Implementing Electronic Patient-Reported Outcome Measures in Outpatient Cosmetic Surgery Clinics: An Exploratory Qualitative Study

Manraj Kaur, PT, MSc (Rehab); Andrea Pusic, MD, MPH; Chris Gibbons, PhD; and Anne F. Klassen, DPhil

Abstract

Background: Patient-reported outcome measure (PROM) data are increasingly being collected over the internet or on a smart device by means of electronic versions (e-PROMs). Limited evidence exists about factors influencing e-PROM implementation in outpatient clinics.

Objectives: The authors sought to identify barriers to collection of PRO data from different locations (home or cosmetic surgery office) by means of different modes (paper vs e-PROM) from the perspective of patients, plastic surgeons, and clinic administrative staff; and to explore patient preferences for the design of e-PROM platforms.

Methods: Semistructured interviews were conducted with 11 patients, 3 cosmetic surgeons, and administrative staff. Patients were shown 1 of the 3 PROMs (ie, the BODY-Q Satisfaction with Body scale, BREAST-Q Augmentation Module Satisfaction with Breast scale, or FACE-Q Satisfaction with Facial Appearance scale). The formats included paper and electronic (REDCap and TickiT) on a tablet and laptop computer. The interviews were audio-recorded and transcribed verbatim. Qualitative descriptive analysis was conducted.

Results: Patients and providers preferred electronic over paper format. The flexibility of the hardware, data entry point (remote location vs point-of-care), and the privacy of the data were the most recurring themes from the patient’s perspective. The objective of collecting PROM data, role in peer-benchmarking, and return on investment were key to surgeons and administrative staff.

Conclusions: The e-PROMs were well accepted in the community setting by the patients and plastic surgeons alike. The design and interface features of e-PROMs were explored in this study, which may be useful for future, mixed method studies evaluating the implementation of e-PROMs.

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The US Food and Drug Association defines patient-reported outcome (PRO) as any report of the status of a patient’s health condition that comes directly from the patient without interpretation of the patient’s response by a clinician or anyone else. A PRO measure (PROM) is a means to capture PRO data to measure the effect of treatment intervention on health-related concepts (ie, symptom[s], function, psychosocial). A PROM is recommended when measuring a concept best known by the patient or best measured from the patient perspective. The use of PROMs in clinical care was found to be positively associated with clinical effectiveness, treatment adherence, and safety and is crucial to shared treatment decision making.
care improved symptom control and increased discussion of patient outcomes, use of supportive care measures, and satisfaction with care. A randomized controlled trial of 766 advanced cancer patients showed that web-based collection of PROM data with automated alerts led to fewer emergency visits and improved survival.

PRO data collected from patients can serve multiple purposes, including clinical care, comparative effectiveness research, quality assessment and improvement, accountability measures, pay for performance, population indices, and public health solutions. To guide implementation of PROMs into clinical practice, the International Society for Quality of Life Research produced a User’s Guide covering 9 topics to help clinicians interested in utilizing PROMs in clinical practice (eg, need for resources, key barriers, selection of tools, administration, and scoring and interpretation of results).

For people who receive cosmetic surgery and minimally invasive cosmetic procedures, PROs may include pain, satisfaction with appearance, body image, and psychosocial and sexual well-being. PROs have been employed in aesthetic surgery for decades. However, the PROM movement is recent. Aesthetic surgery-specific PROMs, for example, BREAST-Q for breast cancer and reconstructive surgery, FACE-Q for facial cosmetic procedures, BODY-Q for bariatric and body contouring, and SCAR-Q for scars (burns, traumatic, and surgical) represent the most recent advances in capturing patient experience to inform decision making. There has been a steady increase in the use of PROMs to assess patient satisfaction with treatment outcomes, health-related quality of life, and the process of care. Traditionally, PROs are collected during the routine clinical visit by means of paper-based methods. This approach, however, is often costly and inefficient. The paper-based method interferes with the clinical workflow and has costs associated with data entry, analysis, and interpretation, resulting in suboptimal allocation of clinic resources. The dissemination and integration of PROM results into practice is often delayed, resulting in missed opportunities during the clinic visit.

