Reducing Patient No-Shows: An Initiative at an Integrated Care Teaching Health Center

Ashwin Mehra, PhD, MBA; Claire J. Hoogendoorn, PhD; Greg Haggerty, PhD; Jessica Engelthaler, BS; Stephen Gooden, MHA; Michelle Joseph, MSHA; Shannon Carroll, DO; Peter A. Guiney, DO

From the NuHealth-LIFQHC and Nassau University Medical Center in Nassau County, New York (Drs Mehra, Haggerty, Carroll, and Guiney and Ms Engelthaler, Mr Gooden, and Ms Joseph), and the Ferkauf Graduate School of Psychology at Yeshiva University in Bronx, New York (Dr Hoogendoorn).

Financial Disclosures: None reported.

Support: None reported.

Address correspondence to Ashwin Mehra, PhD, MBA, NuHealth-LIFQHC, 161 Hempstead Turnpike, Elmont, NY 11003-1432.

Email: amehra@numc.edu

Submitted April 10, 2017; revision received June 7, 2017; accepted July 11, 2017.

Background: Patient no-shows impede the effectiveness and efficiency of health care services delivery.

Objective: To evaluate a 2-phase intervention to reduce no-show rates at an integrated care community health center that incorporates a teaching program for osteopathic family medicine residents.

Methods: The Elmont Teaching Health Center (ETHC) is 1 of 5 community-based health centers comprising the Long Island Federally Qualified Health Centers. In August 2015, the ETHC implemented a centerwide No-Show Rates Reduction Initiative divided into an assessment phase and implementation phase. The assessment phase identified reasons most frequently cited by patients for no-shows at the ETHC. The implementation phase, initiated in mid-September, addressed these reasons by focusing on reminder call verification, patient education, personal responses to patient calls, institutional awareness, and integration with multiple departments. To assess the initiative, monthly no-show rates were compared by quarter for 2015 and against rates for the previous year.

Results: We recorded 27,826 appointments with 6147 no-shows in 2014 and 31,696 appointments with 5690 no-shows in 2015. No-show rates in the first 3 quarters of 2015 (range, 18.2%-20.0%) were slightly lower than the rates in 2014 (20.1%-23.4%) and then changed by an increasingly wide margin in the last quarter of 2015 (15.3%), leading to a significant year (2014, 2015) by quarter (Q1, Q2, Q3, Q4) interaction (P=.004). Also, the change observed in Q4 in 2015 differed significantly from Q1 (P=.017), Q2 (P=.004), and Q3 (P=.027) in 2015, while Q1, Q2, and Q3 in 2015 did not significantly differ from one another.

Conclusion: No-show rates were successfully reduced after a 2-phase intervention was implemented at 1 health center within a larger health care organization. Future directions include dismantling the individual components of the intervention, evaluating the role of patient volumes in no-show rates, assessing patient outcomes (eg, costs, health) in integrative care settings that treat underserved populations, and evaluating family medicine residents' training on continuity of care and no-show rates.

J Am Osteopath Assoc. 2018;118(2):77-84
doi:10.7556/jaoa.2018.022

Keywords: community health, Federally Qualified Health Center, integrated care, no-show rates, teaching health center

The patient no-show rate is one of the most significant factors impeding both the effectiveness and efficiency of health care delivery services, especially in family medicine residency continuity of care facilities. In these outpatient settings, such considerations merit greater attention because of the increased focus in providing high-quality preventive and integrative community-level health care. However, these goals can only be met if patients attend their community health centers' outpatient appointments. Recent studies have found no-show rates in outpatient settings ranging between 23.1% and 33.6%,[1,2] resulting in decreased efficiency, lost time, and higher use of resources.[3] One study surveying 360 outpatient clinics found more than a third of these clinics reported a no-show rate of over 21%.[4] Moore et al[5] found that no-shows adversely affected approximately 25% of scheduled time in a family medicine clinic and cost 14% of anticipated daily revenue.

