatient clinic: a randomized controlled trial, American Board of Family Medicine, 14(3): 193-196.
18. Önür S.T., Uysal M.A., İliaz S., Yurt S., Bahadır A., Hattatoğlu D.G., Ortaköylü M.G., Bağcı B.A., Chousein E.G., (2016), Does Short Message Service Increase Adherence to Smoking Cessation Clinic Appointments and Quitting Smoking? Balkan Medical Journal, 33(5): 525–531.
19. Sancaktutar A.A., Tepeler A., Söylemez H., Penbegül N., Atar M., Bozkurt Y., Yıldırım K., (2012), A solution for medical and legal problems arising from forgotten ureteral stents: initial results from a reminder short message service (SMS), Urological Research, 40(3): 253-258.
20. Celik S., Cosansu G., Erdogan S., Kahraman A., Isik S., Bayrak G., Bektas B., Olgun N., (2015), Using mobile phone text messages to improve insulin injection technique and glycaemic control in patients with diabetes mellitus: a multi-centre study in Turkey. Journal of Clinical Nursing, 24(11-12): 1525-1533.
21. Uysal M.A., Mungan D., Yorgancioglu A., Yildiz F., Akgun M., Gemicioglu B., Turktas H.; Study Group, Turkish Asthma Control Test (TACT), Turkey (2013), Asthma control test via text messaging: could it be a tool for evaluating asthma control?, Journal of Asthma, 50(10): 1083-1089.
22. Bucak I.H., Almis H., (2017), Does Abnormal Laboratory Results Notification with the Short Message Service Shorten Length of Stay in the Pediatric Emergency Department Observation Unit?, Telemedicine and e-Health, 23(7): 539-543.
23. Gurol-Urganci I., de Jongh T., Vodopiv6ec-Jamsek V., Atun R., Car J., (2013), Mobile phone messaging reminders for attendance at healthcare appointments, Cochrane Database of Systematic Reviews, 12: CD007458.
24. Lin C.L., Mistry N., Boneh J., Li H., Lazebnik R., (2016), Text Message Reminders Increase Appointment Adherence in a Pediatric Clinic: A Randomized Controlled Trial, International Journal of Pediatrics, 2016:8487378.
25. Guy R., Hocking J., Wand H., Stott S., Ali H., Kaldor J., (2012), How effective are short message service reminders at increasing clinic attendance? A meta-analysis and systematic review. Health Services Research, 47(2): 614-632.
26. Kannisto K.A., Koivunen M.H., Välimäki M.A., (2014) Use of mobile phone text message reminders in health care services: a narrative literature review, Journal of Medical Internet Researchi, 16(10): e222.