Today, advancements in technology mean that PRO data can be collected via the internet or on a smart device by means of electronic versions (e-PROMs) that can provide immediate scoring and display results employing clinically useful graphics. The advantages of e-PROMs may not materialize if the clinic staff and patients receive suboptimal training or if measurement error is introduced by poor implementation of an e-PROM. Some limited evidence exists about factors influencing e-PROM implementation and preference of patients and healthcare professionals regarding collection of PROM data by means of paper or e-PROMs in outpatient clinics. However, the topic has been rarely explored in the context of cosmetic surgery. Hence, the objectives of our study were to (1) identify barriers to the collection of PRO data from different locations (home or cosmetic surgery office) and employing different modes (paper and pencil vs e-PROM platforms) from the perspective of patients, surgeons, and clinic administrative staff; (2) explore patient preferences for the design of e-PROM platforms; and (3) explore the perceived role of PROMs in patient care from the viewpoint of patients, surgeons, and clinic administrative staff.

METHODS

Plastic surgeons at 3 cosmetic surgery clinics located in Ontario, Canada were invited to participate in the study. All 3 surgeons were practice owners, late career or near retirement, and had not implemented electronic health records in practice. The administrative staff at the clinic were asked to identify and recruit a sample of patients who varied by age, gender, ethnicity, procedure type (ie, body contouring, breast augmentation, or facial aesthetic procedure), and treatment phase (ie, pretreatment or posttreatment). The staff was instructed to include patients aged 18 years or older who were fluent in English and had no cognitive impairment. Patients who agreed to participate were given the option of coming to the clinic specifically for the interview or to have the interview scheduled during the next appointment. Once the interview was scheduled, the interviewer was informed and met with the patient at the clinic to obtain informed consent and conduct the interview. The interviews were conducted between October 2016 and June 2017. The study was approved by the Hamilton Integrated Research Ethics Board, Hamilton, Ontario.

For this study, patients were shown 3 formats of a PROM scale relevant to the patient’s procedure: the 10-item BODY-Q Satisfaction with Body scale, the 16-item BREAST-Q Augmentation Module Satisfaction with Breast scale, or the 10-item FACE-Q Satisfaction with Facial Appearance scale. These scales measure satisfaction with appearance by means of 4 response options: “very dissatisfied,” “somewhat dissatisfied,” “somewhat satisfied” or “very satisfied.” Formats included a paper version and 2 different e-PROM options: (1) REDCap, a nonprofit web application employed by thousands of institutions in more than 100 countries; the design of the REDCap interface for this study was dual tone and listed all questions on one page; and (2) TickiT, a Canadian-based for-profit e-PROM company. The TickiT platform had flexible design options and included one question per electronic screen. The participants were shown TickiT interfaces that varied regarding response options type (emoticons and checkered boxes or circles) and color. To show high and low satisfaction, the checkered boxes were filled in and the emoticons varied from sad to happy face (Supplemental Figure 1). The paper version of the instruments was dual
tone (black and white) and showed all questions on one page. The tablet computer employed in this study was the iPad Air 2 (Apple Inc., Cupertino, CA) and the laptop was a 13-inch MacBook Air (2013) (Apple Inc.).

Semi-structured interviews were conducted with patients, surgeons, and administrative staff to seek feedback on the 3 formats and the feasibility and acceptability of implementing PROMs into routine clinical care. In addition, patients were asked to elaborate on preferences for the interface design (color, response options, questions per page, font size, completion bar) and hardware options (paper vs iPad vs laptop), the logistics for data collection (eg, at the clinic or home, data security, privacy), and use of the data to inform clinical care. Member checking was completed during the interview process. The patients were provided with a gift card equivalent to CAD 50.

All interviews were audiotaped and transcribed verbatim and the identifying information removed. All the transcripts were independently coded by the first author. The transcripts were read multiple times in detail and key words, and key concepts from the text were noted, resulting in preliminary categories (ie, codes). The preliminary categories were organized in a Microsoft Excel spreadsheet and refined utilizing constant comparison within and across participants, resulting in overarching themes. Throughout the analysis, analytic rigor was enhanced by discussions between the first and the senior author (A.K.) in which the analytic procedures, preliminary findings, and interpretations were reviewed. Because data analysis and collection occurred concurrently, there was flexibility to modify or deviate from the interview guide as themes reached saturation (ie, no new information was elicited). The study endpoint was the last interview conducted.

RESULTS

Patients

Eleven patients (6 females, 5 males) ranging from 18 to 83 years (mean, 43 years) were interviewed for the study. The education level varied from high school (n = 2) to undergraduate (n = 5) and graduate degree (n = 4). Four patients completed the BODY-Q, and 3 and 4 participants completed the FACE-Q and BREAST-Q, respectively. All participants owned either a portable (laptop or tablet) or desktop computer or smartphone, or a combination of the 3, and were comfortable accessing the internet and checking electronic mail (e-mail).

