Journal of Patient Experience
Volume 9: 1-6

DOI: 10.1177/23743735221092610
journals.sagepub.com/home/jpx
SAGE

# Sustained Improvement in Patient Experience by Optimizing Patient Flow in Ambulatory Settings

**Dinesh S Pashankar, MD, MBA[1], Troy Brown, BS, MBA[3], Paul Votto, MBA[2], Marie Follo[1], Richard N Formica, MD, FAST[3], Michael L Schilsky, MD, FAASLD[3], David C Mulligan, MD, FAST[3], and Babar Khokhar, MD, MBA[2]**

**Abstract**

Patient experience has become a priority for healthcare institutions as it affects clinical quality of care, financial reimbursement, provider, and patient satisfaction. We report our experience of improving patient experience measured by Press Ganey surveys in a busy multidisciplinary clinic over 65 months. We optimized patient flow in the clinic by technology-facilitated communication among the clinic staff and by a modest space redesign. We noted a significant improvement in "clinic visit" scores from baseline of 82.1 to 84.6 at year 1, 86.1 at year 2, 88.7 at year 3, and 88.9 at year 4 ($P < .001$). In comparison with previous short-term studies, we were able to sustain improvement in patient experience scores over 4 years due to optimized patient flow and monitoring of clinic operations. A similar approach can be implemented in other ambulatory settings and is likely to cause a long-term positive impact on patient experience.

**Keywords**

patient satisfaction, quality improvement, clinician–patient relationship, HCAHPS

## Introduction

Patient experience has emerged as an area of great significance to healthcare providers and institutions. Numerous studies have reported a positive association of patient experience with superior medical outcomes, clinical quality, and patient safety measures (1,2). Positive patient experience is also related to provider job satisfaction, fewer complaints, and fewer lawsuits against providers (3). Finally, from the healthcare institution's perspective, positive patient experience is related to patient retention, better reputation, and more revenue as reimbursement and pay-for-performance are tied to patient experience measures (1,2).

Patient experience is measured by patient feedback from the Consumer Assessment of Healthcare Providers and System Clinician and Group Surveys (4). The Press Ganey survey is one of the most commonly used surveys to assess patient feedback on the outpatient experience (5). The Press Ganey survey assesses various aspects of outpatient care such as access, moving through your visit, nurse/assistant, care provider, personal issues, and overall assessment. Moving through your visit questions are related to patient flow and are based on wait time at the clinic and information about any delays.

Various studies have reported interventions aimed at patient access, care providers, and improving wait times in ambulatory settings to improve patient experience (3,6–8). Prolonged wait time in the clinic is often a source of frustration for patients and can significantly impact patient experience scores negatively on surveys (9–11). We report our experience of optimizing patient flow in clinic resulting in sustained improvement in patient experience scores related to a visit in a busy clinic over 5 years.

[1] Ambulatory Operations, Yale Medicine, New Haven, CT, USA
[2] Clinical Optimization Service, Yale Medicine, New Haven, CT, USA
[3] Yale New Haven Transplantation Center, Yale School of Medicine, New Haven, CT, USA

**Corresponding Author:**
Dinesh S Pashankar, Pediatrics (Gastroenterology), Yale Medicine, LMP 4091 A, 333 Cedar Street, New Haven, CT 06520, USA.
Email: dinesh.pashankar@yale.edu

## Methods

### Settings

Our outpatient clinic is on the fourth floor of a multistoried clinic building associated with an academic center on the East Coast of the United States. It is a multidisciplinary transplantation clinic where patients with renal and liver transplants are seen by multiple providers including various physicians, surgeons, pharmacists, nurse coordinators, dieticians, and social workers depending on their need. The front desk for check-in and check-out functions is in the waiting room which is separated by a staff badge activated door to the clinic and examination rooms. The clinic has 2 vertical hallways with 13 examination rooms and one horizontal hallway with an infusion room facility for patients. On average, 28 clinic staff (including providers, medical assistants, and front desk staff) worked in the clinic and saw approximately 80 patients daily at the start of this project. The project started in October 2015 and continued till February 2020 for 65 months and was stopped as clinics closed in March 2020 due to the coronavirus pandemic.

