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Authors

Boudreault, David J
Li, Chin-Shang
Wong, Michael S

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The Effect of Web-Based Education on Patient Satisfaction, Consultation Time and Conversion to Surgery

David J. Boudreault, MD, Chin-Shang Li, PhD,† and Michael S. Wong, MD**

Introduction: To evaluate the effect of web-based education on (1) patient satisfaction, (2) consultation times, and (3) conversion to surgery.

Methods: A retrospective review of 767 new patient consultations seen by 4 university-based plastic surgeons was conducted between May 2012 and August 2013 to determine the effect a web-based education program has on patient satisfaction and consultation time. A standard 5-point Likert scale survey completed at the end of the consultation was used to assess satisfaction with their experience. Consult times were obtained from the electronic medical record. All analyses were done with Statistical Analysis Software version 9.2 (SAS Inc., Cary, NC). A P value less than 0.05 was considered statistically significant.

Results: Those who viewed the program before their consultation were more satisfied with their consultation compared to those who did not (satisfaction scores, mean ± SD: 1.13 ± 0.44 vs 1.36 ± 0.74; $P = 0.02$) and more likely to rate their experience as excellent (92% vs 75%; $P = 0.02$). Contrary to the claims of Emmi Solutions, patients who viewed the educational program before consultation trended toward longer visits compared to those who did not (mean time ± SD: 54 ± 26 vs 50 ± 35 minutes; $P = 0.10$). More patients who completed the program went on to undergo a procedure (44% vs 37%; $P = 0.16$), but this difference was not statistically significant.

Discussion: Viewing web-based educational programs significantly improved plastic surgery patients' satisfaction with their consultation, but patients who viewed the program also trended toward longer consultation times. Although there was an increase in converting to surgical procedures, this did not reach statistical significance.

Key Words: decision aid tool, satisfaction, web-based education, plastic surgery consultation

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Patients expect their health care system to be both efficient and provide them with the highest quality of care. Through an independent survey published by Grote and Newman,[1] patients report that the quality of education they received regarding their procedure or treatment was the most influential factor in their decision to choose a hospital or physician. The implications of an "excellent" versus a "very good" rating had significant effects on this choice. After reviewing 176,000 surveys performed through Physician Research Consultants, a significant decrease in patients' willingness to recommend the service to family and friends was found between those rating their experience as "excellent" versus "very good" (86% vs 23%). Many health care systems have targeted improved patient education through the use of various educational tools. Emmi Solutions report improved satisfaction and decreased consultation time by better preparing patients for consultation. Traditional consultations are filled with opportunities for omission of information, either from the patients' failure to remember the details of the discussion or the physician's failure to present all the necessary information in a way that a lay person can understand. Although patient education does improve patient knowledge, it may not always lead to improved patient satisfaction.[2–5]

EmmiEngage (EE), a web-based, interactive educational program designed to prepare patients for consultation, supports the clinical conversations with easy-to-understand audiovisual aids that involve the patient in the learning process. These procedure-specific modules can be completed and repeated as often as a patient desires through an online interface. The structure of these modules covers basic anatomy, expectations, preoperative and postoperative considerations, overview of the procedure, common risks and benefits, as well as alternatives to the procedure. The modules take approximately 20 to 30 minutes to complete. EmmiEngage allows patients to stop the module at any time to take notes within the program and print these for their consultation.

In an article published by Emmi Solutions, survey data comparing patients who used EE were found to have greater satisfaction and decreased consult times.[6] The Division of Plastic Surgery at UC Davis Medical Center has been using EE since May 2012. We hypothesize that patient use of EE before consultation will lead to greater patient satisfaction with their consultation and decreased consultation times. We review our early experience with this patient education tool.

METHODS

Study Design

After formal Institutional Review Board review and approval of our study protocol, the records of new patient consults, were retrospectively reviewed.

Participants

Between May 2012 and August 2013, patients seen at our aesthetics clinic were offered EE for any consult covered in their available modules: abdominoplasty, blepharoplasty, breast augmentation, breast reduction, facelift, liposuction, rhinoplasty, and breast reconstruction. The EE modules are available to patients through an online link and can be accessed and completed at times most convenient and comfortable for patients.