The participants preferred completing the PROM on an electronic platform (portable [laptop, tablet, or smartphone] or desktop computer) as opposed to paper. Five major themes characterized the acceptability and relevance of routine collection of PRO data from the participant’s perspective, namely hardware and interface design, privacy, data entry point, reminders, and use of data in clinical practice. Selected verbatim quotes are included to illustrate these themes.

Hardware and Interface Design

Between the 2 e-PROM options, 5 participants preferred TickiT and 6 preferred Redcap. Regarding interface, 8 participants preferred the multiple question format employed in REDCap because participants could see the entire scale and know how much work was involved. The TickiT platform differed by administering one question at a time utilizing a slider at the bottom. Although participants did not find the TickiT approach tedious, they acknowledged that if the survey was long, clicking “next” after each question might be burdensome.

The ability to modify the font size was important to participants as was the ability to reorient the screen of the tablet or smartphone from landscape to profile view. These features were available in REDCap. The 2-toned interface employed to design the REDCap version was thought to add scientific credibility to the platform because participants indicated that the interface looked professional and appropriate for clinical purposes “akin to the preoperative assessment forms.” Five participants found the emoticons and colorful interface of TickiT distracting and compared the interface to that of completing surveys for travel or restaurants.

“...You know the other one (smiley faces - TickiT) is fine for how your flight was. Did you like it? But going into a doctor’s office, you think it should be serious. And this (REDCap) is a little bit more clinical...”

Generally, participants found emoticons to be reflective of the response options but reported that the emoticons did not replace reading the text of the response options located under the emoticons (ie, “very satisfied”). Nine participants found the multiple colors and checkered boxes or circle options on the TickiT platform confusing.

“...I find these (square or circles) harder to read than something like that (emoticons). This, the circles, these in my mind do not line up with... I am empty, or I am full over here. That does not make a lot of sense to me. Same with this one. These squares I find really confusing...”

A feature that 8 participants liked in the TickiT platform was the slider bar because it indicated exactly how many pages or questions were left. This feature is not available in REDCap, which instead shows the number of pages that need to be or have been completed.

“...I do not like seeing how many more pages I have. It is just like oh, I have five more pages to go. Or it is like here (completion bar- TickiT) it is like, I am almost there...”
The ability to either download or bookmark the link to the PROM software on an electronic device(s) was important to patients and was available in both REDCap and Tickit. Bookmarking the website link to the e-PROM made it easy to access, save, and return to later.

**Privacy**

Privacy of data was the most important and recurring concern. Most participants noted that it was the responsibility of the healthcare provider to ensure that the data were protected on a secure, fire-walled, password-protected server. All participants expected to see a disclaimer at the beginning of the survey indicating why the data were being collected and who would have access to the data. The concerns regarding access to personal and health data by a third party (eg, employers, insurance companies) were especially heightened for participants who choose to conceal personal health information for privacy purposes.

“…I would want to know who had access to it (PROM data) and what it was being used for. Like I would want to know those things before I decided whether I was going to complete it. And I think like I would only want the surgeon and key staff in his office to have access to it, and I think it should only be used for improving your surgical care, like your results…”

“…For me, my legal name is different than my preferred name. Also, if my insurance is paying for the surgery, will the data be shared with them? I would like to know, if the surgery would be covered less, I mean by 50% less, depending on what I write in the survey…”

If sensitive personal information was included as part of the survey (health card number, name, address, etc.), participants preferred additional security features (password, self-generated security questions, or touch identification). All participants felt that the possibility of a potential privacy breach (ie, misplaced files or inappropriate access) and human error (misinterpretation, misfiled paperwork) was higher with paper compared with the electronic method. However, 8 patients reasoned that electronic data are equally vulnerable to malware virus(es), hackers, system crash, or power outage. When specifically asked about the privacy risks associated with their own devices, such as loss of the device, saved passwords, or data, none of the participants expressed concerns.

**Data Entry Location**

For data entry location, 7 participants preferred home to point of care (ie, clinic) for a variety of reasons. Utilizing the computer at the clinic was susceptible to infection or hygiene risks and unprofessional behavior by other patients (eg, access to inappropriate content or accidentally accessing data from the previous user). Further, participants saw completing e-PROM at home as an opportunity to reflect on the questions without time constraints. Some of the barriers to completing e-PROM at the clinic included spending additional time at the clinic, parking costs, disrupting the clinic’s schedule, and feeling rushed to complete the e-PROM.