### Measurement

Our clinic uses Press Ganey surveys which are sent to patients electronically or by mail soon after the clinic visit with a reminder a few days later. For patients with multiple clinic visits, surveys are sent only once during one 90-day period. In the ambulatory Press Ganey survey, the "moving through your visit" scores are based on 2 questions, namely "wait time at the clinic (from arriving to departing)" and "degree to which you were informed of any delays." These 2 questions were in our surveys throughout the entire study period of more than 5 years while other questions such as speed of registration, check-in and check-out were in the survey for 2 years from the beginning of the project. All questions offer a numerical response ranging from 1 (very poor) to 5 (very good) on a Likert scale. Scores on the Likert scale were converted to a percentage value ($1 = 0$, $2 = 25$, $3 = 50$, $4 = 75$, $5 = 100$) (5). The results of the survey are reported to us by the Press Ganey corporation on all domains and individual questions monthly.

### Clinical Optimization

Our institution has a Clinical Optimization team that assesses and improves ambulatory operations in various clinics and an Operations team, which provides ongoing support for efficient operation in clinics. Both teams have medical and nonmedical directors with management and process improvement experience. The Clinical Optimization team initiated an assessment of the transplantation clinic in 2015. The team interviewed all stakeholders including patients, providers, nurses, assistants, check-in, and check-out front desk staff. They observed clinical operations and reviewed monthly Press Ganey survey data. The team assessed ambulatory operations in all areas including website, pre-visit, visit, post-visit, productivity, space, and privacy in detail. They identified opportunities for optimization of patient flow during the visit and recommended interventions.

### Baseline (Pre-Intervention) State

It was observed that patients were sometimes lost due to a lack of clear signage when they entered the clinic building. They also had to wait in line as the front desk staff performed both check-in and check-out functions. Following check-in, patients sat in the waiting room. Medical assistants brought the patients to the clinic to take vital signs and placed them in examination rooms. If the examination room was not available after vital signs, the patient was brought back outside the clinic in the waiting room (Figure 1). Communication gaps were noted among the front desk staff, medical assistants, and providers during the patient flow which led to the prolonged wait time for patients. Following the clinic visit, patients went to the front desk for check-out. Sometimes due to the queue, they preferred not to check-out and missed important clinical information about follow-up and further tests. Clinic staff informed patients about delays in the clinic but sometimes were not aware of the patient's status in the clinic.

### Interventions

The Clinical Optimization team planned and implemented the following interventions over 11 months to optimize patient flow.

1. Signage—We instituted clear signs with directional arrows to the clinic at entrance lobby of the clinic building, outside elevators, and in hallways for patients.
2. Check-out process—A new check-out process was set up inside the clinic which improved the check-out rate and allowed patients to exit the clinic without needing to stop at the front desk. The front desk now performed only the check-in function resulting in improved patient flow.
3. Sub-waiting room—A sub-waiting room was created inside the clinic by converting the clinic manager's office. After vital signs were performed, medical assistants put patients in the sub-waiting room if exam rooms were unavailable for any reason. This new workflow prevented patients going back outside the clinic (Figure 1). A flat-screen monitor was installed in the sub-waiting room which showed educational videos describing information about relevant health topics, physicians and research projects keeping patients occupied.
4. Electronic medical record (EMR) dot system—The EMR had patient status indicators such as arrived, in examination room, and checked out. An additional 5 multicolor dot system was implemented in the EMR to denote patient status as arrived, in the sub-waiting