Exposure

Those who received EE before consultation were the intervention group, and those who did not were the control group. Viewing of EE was confirmed through records obtained from Emmi Solutions.

Outcome Measures

Patient satisfaction was determined using a standard Likert scale survey completed at the end of their consultation. A score of 1 was excellent, 2 was very good, 3 was good, 4 was fair, and 5 was poor. Consultation times were calculated from the time interval between when vitals were electronically charted to when the After Visit Summaries were printed. Conversion to surgery was determined through the EMR looking for patients seen for follow-up postoperative visits.

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From the *Division of Plastic Surgery, UC Davis Medical Center, Sacramento; and †Division of Biostatistics, Department of Public Sciences, University of California, Davis, CA.
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Reprints: David Boudreault, MD, 2221 Stockton Blvd, Room 2125 Sacramento, CA 95817. E-mail: David.boudreault@ucdmc.ucdavis.edu.
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Statistical Analysis

Satisfaction and consultation time data were analyzed using a 2-sided Wilcoxon rank-sum test. When comparing the 2 groups with regard to ultimately undergoing surgery, a 2-sided Fisher exact test was used. All analyses were done with Statistical Analysis Software version 9.2 (SAS Inc., Cary, NC). A P value less than 0.05 was considered statistically significant.

RESULTS

Between May 2012 and August 2013, 767 new patient consultations were completed by 4 plastic surgeons at the UC Davis Medical Center Plastic Surgery Center. Our surgeon performing satisfaction surveys produced one hundred thirty-nine surveys completed after their consultation, of which 37 had completed EE before their visit. The average satisfaction score ± SD in the EE group was 1.13 ± 0.44 compared to 1.36 ± 0.74 in the control group ($P = 0.02$) (Table 1).

Of the 767 patients seen in clinic, 368 patients had proxy times available for review. Of those, 54 had completed EE before their consultation. The EE group had an average consultation time of 54 ± 26 minutes and the control group 50 ± 35 minutes ($P = 0.10$). Information regarding conversion was available for 687 consultations, of which 262 converted to surgery, with 44% of the EE group and 37% in the control group ($P = 0.16$) (Table 1). When stratifying the EE group based on patient satisfaction score, it can be seen that 89% of the intervention group rated their consultation as excellent, compared with 76% in the control ($P = 0.02$) (Table 2).

DISCUSSION

With continued financial pressure on our health care system, it is necessary to evaluate the effectiveness of our interventions. Additionally, since the release of Hospital Consumer Assessment of Healthcare Providers Survey, the public can see hospitals' patient satisfaction ratings. In a report by Grote and Newman,[1] the number 1 influential factor in choosing a provider or hospital is patient experience. He further pointed out that 77% of patients would be willing to switch to a hospital where they felt better informed before and after their procedure. The next most significant factor affecting patient experience was having their appointment be on time.[1] Emmi Solutions reports that using EE will increase patient satisfaction and decrease consultation time.[6]

Patient satisfaction is a subjective measure influenced by many variables of a patient's experience. It is a blend of cognitive and emotional experience, which may or may not be modifiable. These factors are referred to as "constructs," and their relationship is complex.[7,8] Regardless, satisfaction is an important metric to target and directly affects a hospital's bottom line. Patients may perceive the quality of their care based on their interaction with the staff, their environment, continuity of care, communication with their physicians, and wait times, as well as many nonmodifiable factors, such as socioeconomic status, race, and sex.[9] It would be impossible to take into account all the variables which affect patient satisfaction; however, during our study period, the only change instituted was EE.

TABLE 1. Results

	EE	Control	*P*	Patients
Patients	114	653	n/a	767
Average satisfaction score	1.13	1.36	0.02	139
Average consultation time, min	54	50	0.10	422
Conversion, %	44	37	0.16	687

TABLE 2. Score Subgroup Analysis

	Emmi (%)	No Emmi (%)
1—Excellent	33 (89)*	78 (76)
2—Very good	2 (5)	11 (16)
3—Good	1 (3)	4 (7)
4—Fair	0	1 (1)
5—Poor	1 (3)	0

*$P < 0.05$ when comparing excellent vs not excellent.

