

Usability Testing Report SFWRENG 4G06A

Team #25, RapidCare

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1 Executive Summary

1.1 Overview

The usability testing for RapidCare involved 10 participants which consist of our supervisor, Dr. Kristen Burrows, 2 practioners and rest were our fellow peers. Participants were provided with the link to the application where we asked them to perform some tasks before filling out the survey. Those tasks include finding a list of patients, creating a new patient record, filling a new SOAP note by recording audio, and using AI-assist to query the patient's information. Once all the tasks were completed, the participants were given this usability testing survey to fill in and rate their experience. Participants were engaged in answering 7 different questions about various features of the system and its compatibility with the hardware. Testing was done to get insights through the following approach:

1. **Quantitative analysis:** This approach focuses on measuring objective, performance-based data to assess the efficiency and effectiveness of the RapidCare system. Additionally, we collected subjective quantitative data through rating scales to measure user satisfaction, ease of use and other relevant factors. They were further analyzed statistically to identify any possible trends.
2. **Qualitative analysis:** This approach focuses on gathering subjective feedback by identifying any possible areas of improvements in RapidCare.

1.2 Key Findings

The survey responses were a mix of strengths and challenges.

1. Strengths:

- (a) 60% participants are perfectly satisfied with the diagnosis and treatment plan feature of RapidCare whereas 30% participants rated this feature as 4 on a 5.0 scale.
- (b) 60% participants are mostly satisfied with the AI-assist feature of the system.
- (c) 80% of participants think that RapidCare satisfy all the needs of the user.
- (d) 80% of participants are satisfied with the UI.

2. Challenges:

- (a) **Multi-language support:** One of the participants suggested that the system should have the capability to support multiple languages so that it can be used by diverse population.
- (b) **Needs not fully satisfied:** 20% of participants think their needs are not fully satisfied by the system. They suggested to expand on other tabs such as blood work, labs etc..

2 Introduction

2.1 Purpose

The purpose of this section is to document the feedback from the user interaction with our system. Participants were provided with the link to the application where we asked them to perform some tasks before filling out the survey. Those tasks include finding a list of patients, creating a new patient record, filling a new SOAP note by recording audio, and using AI-assist to query the patient's information. Once all the tasks were completed, the participants were given this usability testing survey to fill in and rate their experience and indicate any possible improvements that could be done to further satisfy the needs of the user. The quantitative and qualitative feedback gathered from this survey will be helpful in building a strong interaction between the user and this system.

2.2 Testing Goals

1. **Identifying Usability Issues:** To uncover any potential problems that users encounter while interacting with the system. This includes detecting any areas of inefficiency and pinpointing any problems that prevent the users from using this system effectively.
2. **Measuring Task Performance:** To measure how effectively and efficiently users can complete their tasks in this system. This involves performing a quantitative analysis where users will rate the performance of specific features of this system.
3. **Validating UI Design:** To validate the UI design and ensure that it aligns with the users' needs. This is one of the key requirements that needs to be detected properly in case of any design flaws.
4. **Focusing on User Value:** To validate that all implemented features of the system are useful to the user and meet their requirements.

3 Methodology

3.1 Participant Demographics

The usability testing for RapidCare involved 10 participants which consist of our supervisor, Dr. Kristen Burrows, 2 practioners and rest were our fellow peers. The practioners were chosen as they are the primary users of this system. Additionally, we chose our peers to implement the tasks and fill the survey as all of them are enrolled in Software Engineering so their technical expertise is crucial to pinpoint any technical improvements that could be done in the system. The diversity among the participants is important as it strengthens the validity and generalizability of the system's performance.

3.2 Testing Environment

The system is deployed and it's link was given to the participants to access it. After completing all the tasks, they were required to fill out the usability testing survey to provide their feedback. However, our supervisor was given the live demo instead of the deployed link to the system.

3.3 Task Instructions

The participants were instructed to perform the instructions below to test the system.

1. Participants were asked to login the system using valid and invalid credentials.
2. Then, they were asked to find a list patients.
3. Following that, they were asked to add a new patient record and fill a SOAP notes using audio transcription.
4. Additionally, they also verified the diagnosis and treatment plan that was predicted by the system.
5. Finally, they used AI-assist to query the patient information.