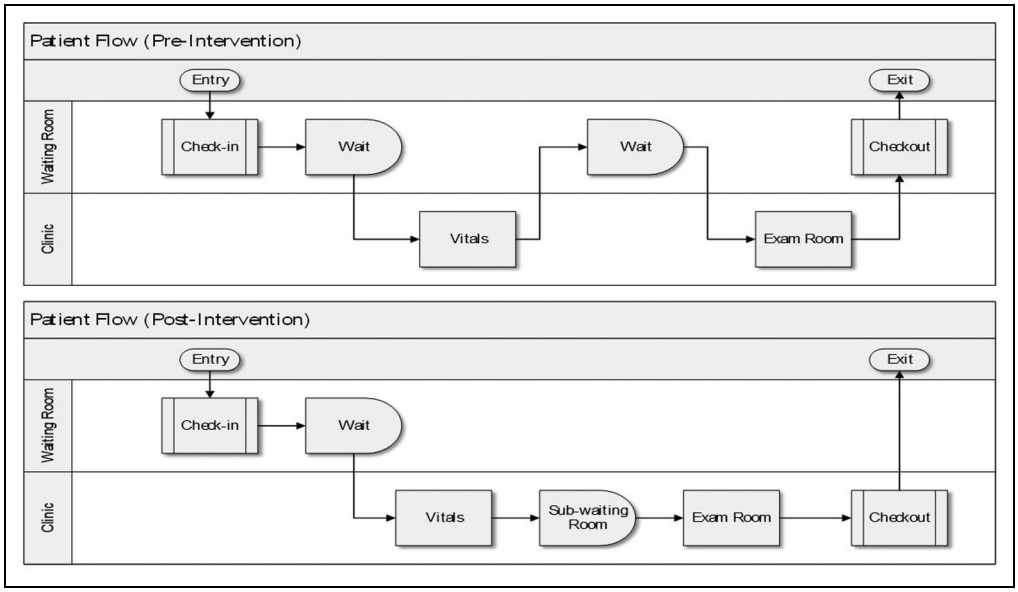


**Figure 1.** Pre-intervention and post-intervention patient flow during the clinic visit.

room, in the exam room ready for the provider, being seen by the provider, and checked out. All clinic staff followed the dot system, and communication lapses with verbal handoffs about patient status were reduced. This system enhanced the ability of clinic staff to inform patients about delays.

5. Patient status monitor—Patient status monitors in the form of large vertical screens of 49 inches dimensions were set up in each of the 3 clinic hallways and in front of a nursing station. These showed HIPAA compliant patient lists (only initials) along with their respective providers, and the EMR dot system. Additionally, the monitors showed appointment time, check-in time, live patient status as room location, and type of visit such as return, new, or infusion. These monitors helped the clinic staff moving in the clinic to be aware of the patient status and wait time in the clinic without needing to log in to computers to check the EMR.

Following implementations of these interventions, there were regular monthly meetings attended by the clinic manager, nurse-in charge, Transplant chief (clinician), Operations director, Medical Director of Operations (clinician) over the next 4 years. During the meetings, clinic operation, patient flow, and patient experience were discussed, and recommendations were planned and implemented.

### *Data Analysis*

We assessed monthly percentage survey scores in the baseline pre-intervention phase of 4 months (October 2014 to January 2015), the intervention phase of 11 months (February 2015 to December 2015) and then monthly for 50 months following the intervention phase. The mean baseline survey scores were compared with the mean scores at 1, 2, 3, and 4 years of follow-up using Student *t* test with Bonferroni correction for multiple comparisons. *P* value was considered as significant at less than .05. As a quality improvement project, the study was exempt from the Institutional Review Board, and there were no ethical concerns.