In our retrospective review, we found that those patients who had completed EE before their consultation had greater satisfaction. When looking closer at the scoring, we found a trend toward increased excellence, with 13% more EE-viewing patients rating their experience as excellent compared to those patients who did not view EE before their consultation. Patient satisfaction is subjective, and many factors weigh into the patient's overall experience. Within our institution, 4 plastic surgeons use the same staff and perform their consultations in the same facility. Individual consultations are subject to each practitioner's style. As only one of our plastic surgeons solicited satisfaction feedback, these results are reflective of 1 plastic surgeon's experience. For this reason, the change in satisfaction scores reflects the effect of introducing EE to his consultation.

Although the results of this study come from satisfaction surveys used by 1 of 4 plastic surgeons, UC Davis Medical Center uses an independent agency to perform satisfaction surveys. Their surveys are random and insufficient in number to use their data for analysis. This agency reviewed nearly 180,000 patient surveys and found that a rating of excellent and very good had dramatic differences in a patient's willingness to recommend a physician, hospital, or service. Those patients who rated their experience as excellent were 87% likely to recommend the associated service to their friends and family, whereas those who rated very good were only 23% likely.[10] This finding emphasizes the importance of striving for "excellent" ratings by our patients. It also reminds that "very good" ratings are not good enough to promote word-of-mouth advertising, which can have profound implications on a hospital's reputation and ultimate profitability.

This retrospective review of our early experience with use of EE revealed a 13% increase in satisfaction scores of "excellent," as well as a statistically significant increase in overall satisfaction. There was no statistical difference in consultation time or conversion to surgery due to several limitations of our study. These limitations include retrospective study design, unmatched groups, comparing 4 surgeons with varying practices, small sample size, insufficient or missing data, patient compliance, and satisfaction surveys collected by only 1 physician.

With regard to consultation time, we did not reach statistical significance. The data might suggest that patients in the EE group require more time for consultation. Aside from the same limitations noted with the satisfaction data, these data should be interpreted cautiously because no direct measurement for consultation time was obtained. By using a proxy for consultation, additional time outside of the direct consultation time could not be verified. These include: time waiting for the physician to start the consultation, changing in and out of an examination robe, and administrative timing of after visit summary printing. There is no system in place to ensure consultation times are recorded for each surgeon, so further studies are likely to be limited by the same proxy time. Overall, our administrative staff is better educated about printing the after visit summary, helping improve data collection in the future.

In our early experience with EE, we found patients had higher levels of satisfaction. Although longer consultation times and higher rates of conversion to surgery were seen with those who viewed EE

before consultation, these differences did not reach a level of statistical significance. Because of the limitations of this trial, a prospective randomized control trial has been devised and powered to reach statistical significance and address the shortcomings and biases noted above. This study will target 4 clinical endpoints: (1) patient satisfaction, (2) consultation time, (3) litigious behavior, and (4) conversion to surgery.

REFERENCES

1. Grote KD, Newman J. A better hospital experience. *The McKinsey …*. 2007.
2. Disseminaton NCFRA. Centre for Reviews and Dissemination. 2014:1–4.
3. Kupke J, Wicht MJ, Stützer H, et al. Does the se of a visualised decision board by undergraduate students during shared decision-making enhance patients' knowledge and satisfaction?—a randomised controlled trial. *Eur J Dent Educ*. 2013;17:19–25.
4. Crabtree TD, Puri V, Bell JM, et al. Outcomes and perception of lung surgery with implementation of a patient video education module: a prospective cohort study. *J Am Coll Surg*. 2012;214:816–821.
5. Pager CK. Randomised controlled trial of preoperative information to improve satisfaction with cataract surgery. *Br J Ophthalmol*. 2005;89:10–13.
6. *The Value of an Engaged Patient*. 2009:1–8.
7. Williams B. Patient satisfaction: a valid concept? *Soc Sci Med*. 1994.
8. Urden LD. Patient satisfaction measurement: current issues and implications. *Lippincotts Case Manag*. 2002;7:194–200.
9. Shirley ED, Sanders JO. Patient satisfaction: Implications and predictors of success. *J Bone Joint Surg Am*. 2013;95:e69.
10. Huff C. How "wowed" are your patients. *Hosp Health Netw*. 2007;81:53–54.