Patient no-shows in community clinics also negatively affect the patients themselves. No-shows can result in longer waiting times, a lower quality of care, practice discontinuity, worse health outcomes, and lower patient satisfaction.[6-8] Missed appointments are especially problematic for patients with chronic illnesses. For example, patients who frequently missed their medical appointments were less likely to use preventive health care services and had poorer control of their diabetes and blood pressure.[8-10] Those patients who do not keep appointments tend to be younger, have a lower socioeconomic status, have a history of failed appointments,[11] and are less likely to understand the purpose of their appointment.[12]

Reasons for missed appointments vary. One study[13] reported that 56% of patients gave personal reasons (eg, illness, work, transportation issues) and 33% reported appointment problems (eg, forgot appointment, away on appointment date, mistook date or time, lost appointment card) for failing to keep their appointments. Another study[14] found that 65% of participants mentioned emotional barriers to keeping appointments, 44% commented on issues of respect by the health care system, and 41% indicated a lack of understanding of the scheduling system. These studies point to various institutional factors, which might be more amenable to change than the patient factors, which are not directly in the health centers' locus of control.

Various studies have proposed solutions to minimize the rate of patient no-shows. Reducing waiting times, explaining the importance of care continuity to patients, and expanding clinic hours have all been somewhat effective.[15] Appointment reminder systems via phone calls, emails, or short message services have also shown to be useful intervention methods.[16] One study[17] implemented a 3-stage process that involved interviewing a cohort of patients with the highest number of no-show appointments, a double-booking process for patients with a history of frequent missed appointments, and a change in the entire schedule to a modified advanced access schedule. The results showed a decrease in the rate of no-show appointments in the cohort from 33.3% to 17.7% and a drop in the overall clinic no-show rate from 10% to 7%.[17] A separate study[2] found that reminders delivered by clinic staff were significantly more effective than an automated appointment reminder system in reducing the patient no-show rate. Research suggests that the patient population, modality of the reminder, and service type are directly related to the effectiveness of a reminder system.[16]

The current study looked at no-show rates at the Elmont Teaching Health Center (ETHC), which is 1 of 5 community-based health centers comprising the Long Island Federally Qualified Health Centers (LIFQHC) located in Nassau County, New York. The LIFQHC's mission is to provide comprehensive primary, preventive, and integrated health care to the local communities, especially the underserved and vulnerable populations within these communities. The ETHC, which had nearly 20,000 patient visits in 2015, provides services under an integrated health care paradigm using the Patient-Centered Medical Home (PCMH) guidelines for addressing the needs of its patients. Patients at the ETHC receive not only primary care but also services from other health care professions, including behavioral

health, pediatrics, obstetrics-gynecology, podiatry, and dental services. Ancillary services for care coordination, nutrition and state programs (eg, Special Supplemental Nutrition Program for Women, Infants, and Children), and insurance assistance are also provided. The majority of the medical encounters are provided by osteopathic family medicine residents in a teaching health center academic environment.

The financial pressure that comes with providing health care to financially vulnerable patients requires that health care professionals use their time efficiently and that patients attend their scheduled appointments. Thus, the reduction of no-show rates plays an important role in providing high-quality integrated community-based health care. Although cancelled and rescheduled appointments resemble no-show appointments in that the patient does not complete the appointment, the former are preferred because they allow for the possibility of another patient being scheduled in the cancelled time slot, as well as maintaining continuity of care of existing patients through rescheduling. From a clinical perspective, patients cancelling or rescheduling their appointments can be viewed as an indicator of greater engagement with treatment, leading to optimal financial and health care outcomes.

The present study highlights the interventions used at the ETHC to reduce the no-show rate. This study evaluated the impact of the interventions using quarterly no-show rates tracked against its no-show rates before the intervention was implemented.

Methods

In August 2015, the ETHC team, led by the center's practice manager (S.G.), implemented a No-Show Rates Reduction Initiative to decrease the no-show rates at the health center. The initiative was implemented center-wide, with primary support from the front desk staff and ancillary support from the nursing staff, medical assistants, residents, and other health care professionals from the different disciplines. The initiative was divided into 2 phases: assessment and implementation. This research protocol was reviewed and approved by the Institutional Review Board of Nassau University Medical Center.

Assessment Phase

The practice manager and the front desk staff implemented an initial assessment project in August 2015 to analyze the major reasons influencing the no-show rates at the ETHC. During this project, the team used a no-show follow-up checklist to track the no-shows on any given day. The front desk staff contacted the patients who had not shown up for their appointments and elicited the reasons for the no-shows (forgot appointment, had to go to work, woke up late, transportation issues, child care issues, or other). The team discovered that the reasons most frequently cited by the patients for the no-shows were (1) forgetting their appointment, (2) being called in to work, and (3) not being able to get through to the center or to leave a voicemail for cancellation. The team also met with all of the health care providers and staff members to obtain their feedback on this topic, as well as to identify issues unique to each specialty. These issues were then systematically addressed in the implementation phase.