## Results

During the study period of 65 months, 8633 unique patients came for 99 164 visits to our transplant clinic (new patient visit 11%, return visits 70%, and 19% infusion visits). Patients in our clinic were 98% adults (2% pediatric), 63% male, 77% of non-Hispanic, and 69% identifying themselves as white. Following transplantation, patients came for approximately 15 visits in the first 3 months and 24 visits in the first year. Multiple visits during a 90-day period generated the survey only once and infusion visits did not generate Press Ganey surveys. We received a total of 2902 completed surveys with a response rate of 12.6% during the study period with an average of 45 surveys per month. The response rate of the Press Ganey surveys in our institute overall was approximately 13.8%.

Average daily patient visits to the clinic increased from 80 per day at the start of the project to 90 per day at the end of the project over 5 years. There was some turnover of the clinic staff including providers, but the clinical space and patient flow process remained the same over time following the implementation of interventions.

Table 1 shows the average Press Ganey scores in all domains during the study period. In the pre-intervention

**Table 1.** Average Press Ganey Survey Scores of All Domains at Baseline, Intervention Phase, and 4 Years of Follow-Up.

| Scores | Baseline | Intervention phase | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|---|
| Overall | 92.2 | 91.6 | 92.7 | 93.1 | 93.5 | 94 |
| Access | 91.1 | 89.3 | 89.9 | 90.3 | 91.2 | 92.6 |
| Moving through your visit | 82.1 | 81.2 | 84.6 | 86.1 | 88.7 | 88.9 |
| Nurse/assistant | 92.5 | 93.6 | 94.5 | 94.7 | 93.5 | 94.6 |
| Care provider | 95.7 | 95.6 | 96.2 | 96.7 | 96.3 | 96.4 |
| Personal issues | 95.3 | 94.2 | 94.9 | 95.4 | 95.2 | 95.8 |
| Overall assessment | 96.1 | 97.7 | 95.4 | 96.6 | 96.2 | 96.1 |

phase, scores were at or above 90 in all domains such as access, overall, nurse/assistant, care provider, and personal issues except for "moving through your visit" score which was low 80 s. Following interventions, visit scores showed a continuous annual increase for 4 years, while other scores remained the same or showed only modest increase. The increase in percentage visit scores from baseline of 82.1 (n = 163) to 84.6 at year 1(n = 525), 86.1 at year 2 (n = 603), 88.7 at year 3 (n = 566), and 88.9 at year 4 (n = 445) were all statistically significant ($P < .001$). For 95% confidence intervals, the margins of error were 0.2 at baseline, 0.26 during the intervention phase, 0.25 at year 1, 0.21 at year 2, 0.14 at year 3, and 0.29 at year 4.

Figure 2 shows monthly Press Ganey "moving through your visit" scores over 65 months of the study period. Initially, there was a decrease in scores following the intervention phase. At 22 months, there was an upward centerline shift with an ongoing increase in scores over the entire follow-up period with some variations. Visit scores are based on responses for questions about wait time and information about delays. "Wait time" scores showed a significant increase at year 1 from the baseline ($P < .001$) while "information about delay" scores showed a significant increase starting from year 2 ($P < .001$) and onward (Figure 3).

## Discussion

The Press Ganey survey is widely used in many healthcare institutions to assess the patient experience in ambulatory visits. In our clinic, the Press Ganey scores were in 90 s in all other domains except for "moving through your visit" score which was low 80 s. We planned interventions to optimize patient flow in the clinic by improving communication in the clinic and by redesigning the clinic space. We were able to improve patient experience scores regarding "wait time" and "information about delays" in the Press Ganey scores. Moreover, with ongoing monitoring of clinic operations, we were able to sustain improvement in the Press Ganey scores in visit domain over 4 years.

Review of the literature shows several recent studies addressing patient experience in ambulatory settings (2,3,6,7). Some studies aimed at improving access and care provider while others have addressed wait time and clinic efficiency. Prolonged wait time in clinics is seen as an opportunity for improvement as it affects patient experience scores directly (9–11). In one busy orthopedic clinic in Salt Lake City, a prolonged wait time was an independent factor of prediction of low Press Ganey scores (9) while it affected access, communication, and global scores in another busy spine clinic in North Carolina (10). In addition to being a dissatisfier for patients, the prolonged wait time is also frustrating for providers and clinic staff as they may have to stay after hours (7).