“…Yeah, I think I would do it at home. I think because of the convenience factor. I could do it anytime I want. When completing at the clinic, for example, will my doctor be present when I’m doing this? So again, not that I would skim over it, but my responses might be a little bit more positive or negative depending on how emotionally charged I am. Because there’s always going to be some sort of emotional connotation with these kinds of questions. So, I think at home you’re more likely to be your true self…”

**Reminders**

Participants preferred electronic reminders (text message followed by email), preferably at least 2 reminders to ensure optimal compliance. The participants were more likely to complete the e-PROMs at home if reminders were sent early to late evening.

**Use of Data in Clinical Practice**

All participants described the specific ways in which the routine use of e-PROMs could enhance interactions with the surgeons (communication and influence). Participants reported that completing e-PROMs before clinic visits would help prepare for the visit by identifying meaningful and important appearance or HRQOL issues. Also, participants hypothesized that completing PROM scales about psychosocial quality of life may help in verbalizing feelings, resulting in increased access to additional resources. All participants noted that concerns such as pain, complications, and satisfaction with outcome were mentioned during clinic appointments by the surgeon or by participants without the use of PROMs. As such, completing a PROM was perceived as a tool that could enrich visits but not entirely replace patients’ interactions with the surgeons.

**Surgeons and Administrative Staff Perspective**

The themes that emerged from the surgeon and office staff related to issues and strategies to address routine collection of PROMs in clinical practice from the surgeons and administrative staff’s point of view included: (1) objective(s) of
collecting PROM data, (2) peer-benchmarking, (3) return on investment, and (4) concerns unique to private practice cosmetic clinics.

**Objective**

The choice of data collection method (paper or electronic PROM) for the surgeons was dependent on the objective(s) for PROM data collection. For research or specific practice-related questions, the cosmetic surgeons unanimously preferred REDCap because it is easy to design the survey, collects data anonymously, and provides the ability to conduct unlimited surveys. Further, the REDCap license provides access and use of the REDCap software at no charge to not-for-profit (including government and military) institutions, noncommercial entities, and organizations who aid in the advancement of clinical and translational healthcare research. Healthcare professionals who are affiliated with a university may be able to access cloud data storage space for REDCap at a nominal fee. The flexibility of accessing REDCap via desktop or tablet computers and smartphones (Windows/Macintosh/Unix/Linux) from a variety of browsers without the need to download additional software and the ability to export data to Excel or SPSS for analysis were cited as the key advantages of the REDCap platform. The surgeons found the TickiT platform to be visually appealing, suitable for patients of all age groups, easy to use, and hence, ideal for routine use. However, TickiT could not export data at the time of the study and has upfront and ongoing costs associated with the software (ie, e-PROM customization costs, subscription costs). The surgeons were also concerned regarding the ownership and privacy of the data when utilizing the TickiT platform.

**Peer-Benchmarking**

In addition to “specific” research, clinical, or quality improvement initiatives, the surgeons recognized the value of a routine collection of PROMs in clinical practice regarding benchmarking of outcomes against other plastic surgeons.

“…I will tell you there’s one possibility is that you find out you’re not as good as you think you are. And you’re getting worse outcomes. I suppose we might prefer calling it the “ostrich approach.” I do not want to know, because maybe I am not as good as I think I am. Ideally, if we learned that we are not as good as we think we are, then we would respond by trying to improve our results. Until we have this [PROs in practice] like if I have no quality improvement analysis at all, I am not going to know how my outcomes are. So, I must admit I am working in a void right now. It would, of course, it would be useful…”

The surgeons also identified lack of knowledge about identifying an appropriate, validated PROM for a clinical condition, scoring, and interpretation of the data. The surgeons identified gaps in understanding how to collect and analyze data in a methodologically rigorous manner, that is, eliminating nonrandom biases (eg, higher compliance rates in patients who are extremely satisfied or dissatisfied akin to public forums such as ratemds.com).

**Return on Investment**

All 3 cosmetic surgeons in this study were practice owners and hence responsible for employee salaries and clinic operational costs. The surgeons agreed that routine use of PROMs in practice could result in better outcomes and higher patient satisfaction and therefore in a high patient turnover, making it a worthwhile investment. For successful implementation of a routine collection of PROMs, the surgeons identified a need for organizational change consisting of additional staff hours, role-specific training for clinic staff (administrative, nursing, residents/fellows), revised clinic logistics, and infrastructure.