Implementation Phase

This phase began in mid-September 2015, based on the results of the assessment phase. Seven interventions were implemented to address these concerns, as follows:

1. **Reminder call verification.** The practice manager and front desk staff used internal metrics to verify that each patient had been called to remind him or her of his or her appointment 1 day before the appointment.
2. **Patient education through phone calls.** The practice manager and front desk staff developed clear communication protocols for informing patients about the importance and method of cancelling or rescheduling their appointments in advance. The communication protocol adhered to the following

format: "Hello Mr/Ms XYZ, I'm calling to confirm your appointment for [date/time] with [provider] at the Elmont Health Center. In case you need to cancel or reschedule this appointment, please call us at [phone] at any time." For new patients, the protocol included the following statement: "Please complete the new patient information packet before your appointment, and please arrive at least 15 minutes prior to your appointment time to allow for the new patient registration paperwork." This communication was included in every reminder call to the patients.

No-show patients were contacted by family medicine residents within 2 days of missed appointments to directly communicate with patients regarding no-shows, rescheduling, and registration preparation to facilitate patient engagement and attendance.

3. **Patient education onsite.** The importance of cancelling or rescheduling appointments was also reinforced to patients onsite. Large signs in multiple languages were posted on the notice boards and other patient areas throughout the center. Family medicine residents were directed to educate their patients regarding the need to comply with appointments to achieve their health goals.
4. **Personal responses to patient phone calls.** To address the issue of patients' reported inability to leave a voicemail to cancel or reschedule their appointments, the team incorporated ongoing initiatives to answer every phone call. For example, we allowed incoming phone calls to ring on every phone in the front desk area, and all front desk staff members were allowed to answer any phone, irrespective of their assigned phones.
5. **Institutional awareness.** To raise the awareness of the no-show rate among all of the health care professionals and office staff at the ETHC, the practice manager reported no-show rates for each health care professional as part of a weekly email. The anticipated impact of this intervention can be viewed in the context of the well-documented "Hawthorne Effect," in which even directing attention toward a problem can be expected to improve the observed outcomes.[18]
6. **Integration across specialties.** The project team met with family medicine faculty and residents, as well as with providers from behavioral health, pediatrics, obstetrics-gynecology, and other specialties within the ETHC, to understand and address the unique challenges for each discipline. For example, more direct contact between the behavioral health providers and their patients after no-shows, as well as flexibility in scheduling, were identified as factors to reduce the no-show rate for behavioral health patients.
7. **PCMH focus.** Communication to the patients was based on the principles of patient-centeredness—coordination and integration of care based on respect for patient values, preferences, and needs—and incorporated the ongoing efforts to meet the PCMH standards for this initiative.

Data Analysis

The LIFQHC tracked the visit status of each patient appointment through its electronic health record system called eClinicalWorks and analyzed data using IBM Cognos software. Patient demographics in both years were assessed for meaningful differences between groups. No-show rates were calculated as a percentage of no-show appointments to the total number of appointments by month and quarter. No-show rates for the ETHC for 2015 were tracked against the rates for the previous year using analysis of variance.

Results

The ETHC had 27,826 appointments with 17,348 patient visits in 2014 and 31,696 appointments with 19,622 patient visits in 2015. In 2014, a total of 4608 patients contributed to 6147 no-show appointments, and in 2015, a total of 4744 patients contributed to the 5690 no-show appointments. The no-show patient sample from 2014 did not differ significantly from that of 2015 in terms of age, sex, race/ethnicity, or use of government-assisted health insurance (**Table 1**).

Table 1.
Reducing Patient No-Shows: Demographics of Patient No-Shows at the Elmont Teaching Health Center

Characteristic	2014 (n=4608)	2015 (n=4744)
Age, y, mean (SD)	35.3 (18.6)	33.9 (19.7)
Sex, No. (%)		
Women	2815 (61.1)	2768 (58.4)
Men	1793 (38.9)	1975 (41.6)
Unavailable	0	1 (<0.1)
Race, No. (%)		
Black/African American	2158 (46.8)	2211 (46.6)
White	1732 (37.6)	1768 (37.3)
Asian	164 (3.6)	238 (5.0)
American Indian or Native Alaskan	13 (0.3)	30 (0.6)
Native Hawaiian/Pacific Islander/Other Pacific Islander	1 (<0.1)	2 (<0.1)
Other	47 (1.0)	48 (1.0)
Unavailable	493 (10.7)	447 (9.4)
Ethnicity, No. (%)		
Not Hispanic or Latino	3078 (66.8)	3317 (69.9)
Hispanic or Latino	1089 (23.6)	1055 (22.2)
Did not report	376 (8.2)	372 (7.8)
Unavailable	65 (1.4)	0
Government-Assisted Health Insurance, No. (%) Patient Visits per Scheduled Appointments	17,322 (62.3)	19,553 (61.7)