Recent studies have demonstrated an improvement in wait time and patient experience scores by improving patient flow and efficiency in clinics (7,8,12). Robinson et al reported improvement in patient cycle time (check-in to check-out) from 71 to 63 min by improving check-in time and staff communication in a primary care clinic in Los Angeles over a year (7). Kam et al used lean 6 sigma techniques to decrease patient in-clinic time by 18% by adjusting schedule, improving process and communication in an ophthalmology clinic in Australia over a few months (8). Le et al improved Press Ganey patient experience scores from 82 to 88 in a phlebotomy clinic by space redesign and using electronic sign-in system to monitor patient status (12). We planned interventions based on our detailed assessment of patient flow in our clinic. With creations of a sub-waiting room and check-out function inside the clinic, we redesigned the clinic space without major structural changes to improve patient flow. Additionally, EMR dot system and the presence of patient status monitors facilitated communication among the front desk, clinic staff and providers, resulting in an improved patient flow. As these changes were new, it took a few months for staff to implement and during that time, our Press Ganey scores actually decreased. However, over time, we observed a steady increase in the Press Ganey scores for the visit question when the new patient flow was established.

Although the patient satisfaction increased for "the wait time in the clinic" question, we did not measure wait time or actual time patient spent in the clinic. There are several problems for measuring patient's time spent in clinics, particularly in situations when patients miss check-out, or they arrive earlier for their appointment (7). Moreover, this process requires accurate time stamping at every step by the clinic staff. Recent studies seem to indicate that patient's perception of wait time is probably more important than the

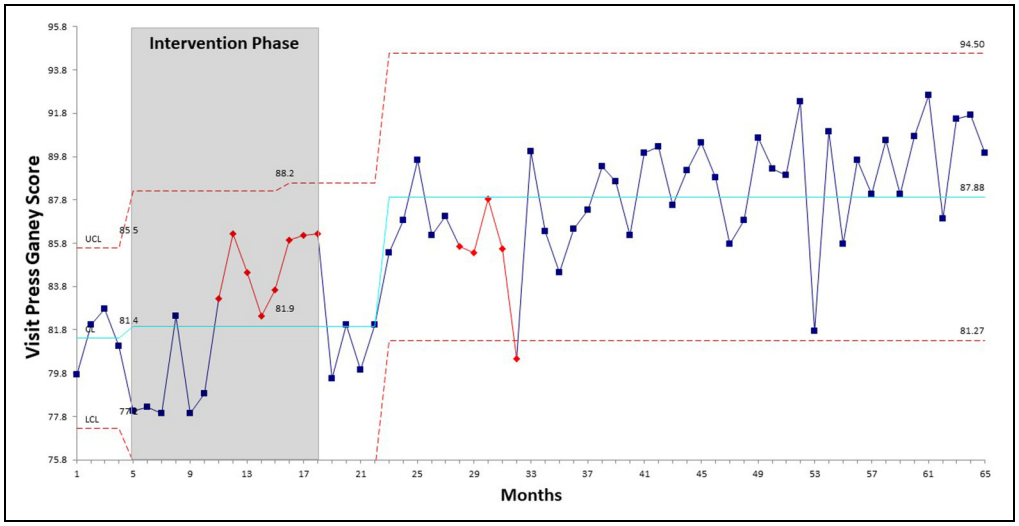


**Figure 2.** Statistical process control X bar S chart showing average monthly "clinic visit" Press Ganey survey scores over 65 months of the project period with upper and lower control limits.

