The American Journal of Surgery (2015) 209, 101-106

The American Journal of Surgery®

Association for Surgical Education

A real-time mobile web-based module promotes bidirectional feedback and improves evaluations of the surgery clerkship

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KEYWORDS:
Surgical education;
Mobile;
Evaluations;
Medical students;
Mistreatment;
Reporting

Abstract

BACKGROUND: We implemented a real-time mobile web-based reporting module for students in our surgery clerkship and evaluated its effect on student satisfaction and perceived abuse.

METHODS: Third-year medical students in the surgery clerkship received surveys regarding intimidation, perceived abuse, satisfaction with clerkship resources, and interest in a surgical career. Survey data were analyzed to assess differences after implementing the mobile reporting system and to identify independent predictors of perceived abuse.

RESULTS: With the reporting module, students perceived less intimidation by residents ($P < .001$) and by faculty ($P = .008$), greater satisfaction reporting feedback ($P < .001$), and greater interest in surgical careers ($P = .003$). Perceived abuse decreased without reaching statistical significance ($P = .331$). High ratings of intimidation by faculty independently predicted perceived abuse (odds ratio = 1.3), and satisfaction with anonymous reporting was a negative predictor (odds ratio = .2).

CONCLUSIONS: A mobile web-based system for real-time reporting fosters open communication and bidirectional feedback and promotes greater satisfaction with the surgery clerkship and interest in a surgical career.

In the early 1990s, as many as 81% of US medical students reported mistreatment at some point in medical school, an experience associated with later cynicism and career regret.[1–3] Despite major efforts to improve student experiences,[4–6] recent surveys suggest that perceived mistreatment rates remain unabated.[7–9] The surgery clerkship is often considered the most common source of student mistreatment.[10–13]

Conduct policies and complaint management practices targeting medical student mistreatment commonly rely on end-of-clerkship student reports, which are often reviewed months following clerkship completion. In the absence of timely discourse, mistreatment concerns are not addressed in a manner considered meaningful and effective by students.[14] Also, reports provided by students at the end of an experience is subject to recall error, while timelier reports are more likely to produce a formative effect.[14]

Usage of mobile devices in the educational setting has increased rapidly in recent years.[15–17] Reports suggest that mobile software resources engineered for medical students have

The authors declare no conflicts of interest.

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Manuscript received May 15, 2014; revised manuscript July 21, 2014

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http://dx.doi.org/10.1016/j.amjsurg.2014.08.035

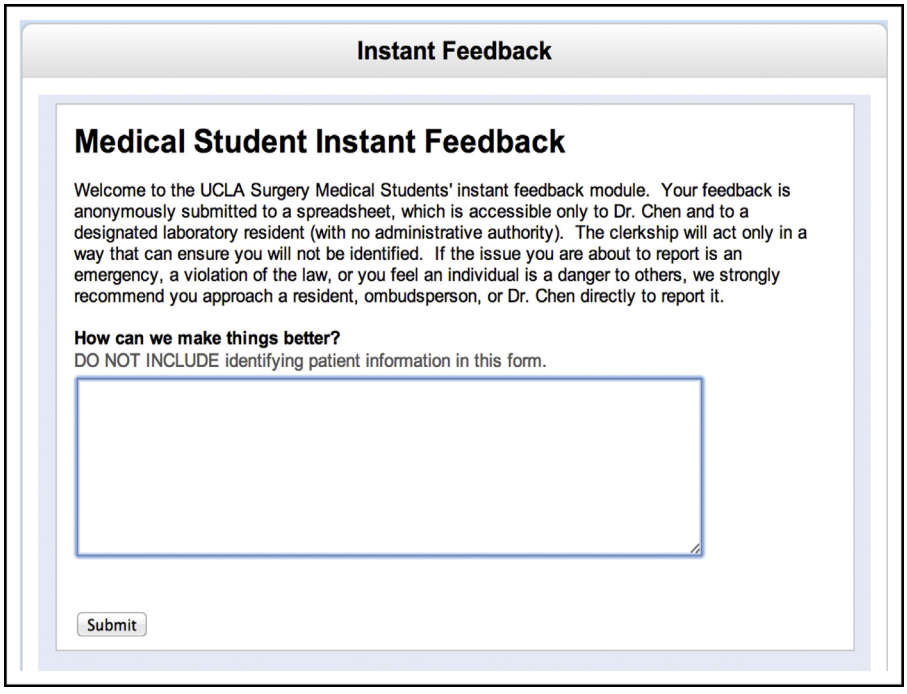

Figure 1 Screen capture of reporting module from a smartphone. (For interpretation of the references to color in this Figure, the reader is referred to the web version of this article.)

improved clinical performance and learning.[18–21] Recognizing the potential advantages of mobile technology, we created a real-time, anonymous, mobile reporting mechanism for students on the surgery clerkship. We hypothesized that the mobile system would stimulate bidirectional feedback, improve student satisfaction, and decrease perception of mistreatment.

Methods

This study was performed in a large academic medical center during four 12-week surgery clerkship blocks from January to December 2013. All third-year medical students rotating on the surgery clerkship during the study period (n = 187) were candidates for the reporting module (RM) study group, while 88 students who had completed the third-year surgery clerkship during the two 12-week blocks before the study period (July to December 2012) were candidates for the control group (CG). The learning environments of the 2 groups were identical in clinical rotation structure. Didactic lectures encouraging teaching practices among residents and faculty members were delivered during the autumn quarter of each academic year. All clinical and educational resources were available to both groups; however, only the study group received access to these resources and an anonymous RM via a dedicated mobile Web site. The study was approved by the University of California, Los Angeles Institutional Review Board.

Mobile Web site development

We created an educational mobile Web site designated for medical students rotating on the surgery clerkship with an embedded web-based RM using cloud computing. The RM form invited anonymous unrestricted text reports from students (Fig. 1). Form responses, including time and date, were compiled instantly within a secure cloud-based spreadsheet. We tracked RM usage via web-based site analytics. The Web site also incorporated links to educational resources, including video lectures and web-based clinical reference material.

Surveys

Using the same cloud-computing platform, we generated web-based surveys about the clerkship experience and embedded them within a separate section of the medical student mobile Web site. The 12-question surveys included 2 demographic questions; 2 questions assessing perceived intimidation, 1 by residents and 1 by faculty (formatted to 10-point scales); 2 questions assessing perceived quality of teaching, 1 by residents and 1 by faculty (formatted to 10-point scales); 1 question evaluating whether students felt they were ever abused; 1 question assessing student expectations about mistreatment in future clerkships; 3 questions assessing satisfaction with student-reported feedback resources (formatted to 5-point Likert scales); and 1 question assessing interest in a surgical career.

Study design

The timeline of the study period is shown in Fig. 2. In January 2013, we sent the end-of-clerkship survey (ES) described above via e-mail link to the 88 students who