No-show rates for each month of 2014 and 2015 are illustrated in the **Figure**. No-show rates for 3 quarters of 2015 were similar to the rates for all the quarters of 2014 and then changed by an increasingly wide margin in the last quarter of 2015, right after the implementation of the No-Show Rates Reduction Initiative (**Table 2**).

The year (2014 vs 2015) by quarter (Q1, Q2, Q3, Q4) analysis of variance showed a significant interaction ($F_{1,3}$=6.61; P=.004), indicating that 1 or more quarters were significantly different between the 2 years. Intra-year analysis revealed that the quarters did not significantly differ in 2014 (F_3=2.62; P=.123) but did differ significantly in 2015 (F_3=5.70; P=.022). Furthermore, a post-hoc analysis of the least significant difference of 2015 indicated that only Q4 differed significantly from Q1 (P=.017), Q2 (P=.004), and Q3 (P=.027), while Q1, Q2, and Q3 of 2015 did not significantly differ from one another.

Discussion

In 2015, the LIFQHC kept their average no-show rates to 20%, which is lower than that of most clinics. After the implementation of the No-Show Rates Reduction Initiative, the ETHC saw an even lower no-show rate of approximately 15%. Our results supported the hypothesis that the 2-phase initiative contributed to a reduced no-show rate in the fourth quarter of 2015, which was lower than the rates of the other quarters in both 2014 and 2015. In addition, excluding the fourth quarter in 2015, all the other quarters in 2014 and 2015 did not have significant differences in their no-show rates. The year-on-year data analysis helped reduce the error variance due to seasonal or site factors, leading to the conclusion that the intervention of changing institutional factors implemented by the ETHC likely was effective in reducing the no-show rates for the center.

The need for reducing patient no-show rates in health care is undeniable in both maximizing the productivity of services as well as ensuring that patient outcomes and satisfaction attain high standards. Among the myriad of organization-wide steps to address the issue of no-show rates, the project team at the ETHC successfully intervened and significantly reduced the no-show rates. Although no-show rates trended favorably in the Q1, Q2, and Q3 of 2015, likely because of increased organizational awareness and ad-hoc practices geared toward staff responsiveness and patient education, the implementation of our targeted program likely resulted in the sharp decrease in the no-show rates observed in Q4 of 2015.

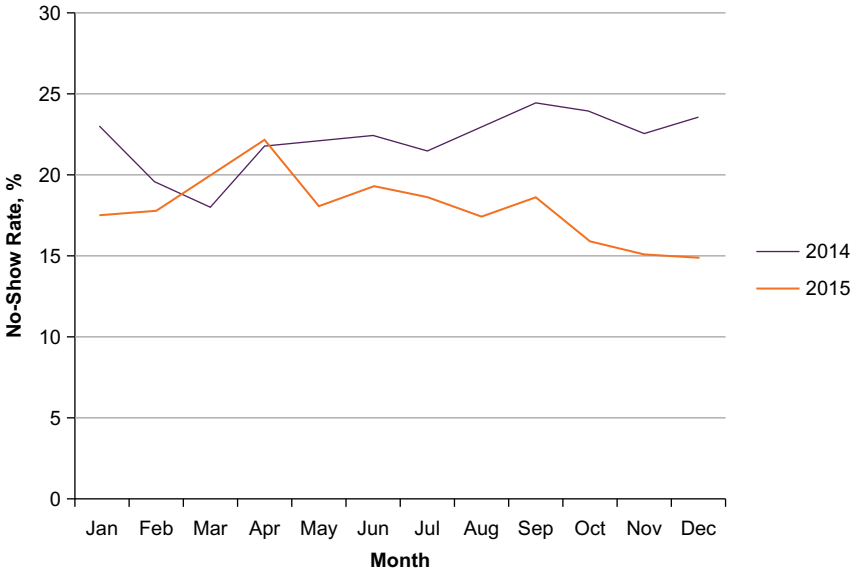

Figure.
Patient no-show rates for the Elmont Teaching Health Center by month in 2014 and 2015. The No-Show Rates Reduction Initiative was implemented on September 15, 2015.