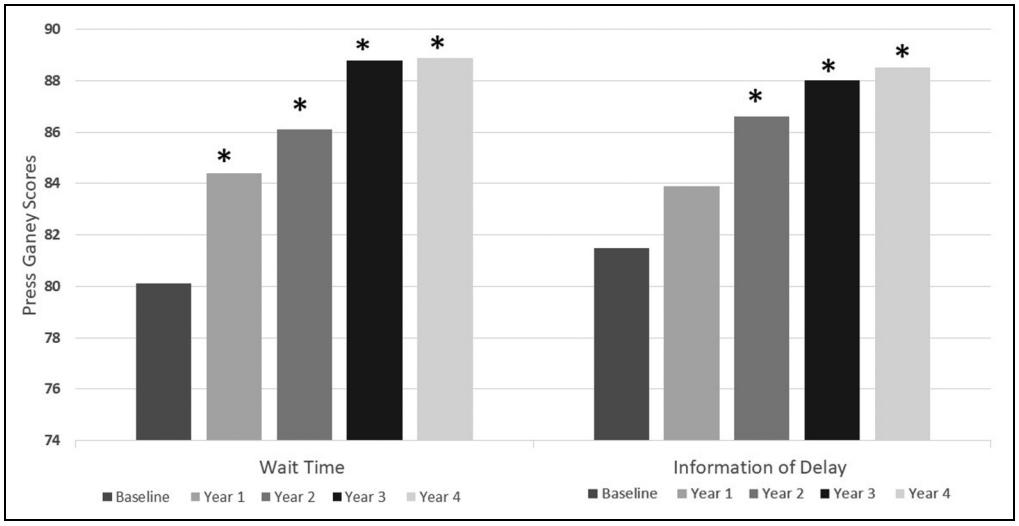


**Figure 3.** Comparison of Press Ganey survey scores of "wait time" and "information of delay" from baseline to every year of follow up (* denotes $P < .001$).

actual wait time (13,14). Creative strategies to fill patient's wait time seem to improve "wait time experience" without affecting the wait time. We used educational video programs for the patients in the sub-waiting room as these types of measures have been reported to make patients feel that their time is not being wasted and improve wait time perception (14,15).

"Degree to which you were informed of any delays" is another important question of the survey on "moving through your visit." We noticed a significant improvement in the response to this question in a second year of follow-up and onward. Delays in clinics were noted obviously on newly installed patient status monitors as these showed check-in time, appointment time, and present time. This information enabled the clinic staff to be aware of delays and to communicate with patients about delays with apology. Studies show that patients appreciate being informed of the delay as it decreases the anxiety of uncertainty and gives patients a feeling that their time is respected (12,13,16).

Our study has certain limitations. First, our response rate of Press Ganey survey was low at 12.6% probably due to a high number of return visits due to the nature of the clinic. It is likely that frequent survey requests may make patients not respond to the surveys even though we restricted surveys to one time during a 90-day period. Second, we did not actually measure wait time in the clinic in this study due to problems in assessing wait time as mentioned before. However, we were able to improve the perception of wait time as evidenced by survey

scores with our interventions. Third, patient status monitors can be expensive but returns due to improved patient flow and experience can compensate for initial investment over time. Finally, there may have been other changes in the clinic over 5 years that may have affected our visit related patient experience scores. There was an unavoidable turnover in the clinic staff and an increase in daily patient volumes over the years, but the clinic space and the patient flow remained same.

Despite these limitations, we feel that our interventions led to a successful and lasting outcome in patient visit scores. Previous studies have reported different interventions resulting in improving patient experience scores for a few months (7,8,16). The main strength of our study lies in focused interventions resulting in optimization of patient flow that led to a significant and sustained improvement in patient experience of clinic visit over a few years despite an increase in patient volume. Our recommended interventions lasted over many months because of several reasons. First, we listened to all stakeholders before planning interventions, and this buy-in led to the change in the process that was acceptable. Second, the improved patient flow continued due to clinic space redesign and enhanced communication among the clinic staff and patients. Finally, we continued to monitor clinic operation regularly over the years to address any issues with patient flow and experience to sustain efficiencies gained.

