Creation and Use of a Survey Instrument for Comparing Mobile Computing Devices

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ABSTRACT
Both personal digital assistants (PDAs) and tablet computers have emerged to facilitate data collection at the point of care. However, little research has been reported comparing these mobile computing devices in specific care settings. In this study we present an approach for comparing functionally identical applications on a Palm operating system-based PDA and a Windows-based tablet computer for point-of-care documentation of clinical observations by eye care professionals when caring for patients with diabetes. Eye-care professionals compared the devices through focus group sessions and through validated usability surveys. This poster describes the development and use of the survey instrument used for comparing mobile computing devices.

INTRODUCTION
To address the issue of which mobile device (PDA or tablet computer) is optimal for recording clinical observations at the point of care, we created fully-functional prototypes for documentation of eye care on a Palm operating system-based PDA and a Windows-based tablet computer. This poster describes a usability survey tool that was employed with practicing ophthalmologists and optometrists from both academic and community settings to compare mobile computing devices.

METHODS
Usability Surveys. We created surveys to assess the usability of each device by selecting context-relevant questions adapted from four validated survey instruments that had different areas of emphasis, including user interaction satisfaction,1 end user computing satisfaction,2 perceived usefulness,3 and doctors’ attitudes.4 Each response was based on a 5-point Likert scale.

RESULTS
Overall Reaction to Devices. Users’ overall reactions to the mobile devices were measured using items drawn from the Questionnaire on User Interface Satisfaction (QUIS)1 that were appropriate for our context. This section of the QUIS evaluated a user’s overall reaction to each device with anchors such as terrible versus wonderful and difficult versus easy.

User Interface Preference. Provider views on the user interface were also measured using questions adapted from the QUIS. Items on this portion of the QUIS addressed topics such as learning to navigate, organization of information, and ease of tasks.

Satisfaction with Information Management. User satisfaction with the information provided by the device was evaluated using the end user computing satisfaction scales2. These survey questions addressed provider satisfaction with content and information; accuracy of information; clarity of information; and provider satisfaction with the output of each device.

Impact on Work Patterns. We used the perceived usefulness scale3 to assess the systems’ impacts on the participants’ work patterns. These questions addressed impact on provider time, effect on provider workload, impact on services, impact on knowledge, impact on confidence in patient management and helpfulness to patients.

DISCUSSION
The generation of appropriate validated survey instruments is an important challenge in measurement of provider preference and satisfaction. We drew upon constructs from validated survey instruments, in order to create a survey tool that enabled us to compare mobile computing devices.

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REFERENCES