The elements of this intervention comprised project ownership, teamwork, task orientation, patient focus and feedback, and buy-in from all health care professionals and front desk staff members at the ETHC. The heightened awareness of the no-show rates among the ETHC team resulting from the weekly emails that reported no-show rates appeared to direct sufficient attention toward the problem, most likely improving the observed outcomes. In addition, patients anecdotally reported feeling helped by the reminder calls and appreciated having more personal contact with front desk staff, family medicine residents, and other health care professionals. Patients reported that these actions helped them solve scheduling issues before the next appointment. Patients also reported improved understanding of the importance of communicating nonattendance, as well as having clear messaging about how to cancel or reschedule appointments either in person or on the phone. This improved understanding likely influenced the observed trend of decreased no-shows through increased rescheduled and canceled appointments in Q4 of 2015. In turn, front-desk staff were likely able to better manage the providers' schedules in a more responsive and dynamic manner, aimed at increasing completed appointments.

Using a 2-phase approach of assessment and intervention was likely to be a superior approach than one based on intervention alone. Needs assessments have been a standard element of recommended management best practices for decades.[19] The ETHC team was able

Table 2.
Quarterly No-Show Rates for the Elmont Teaching Health Center in 2014 and 2015

	No-Show Rate (No. No-Shows/No. Total Appointments)	
Quarter	2014	2015
1 (January-March)	20.1% (1273/6331)	18.5% (1337/7218)
2 (April-May)	22.0% (1633/7414)	20.0% (1550/7765)
3 (June-September)	22.6% (1591/7043)	18.2% (1540/8449)[a]
4 (October-December)	23.4% (1650/7038)	15.3% (1263/8264)[a]

[a] The implementation phase of the No-Show Rates Reduction Initiative began in quarter 3 on September 15, 2015, which was 15 days before the start of quarter 4.

to use these principles to assess the nature of the problems before implementing solutions, leading to more targeted interventions and successful outcomes. Health care interventions focused on improving efficiency need to be scalable—and sustainable—in light of increasing patient volumes. The ETHC had a 13% year-on-year increase in patient visits in 2015 (19,622 patient visits in 2015 compared with 17,348 patient visits in 2014). Although there is scant literature on the impact of patient volumes on no-show rates, the decrease in no-show rates observed despite an increase in total patient volume underscores the positive impact of the interventions reported in this study. The impact of the intervention on the patients themselves could be judged as positive, potentially leading to increased compliance, shorter wait times, improved quality of care, higher patient satisfaction, and increased use of preventive health care services.

There were several limitations to this study. We lacked a more specific control group. This study looked at 1 successful initiative implemented at 1 teaching health center within a larger organization focused on community-based health care. No-show rates were compared between the individual center for different years but not across sites. It was not possible at this time to obtain data from other centers located in the neighboring communities, which might have added additional control conditions with respect to the effects of the intervention. Also, because of the relatively short postintervention period (3 months), the sustainability of the decrease in the no-show rates would require further evaluation. Furthermore, because of our study design, we were unable to make causal inferences from this study, as random assignment of participants to pre- and postintervention groups was not possible. In addition, our study design limited our ability to dismantle the mechanisms of each intervention component (eg, patient vs staff education). It would be helpful to quantify the individual effects of messaging as opposed to the effects of raising awareness for no-show rates for resident and nonresident providers. It would also be helpful to understand the specific mechanisms behind the individual components, such as the influence of weekly emails regarding no-show rates or the specific impact of patient education on the observed decrease. More targeted studies might be able to shed light on both of these factors, leading to better interventions in the future.

Future studies should also focus on site and patient outcomes in integrative health care settings, such as reduced costs or improved health outcomes for those with a chronic illness, with an emphasis on underserved populations. These studies could focus on important patient population subsets, such as patients with a high number of repeated no-shows or patients visiting a particular specialty (eg, osteopathic medicine), provider, or service (eg, osteopathic manipulative treatment), to fine-tune strategies for addressing the causes of no-shows for these subsets. Additional components could also be added to such interventions, leveraging the current proliferation of mobile and internet technologies, such as reminder text messages and emails, which are already used by some organizations. Further study of increased use of the resident workforce as a tool for targeting patient education and communication pertaining to no-shows could be revealing.