3.4 Data Collection Methods

The data collection method of choice was survey as there were specific points of information we wanted to capture for feedback. The questions in the survey were

created to collect all kinds of feedback about the system. The following questions were asked in the survey.

1. What operating system do you use?
 - (a) Mac
 - (b) Windows
2. Is this system compatible with the hardware?
 - (a) Yes
 - (b) No
3. Does this system satisfy all the needs of the user?
 - (a) Yes
 - (b) No
4. How intuitive is the UI? Rate performance.
 - (a) Very confusing
 - (b) Mostly confusing
 - (c) Intuitive
 - (d) Mostly intuitive
 - (e) Very intuitive
5. How satisfied are you with the AI-assist feature of the system?
 - (a) Not satisfied
 - (b) Less satisfied
 - (c) Neutral
 - (d) Mostly satisfied
 - (e) Highly satisfied
6. How satisfied are you with the diagnosis and action plan based on the symptoms?
 - (a) Not satisfied

- (b) Less satisfied
 - (c) Neutral
 - (d) Mostly satisfied
 - (e) Highly satisfied
7. Are there any other functionalities that you want to list which can further improve the performance of this software?

4 Findings

4.1 Participant Feedback

The feedback from the participants were as follows:

1. Strengths:

- (a) 60% participants are perfectly satisfied with the diagnosis and treatment plan feature of RapidCare whereas 30% participants rated this feature as 4 on a 5.0 scale.
- (b) 60% participants are mostly satisfied with the AI-assist feature of the system.
- (c) 80% of participants think that RapidCare satisfy all the needs of the user.
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2. Challenges:

- (a) **Multi-language support:** One of the participants suggested that the system should have the capability to support multiple languages so that it can be used by diverse population.
- (b) **Needs not fully satisfied:** 20% of participants think their needs are not fully satisfied by the system. They suggested to expand on other tabs such as blood work, labs etc..

The figures below show the participants' response for all questions:

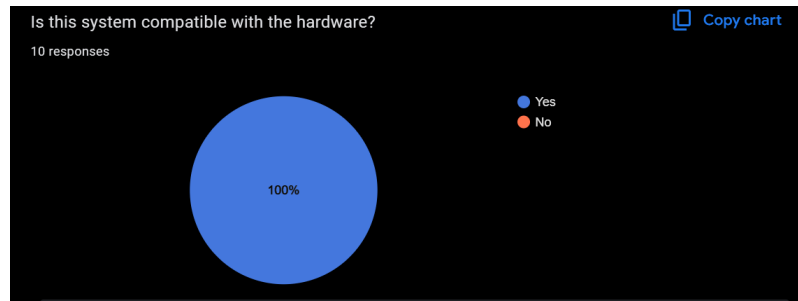


Figure 1: Participant Feedback for Hardware use

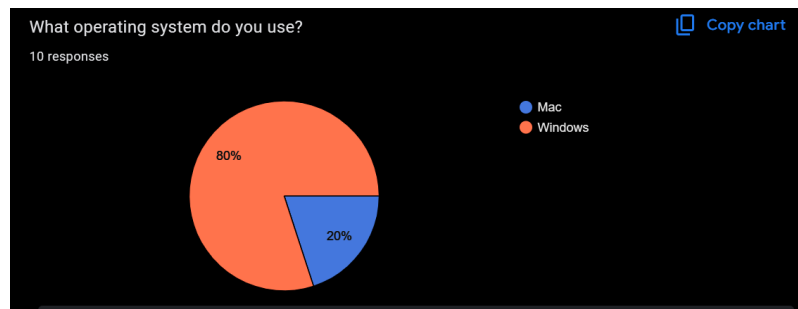


Figure 2: Participant Feedback for Software compatibility

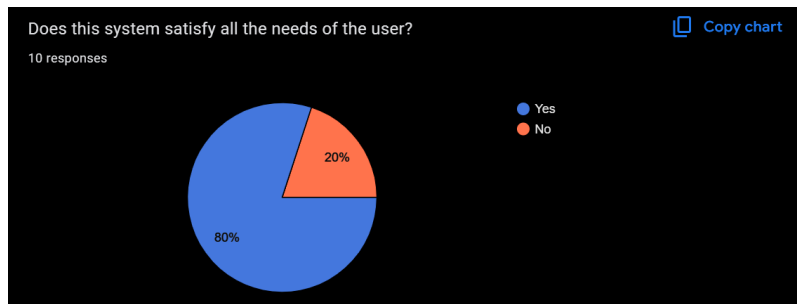


Figure 3: Participant Feedback for User Needs Satisfaction

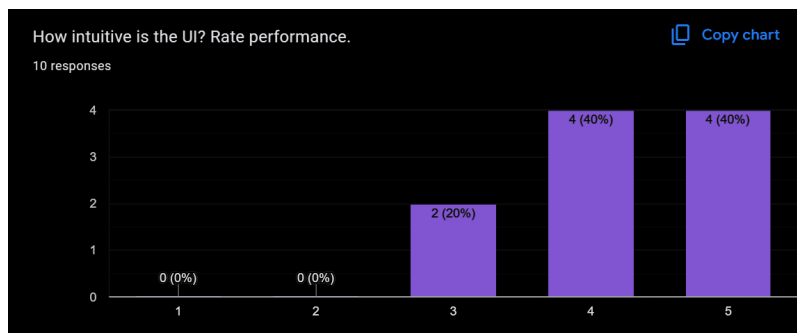


Figure 4: Participant Feedback for UI

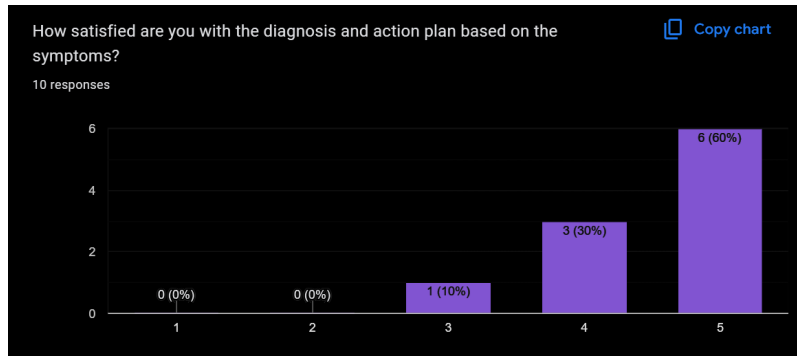


Figure 5: Participant Feedback for Diagnosis and Action plan prediction

Are there any other functionalities that you want to list which can further improve the performance of this software?

10 responses

NA

To improve performance, the software could benefit from personalized context awareness, better multimodal interactions (text, images, audio), and real-time collaboration features. Additionally, integrating external tools, enhancing security, and enabling offline capabilities would further enhance its versatility and user experience.

Creating custom templates for patients charts.
Integration with other systems.
Transfer file to other platforms functionality.
May be a tutorial to guide through the system when user first uses the system as existing systems have a high learning curve

Add disclaimers when suggesting diagnosis and plan. Expand to add other tabs in existing systems like blood work, prescriptions, referrals

No

Figure 6: Participant Feedback for future improvements

4.2 Issues

There were no technical issues experienced with the software by any of the participants.

5 Recommendations

The participants recommended different actions to further improve the software. The recommendations are listed below:

1. To improve performance, the software could benefit from personalized context awareness, better multimodal interactions (text, images, audio), and real-time collaboration features. Additionally, integrating external tools, enhancing security, and enabling offline capabilities would further enhance its versatility and user experience.
2. Creating custom templates for patients charts, integration with other systems, transferring files to other platforms functionalities could further improve the performance.
3. May be a tutorial to guide through the system when user first uses the system as existing systems have a high learning curve.
4. Add disclaimers when suggesting diagnosis and plan. Expand to add other tabs in existing systems like blood work, prescriptions, referrals.
5. Multi-language support to support diverse cultural groups.
6. The AI handle could be further modified for specific cases.

6 Conclusion

6.1 Changes Implemented

As a part of already implemented changes, the following changes are already/will be implemented.

1. Based on the preliminary testing that we did with our supervisor before Rev 0 demo, the feedback we got was to create an AI functionality to assist in fetching patient data for the healthcare professional without manually reviewing the patient record.
2. We also implemented the referrals and prescriptions tabs based on our supervisor's feedback.
3. Another change that we will implement as a part of next steps is adding disclaimers in UI when the diagnosis and treatment plans will be predicted by the system.
4. We will also make a user manual to assist first-time users who will be using this system.

All the other suggestions from the feedback are noted and will be worked upon as a part of next steps.