QEESI - The Sensitivity Questionnaire For All

A User Experience Study of the QEESI

Under the direction of
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Stakeholder Meeting

The QEESI Team is looking for data on how to continue transitioning the QEESI into an online questionnaire that assists potential patients in the discovery, tracking, and treatment of chemical intolerances.

Research Goals

After building familiarity with the history and current status of the QEESI, our team decided to approach the research with three main themes in mind:

Language: Is the QEESI communicated effectively? Are there problems with the instructions or explanations included in the QEESI?

Efficiency: Is the QEESI formatted in a way that promotes the quick and accurate identification of chemical sensitivities?

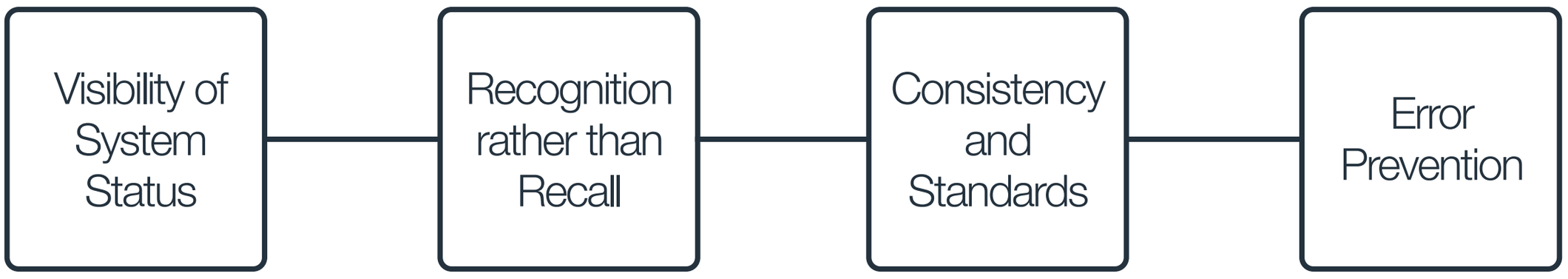
Standards: Is the QEESI adhering to the current standards set by other questionnaires? Is it secure, accessible, and responsive?

Research Approach

The QEESI is a validated questionnaire and as such has been proven effective in the assessment of patient sensitivities. Taking into account the two current online versions of the QEESI as well as the success of the paper form QEESI, our research team primarily on the experience of finding, completing, and interpreting the QEESI. This experience would guide the recommendations necessary to ensure anyone can successfully complete and pursue the proper treatment for their sensitivities. To evaluate the experience, the research team performed a Heuristic Evaluation, Competitive Analysis, and conducted User Interviews and Usability Testing.

Heuristic Evaluation

Two members of the research team conducted a lengthy Heuristic Evaluation to determine whether the current QEESI complies with the current usability standards. Four of the ten standard heuristics* (popularized by Jakob Nielsen) stood out during the evaluation.



*https://www.nngroup.com/articles/ten-usability-heuristics/

Visibility of System Status

The QEESI consists of 50 questions divided into 5 sections including Chemical Exposure, Other Exposure, Symptoms, Masking Index, and Impact of Sensitivities. However, there is very little visibility to their status within these sections while they are completing the QEESI as well as the reasoning behind the questions. Providing visibility to the user promotes communication and transparency. The importance of the system status is magnified by the effort required to complete the QEESI. The questions are often asked using medical terminology that most users are unfamiliar with. As they continue to progress through the questionnaire, the user can often feel as if the questions “mold” together due to their repetitive nature.

Recognition rather than Recall

The QEESI is formatted in an Instruction - Multiple Question format. Considering the high number of questions and the lack of context “below the fold,” the user is forced to reconfirm that they are correctly answering the questions by scrolling back up to the instructions repeatedly. To compensate for this, there needs be context that is visible to the user. This process should be repeated as the instructions in the different sections continue to change.

Consistency and Standards

Promoting consistency and standardization in a questionnaire like this is difficult due to the terminology necessary for accurate completion. However, by grouping questions of similar format or context, the questionnaire can provide clarity through the use of repetition. The appropriate use of location, alignment, coloring, and other industry standards will assist the QEESI in promoting accurate completion of the questionnaire.

Error Prevention

Error prevention is paramount in a medical questionnaire. Compensating for user miscues can come in the form of limiting progress until a specific section is complete, providing appropriate feedback about user inputs, and including context and definitions as needed to ensure the answers are being understood as the authors intended.

Takeaways

- Provide a progress bar/sidebar to assist the user in navigating the QEESI
- Ensure the user is prompted with a summary/set of instructions to establish understanding
- Don’t overwhelm the user, provide a more restricted amount of data to promote focus and reduce effort level associated with answering questions.
- Maintain consistency across sections where applicable. Take advantage of common design standards to promote ease of use.
- Reduce the occurrence of errors through feedback. This should be in the form of answer completion as well as an increase in context to assist the user in correctly assessing their sensitivities.

Competitive Analysis

Direct Competitors

Direct competitors were chosen based on their consumer base. WebMD, Mayo Clinic, and Psychology Today serve users interested in healthcare information that are often unfamiliar with the formal terminology used in medical diagnosis. WebMD uses a wizard-style format to guide the user through questions that provide the user with a list of common ailments.

Additionally, both WebMD and the Mayo Clinic provide a consistent status and format for their users allowing them to become familiar with a repeatable process thus lowering the required mental effort to navigate the wizard.

Indirect Competitors

The research team also analyzed some of the leading producers of questionnaires of all types including Google Forms, Qualtrics, and the popular 16 Personalities questionnaire. The functions provided by these questionnaire services highlight the ability for the questionnaire to be flexible and promote convenience for the user. Applying question logic and the appropriate error prevention, they effectively reduce the amount of time and effort necessary to accurately complete their questionnaires.

