A Comprehensive Customizable Patient Reported Outcomes System for Opal

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Abstract

Patient Reported Outcomes (PROs) are used by researchers and clinicians to evaluate patient symptoms and improve treatment outcomes. When patients answer PRO questionnaires and have their answers acted upon, they experience a higher quality of life during and after their cancer treatment. Opal (opalmedapps.com), a patient-centered app for smartphones developed by the Opal Health Informatics Group at the MUHC, provides an excellent medium for implementing customizable PROs.

This research project involved the design and implementation of the front-end of a comprehensive PRO system for Opal, which supports many standard and novel features. A wide variety of question types and visualizations are provided, with each question's visualization carefully tailored to properly display on a mobile phone screen. A novel patient-oriented feature is the ability of patients to provide feedback on questions, and a star-rating system for questionnaires. This should aid in improving questions and questionnaires so that they are better accepted by patients. The overall system will provide a more patient-centered and customizable experience for patients.

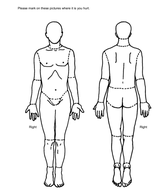
Summary of the Results

We have integrated the work of previous students on multiple choice, visualization option 1 of the slider type and standard checkbox questions. We have also designed and implemented visualization option 2 of the slider, the exact checkbox, the textbox question type as well as the feedback and star rating systems. In the Questionnaires User Interface section of this poster, we show examples of the views associated to the new functionalities and how they are connected to each other.

Finally, we also optimized the process of loading the questionnaires from the database. In the previous implementation, all the questionnaires were loaded at once each time the patient entered the questionnaires section of the app. We collaborated with two other students, Yuan Chen and Anton Gladyr, working respectively on the backend and the historical visualizations (summary tab) for the questionnaires, to break down the loading process into steps, therefore making the flow of the questionnaire part of the app more efficient.

Future Work

Future developments of the questionnaires system will include the implementation of new question types that match the styles of those found in paper-based questionnaires, such as for example a labelling question. It also remains to integrate conditional questionnaires, namely questionnaires where some of the questions may be filtered out or added in based on the patient's answers to the previous questions.



Paper-based labelling question

Mock-up for a labelling question type

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Questionnaires User Interface