Conclusion

No-show rates are a significant factor in maximizing the productivity of services as well as ensuring that patient outcomes and satisfaction are met. This study looked at the impact of an intervention comprising teamwork, task orientation, patient focus and feedback, and buy-in from all the members of the health center team. The study found a steeper decline in no-show rates after the intervention compared with the rates before the intervention during the same year, as well as the rates documented the previous year. Health care facilities with high patient no-show rates may be able to implement similar interventions as those used in the current study to reduce patient no-show rates and evaluate the mechanisms underlying successful outcomes.

Author Contributions

Drs Mehra, Hoogendoorn, and Haggerty and Ms Engelthaler provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; Drs Mehra, Carroll, and Guiney, Ms Engelthaler, Mr Gooden, and Ms Joseph drafted the article or revised it critically for important intellectual content; Drs Mehra and Guiney gave final approval of the version of the article to be published; and Drs Mehra and Guiney agree to be 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.

References

1. Geraghty M, Glynn F, Amin M, Kinsella J. Patient mobile telephone 'text' reminder: a novel way to reduce non-attendance at the ENT out-patient clinic. *J Laryngol Otol*. 2008;122(3):296-298.
2. Parikh A, Gupta K, Wilson AC, Fields K, Cosgrove NM, Kostis JB. The effectiveness of outpatient appointment reminder systems in reducing no-show rates. *Am J Med*. 2010;123(6):542-548. doi:10.1016/j.amjmed.2009.11.022
3. Capko J. The price you pay for missed appointments. *J Med Pract Manage*. 2007;22(6):368.
4. Hixon AL, Chapman RW, Nuovo J. Failure to keep clinic appointments: implications for residency education and productivity. *Fam Med*. 1999;31(9):627-630.
5. Moore CG, Wilson-Witherspoon P, Probst JC. Time and money: effects of no-shows at a family practice residency clinic. *Fam Med*. 2001;33(7):522-527.
6. LaGanga LR, Lawrence SR. Clinic overbooking to improve patient access and increase provider productivity. *Decis Sci*. 2007;38(2):251-276. doi:10.1111/j.1540-5915.2007.00158.x
7. Murray M, Berwick DM. Advanced access: reducing waiting and delays in primary care. *JAMA*. 2003;289(8):1035-1040.
8. Nguyen DL, DeJesus RS, Wieland ML. Missed appointments in resident continuity clinic: patient characteristics and health care outcomes. *J Grad Med Educ*. 2011;3(3):350-355. doi:10.4300/JGME-D-10-00199.1
9. Schectman JM, Schorling JB, Voss JD. Appointment adherence and disparities in outcomes among patients with diabetes. *J Gen Intern Med*. 2008;23(10):1685-1687. doi:10.1007/s11606-008-0747-1
10. Bowser DM, Utz S, Glick D, Harmon R. A systematic review of the relationship of diabetes mellitus, depression, and missed appointments in a low-income uninsured population. *Arch Psychiatr Nurs*. 2010;24(5):317-329. doi:10.1016/j.apnu.2009.12.004
11. Barron WM. Failed appointments: who misses them, why they are missed, and what can be done. *Prim Care*. 1980;7(4):563-574.
12. Frankel S, Farrow A, West R. Non-attendance or non-invitation? a case-control study of failed outpatient appointments. *BMJ*. 1989;298(6684):1343-1345.
13. Verbov J. Why 100 patients failed to keep an outpatient appointment—audit in a dermatology department. *J R Soc Med*. 1992;85(5):277-278.
14. Lacy NL, Paulman A, Reuter MD, Lovejoy B. Why we don't come: patient perceptions on no-shows. *Ann Fam Med*. 2004;2(6):541-545.
15. Pesata V, Pallija G, Webb AA. A descriptive study of missed appointments: families' perceptions of barriers to care. *J Pediatr Health Care*. 1999;13(4):178-182.
16. Macharia WM, Leon G, Rowe BH, Stephenson BJ, Haynes RB. An overview of interventions to improve compliance with appointment keeping for medical services. *JAMA*. 1992;267(13):1813-1817.
17. DuMontier C, Rindfleisch K, Pruszynski J, Frey JJ III. A multi-method intervention to reduce no-shows in an urban residency clinic. *Fam Med*. 2013;45(9):634-641.
18. Roethlisberger FJ, Dickson WJ, Wright HA. *Management and the Worker: An Account of a Research Program Conducted by the Western Electric Company, Hawthorne Works, Chicago*. Cambridge, MA: Harvard University Press; 1939.
19. Kaufman RA, English FW. *Needs Assessment: Concept and Application*. Englewood Cliffs, NJ: Educational Technology Publications; 1979.