Takeaways

- Small portions of tasks require less effort than larger portions
- Wizard-style interfaces provides ample space for instructions and offer the convenience of repeatable processes
- The most successful questionnaires consistently provide multiple forms of feedback
- Leveraging technology/adaptability is beneficial for both the provider and consumer of Questionnaires

Usability Testing

Average SUS Score: 68
QEESI SUS Average: 40
(7 Participant scores ranging from 22.5 - 62.5)

Task 1 — Navigate from your home page to the QEESI Questionnaire

For Task 1, we directed each research participant to navigate to the QEESI homepage and initiate the assessment. On a scale from **1 (very difficult) to 5 (very easy)**, the average rating for this task was **3.5**. While all participants successfully navigated to the correct page, many stated that they had difficulty with the information provided. One participant was unable to locate the "Take the QEESI" button initially, another participant navigated to the TILT Test website initially, while another wished their had been an explanation of the QEESI somewhere on the home page. Some of this information is provided but many of the participants did not fully read the instructions or found them too wordy to spend much time on. One participant did appreciate the domain being a .org, promoting their trust of the website.

Task 2 — Complete the QEESI Questionnaire

During the process of completing the QEESI, much of the feedback related to the confusion that was experienced by the participants in relation to the rating scale, question-wording, and symptom definitions. On a scale of **1 (very difficult) to 5 (very easy)** the average score was **3.2**. However, when asked about their confidence about accurately completing the QEESI, many participants expressed doubt:

I feel I can understand the instruction of QEESI:	Yes: 6	No: 1
I feel I can understand the description of the chemical exposure in the questionnaire:	5	2
I feel I can successfully rate the severity of my symptoms:	3	**4**
I feel I can understand the score of each radio button:	2	**5**
I feel I can navigate through the QEESI questionnaire:	7	0

Task 3 — Interpret the results of the QEESI Questionnaire

In order to determine if the data provided by the QEESI was being used correctly, we presented the participants with two tasks. First, they were asked to order their intolerances from highest severity to lowest. However, the researchers presented 4 participants with the default Spider Chart and 3 participants with a Bar chart during the exercise. Afterward, all participants were asked which chart they preferred. The charts represented the same diagnosis and were designed to be identical aside from the format. **All 7 participants successfully ranked their intolerances but only one preferred the spider chart**. We then asked the participants to calculate their MCI using the default table provided by the QEESI. **2 of the 7 participants successfully calculated their MCI.** On a scale of **1 (very difficult) and 5 (very easy)** the average participant rating was **1.5***.

*Represents an average of 6 results due to a non-answer from one participant

Takeaways

- Access should be simple and instructions should be up front and friendly
- Reduce the cognitive load on the participants by providing context, reducing answer choices, and providing real examples for ratings
- Use common formats to display information to promote understanding
- Leveraging technology/adaptability is beneficial for both the provider and consumer of Questionnaires

User Interviews

Discovery

A portion of the Interview was dedicated to the usability testing discussed early however, the researchers spent a portion of this time probing for opinions on the QEESI. The following are quotes provided during the specific tasks mentioned earlier:

Task 1

In the process of locating the QEESI page and initiating the questionnaire

- “There is too much to read.”
- “I expected more information here.” (home page)
- “I can’t tell what tab I’m on, they should highlight this.” (how/about/interpret)

Task 2

In the process of completing the QEESI

- “What is a disabling symptom?”
- “1-10 is too many, I don’t even know what any of them mean.”
- “What do I put if I’m not sure?”

Task 3.1

In the process of interpreting their results on the spider or bar chart

- “What is the green?”
- “I don’t know what to do with this information.”
- “This bar chart is pretty easy to understand.”

Task 3.2

In the process of calculating their MCI

- “I don’t know what the MCI even is.”
- “I would need help understanding this data.”
- “What do these statistics have to do with this?”

Recommendations

Stakeholder Meeting

The QEESI Team is looking for data on how to continue transitioning the QEESI into an online questionnaire that assists potential patients in the discovery, tracking, and treatment of chemical intolerances.

Language

Efficiency

Standards

Contextual Support

The most significant issue we saw with the QEESI was the inability for users to grasp the context of the instructions and/or questions they were being asked. There were inquiries into items such as certain terms, answer choices, and the applicability of certain questions when the users experience was atypical. While we recognize that the language used is likely necessary, we believe that steps could be taken to inform the user more appropriately. This can be achieved through the act of providing definitions for medical terms, providing examples of sensitivity levels, and providing links to appropriate resources.

Wizard Format

We believe that adopting a wizard format for the QEESI would best suit the users' needs and provide the most accurate data for health care professionals. This format allows the user to focus on the sole element presented to them. This would increase exposure to the instructions, individual questions, and the context necessary to properly complete the QEESI. The additional white space can also be used to improve context through the use of definitions, examples, and other beneficial information as testing suggests.

Progress Visibility

Regardless of the format that is adopted, feedback should always be provided to the user in the form of numbering, a completion percentage, or a progress bar. By providing the user with a guideline for how long the process should take and including status visibility along the way, we create a pattern where the user is consistently informed about their status as well as their chemical sensitivities.

Accessibility and Security Standards

While this research focused mostly on how the QEESI could be improved to promote clarity, we do think it is important that the QEESI adopt the security and accessibility standards that are commonplace across the web. This includes the HTTPS protocol that promotes privacy and integrity of data. Additionally, all websites should follow the Web Content Accessibility Guidelines (WCAG) to ensure individuals with disabilities have equal access to the QEESI.