“…We are past the stage of high engagement with the electronic stuff that younger people will have. But I am sort of also looking at there’s extra time on me, there’s extra money and at the end, have we improved outcomes? I know there’s a noble drive for it, for any given patient to give them the best outcome they can have. That sort of more along an ethical call for us. But in practice, that’s against the realities of trying to churn people through your office, because there’s a lot of work to be done…”

The paper method was associated with storage costs, and the e-PROM method was associated with set-up and hardware cost. The administrative costs (collect, track, enter, and analyze the data) were common across both the methods. The cost of hardware was not considered significant. Financial support extended to cover the cost of the e-PROM platform by the Ministry of Health was proposed as a facilitator. Further, in case of practices that are co-owned by more than one surgeon, co-sharing of costs was identified as a means by which the financial burden could be reduced.

The surgeons felt that adding PROMs did not entirely replace interactions with patients. However, it targeted the consultations to patient concerns and helped track patient outcomes over time.

**Cosmetic Clinic Specific Issues**

The surgeons and administrative staff identified concerns that were unique to cosmetic surgery outpatient clinics. Most patients who attend outpatient cosmetic surgery
clinics either pay out-of-pocket or have third-party insurance. This may result in attitudes that hinder compliance with the e-PROMs. Patients who pay out-of-pocket for procedures are under no obligation to provide official names or contact information and may feel less obligated to participate in research or quality improvement initiatives. A substantial number of patients who attend outpatient cosmetic clinics for consultations are “shopping around,” and not all the patients who undergo cosmetic surgery return for follow-up, which could result in biased data. The surgeons expressed the concern that being involved in the academic or questioning field may be perceived by patients as the surgeon being less busy or skilled compared with counterparts, negatively impacting the clinic turnover.

“…Patients won’t necessarily understand the value of gaining information in any environment, because of cosmetic surgery, just like everything else we should be following their outcomes... A lot of cosmetic patients, I know, however, think well don’t learn on me. So, they kind of feel like they are paying you money and they do not have to be involved in the unpleasant academic or questioning field...”

Additionally, the amalgamation of electronic and paper-based records into a single platform is difficult for cosmetic surgeons because sketches and photographs are an integral part of the practice. Electronic health record systems for cosmetic surgeons can be quite sophisticated and hence, expensive. Lastly, outpatient cosmetic surgeons may focus on a few procedures or specialized techniques, resulting in a large prospective database of procedures with established expertise and vice versa. This may result in the objective assessment of clinical outcomes from a patient perspective in a large cohort of patients while limiting new knowledge on procedures that are performed infrequently.

**DISCUSSION**

Our study explored issues associated with e-PROM implementation in outpatient cosmetic surgery clinics, a topic seldom discussed in the literature. Cosmetic surgeons planning to implement e-PROMs in their practice may find these results helpful when selecting the interface of the e-PROM and identifying areas where patients and the clinic staff may require training and support.

Both patients and providers preferred an electronic platform over the paper. The flexibility of the hardware and data entry point (remote location vs point-of-care) and the security of the data were important to patients. Patients and healthcare providers preferred the REDCap platform due to the simplicity of design and response options, provision to anonymize the data, and low cost of implementation. Higher costs (staff hours, server space, software and hardware, and maintenance) and increased time with the patients in an already strained environment were the most common barriers to implementing e-PROMs from the surgeon’s point of view. The preference of patients and providers for electronic methods over paper has been documented previously in the literature. A review of randomized controlled trials comparing the effectiveness of hand-held computers with a paper method for data collection in clinical research found that patients preferred handheld devices, resulting in improved adherence to data collection protocols for long-term studies.

Our study assessed the preference of the interface design from the patient’s perspective. The patients in our study preferred multiple questions per page, the presence of a completion bar, and minimalistic design (large black font against a light background and no distracting graphics). The emoticons, although shown to be effective in adolescents and young adults, were perceived as not scientific by our study population (predominantly middle-aged or older adults). This finding suggests the significance of customizing e-PROM interface design for the intended population. Diverse patient groups may vary on comfort level and expertise with technology, necessitating an adaptive interface design. Another caveat of e-PROMs that was not a focus of this study is the measurement equivalence between the paper and e-PROMs. Measurement equivalence in our study would be a function of the comparability of the psychometric properties of the data obtained via the original (ie, paper-based method) and adapted (ie, e-PROM) methods. This comparability is driven by the amount of modification required to the content and format of the original paper PROM. The BREAST-Q, BODY-Q, and FACE-Q were originally developed for paper-based administration. However, the BREAST-Q and BODY-Q have been validated for electronic format. Cosmetic surgeons who wish to implement e-PROMs in clinical practice should consider conducting a psychometric evaluation of paper vs e-PROM before implementation. The security concerns and the flexibility of hardware and data entry point have been previously substantiated in the literature.