## Conclusion

In summary, we increased patient experience scores by improving communication using technology and modifying patient flow with only a modest space redesign. By ongoing monitoring of clinic operation, the improvement in patient experience was maintained over a few years. Similar interventions can be implemented in other multidisciplinary clinics and are likely to cause a sustained positive impact on patient experience. Efforts aimed to improve the patient experience are worthwhile for healthcare institutions for reputation, economic value, and for patient and provider satisfaction.

### Acknowledgments

The authors thank all the clinic staff who actively participated in implementing interventions and clinic operations.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### ORCID iD

Dinesh S Pashankar https://orcid.org/0000-0003-0815-8809

### References

1. Manary MP, Boulding W, Staelin R, Glickman SW. The patient experience and health outcomes. N Engl J Med. 2013;368:201-3.
2. Delisle DR, Dajani J, Overton L. An integrated model to accelerate patient satisfaction improvement. Am J Med Qual. 2021;36:255-62.
3. Fustino NJ, Moore P, Viers S, Cheyne K. Improving patient experience of care providers in a multispecialty ambulatory pediatric practice. Clin Pediatr. 2019;58:50-9.
4. Jurdi ZR, Crossby JF Jr, Harris JE, Harvey JB. A closer examination of the patient experience in the ambulatory space. J Ambul Care Manage. 2020;43:89-97.
5. Accessed February 2, 2022. https://www.pressganey.com/products/patient-experience
6. Volk AS, Davis MJ, Abu-Ghname A, Warfield RG, Ibrahim R, Karon G, et al. Ambulatory access: improving scheduling increases patient satisfaction and revenue. Plast Reconstr Surg. 2020;146:913-9.
7. Robinson J, Porter M, Montalvo Y, Peden CJ. Losing the wait: improving patient cycle time in primary care. BMJ Open Quality. 2020;9:e000910.
8. Kam AW, Collins S, Park T, Mihail M, Stanaway FF, Lewis NL, et al. Using lean six sigma techniques to improve efficiency in outpatient ophthalmology clinics. BMC Health Serv Res. 2021;21:38.
9. Rane AA, Tyser AR, Kazmers NH. Evaluation the impact of wait time on orthopedic outpatient satisfaction using the Press Ganey Survey. JB JS Open Access. 2019;4(4):e0014.
10. Zakare-Fagbamila RT, Park C, Dickson W, Cheng TZ, Gottfried ON. The true penalty of the waiting room: the role of wait time in patient satisfaction in a busy spine practice. J Neurosurg Spine. 2020;33:95-105.
11. Kreitz TM, Winters BS, Pedowitz DI. The influence of wait time on patient satisfaction in the orthopedic clinic. J Patient Exp. 2016;3:39-42.
12. Le V, Wager EA, Phipps RA, Del Guidice RE, Le H, Middleton LP. Improving patient experience of wait times and courtesy through electronic sign-in and notification in the phlebotomy clinic. Arch Pathol Lab Med. 2020;144:769-75.
13. Chu H, Westbrook RA, Njue-Marendes S, Giardano TP, Dang BN. The psychology of the wait time experience—what clinics can do to manage the waiting experience for patients: a longitudinal qualitative study. BMC Health Serv Res. 2019;19:459.
14. McIntyre D, Thiagalingam A, Chow C. While you're waiting, a waiting room-based, cardiovascular disease-focused educational program: protocol for a randomized controlled trial. BMJ Open. 2020;10:e036780.
15. Borges A, Herter MM, Chebat J. "It was not that long": the effects of the in-store TV content and consumer emotions on consumer waiting perception. J Retail Consum Serv. 2015;22:96-106.
16. Locke R, Stafano M, Koster A, Taylor B, Greenspan J. Optimizing patient/caregiver satisfaction through quality of communication in the pediatric emergency department. Pediatr Emerg Care. 2011;11:1016-21.