The cosmetic surgeons in our study noted value in the routine collection of PROMs regarding patient satisfaction and hence, an increased patient recruitment in line with the literature. Recent studies have shown that routine collection of PROMs is associated with increased frequency of patients discussing outcomes during the consultation, improved symptom control, and increased supportive care measures and patient satisfaction. In cosmetic surgery, validated and reliable PROMs allow the surgeon to assess the patient’s expectations (regarding recovery and satisfaction with the outcome) preoperatively and screen patients with psychological issues. A review of the cosmetic surgery literature by Sawyer at al showed that...
5% to 15% of patients who seek cosmetic surgery suffer from body dysmorphic disorder (BDD). Patients with BDD typically request multiple procedures to improve slight or imagined defects and report high levels of dissatisfaction postoperatively, both of which are associated with varying levels of psychological distress. For some patients, this may result in self-injurious behaviors such as “do-it-yourself” cosmetic procedures or seeking treatments at unregulated and unlicensed clinics. For cosmetic surgeons, providing or refusing treatment to a patient with BDD has resulted in lawsuits or patients becoming violent. In patients with suspected BDD, assessment of patient motivations and expectations is recommended in addition to psychiatric status and body image concerns.

The BODY-Q and FACE-Q expectations and satisfaction with appearance modules have been utilized to identify patients with appearance-related psychological distress who would benefit from counselling or referral to a mental health professional. Kappos et al employed FACE-Q in the largest reported series of facelift patients and concluded that employing valid and reliable PROMs allowed clinicians to validate clinical outcomes from the patient’s perspectives and allows an open-ended and 2-way discussion regarding recovery and outcome expectations based on patient data rather than anecdotal evidence. Similarly, BREAST-Q has been employed to assess satisfaction with appearance in immediate and delayed breast reconstruction utilizing implant or autologous tissue, augmentation, and breast reduction patients. A review of literature from 2009 to 2015 of 214 articles employing BREAST-Q highlighted how BREAST-Q has been employed in research, treatment decision making, managing patient expectations, patient education, and policy decisions. Another recent systematic review of the literature from 2009 to 2018 of 54 peer-reviewed articles concluded that BREAST-Q effectively captured meaningful and reliable information from the patient’s point of view and measured satisfaction and HRQOL in patients undergoing breast oncplastic surgeries. The United States Food and Drug Administration recently endorsed the use of PROMs to measure the effectiveness of aesthetic procedures, focusing on modular PROMs such as the BREAST-Q and FACE-Q.

Our study is not without limitations. The results of this study have limited generalizability because 3 late-career cosmetic surgeons with paper-based offices were interviewed. The early- and mid-career cosmetic surgeons may be more attuned to implementing electronic data collection for clinical purposes. Further, our study explored patient and clinician attitudes before implementation. The issues during the implementation and postimplementation may be different. Due to the exploratory nature of the study, the sample of cosmetic surgeons interviewed was small.

Further, data triangulation was not possible due to the limitations of the clinic concerning e-PROM implementation and hence, this study is hypothesis generating. Lastly, there is “no one size fits all” when it comes to e-PROM interface and design. There are an increasing number of electronic platforms in addition to TickIT, which may be more flexible in terms of design and data export features. Our study population consisted of tech-savvy adults with access to wireless electronic devices. The results may not translate to older adults or patients in developing countries with limited access to technology.

CONCLUSIONS

Our study provides important insights into the e-PROM interface design and patient and provider attitudes that may influence the uptake of e-PROMs in cosmetic practices. This information is useful to e-PROM platform developers and cosmetic surgeons. Prospective, mixed methods studies are required to assess barriers and facilitators to implementation of e-PROMs in both paper-based clinics and integrating e-PROMs into existing electronic health records and their impact on patient care in cosmetic clinics.

Supplementary Material

This article contains supplementary material located online at www.aestheticsurgeryjournal.com.

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