# Usability Evaluation of Mental Health Websites

## Muhammad Saad

Department of Computer Science, Federal Urdu University of Arts, Science and Technology, Islamabad, Pakistan

## Abdul Mateen*

Department of Computer Science, Federal Urdu University of Arts, Science and Technology, Islamabad, Pakistan

## Saeedullah

Department of Computer Science, Federal Urdu University of Arts, Science and Technology, Islamabad, Pakistan

## Rubina Adnan

Department of Computer Science, COMSATS Institute of Information Technology, Islamabad, Pakistan

## Muhammad Javed

Department of Computer Science, University of Peshawar, Peshawar, Pakistan

**ABSTRACT:**

*Today, websites related to health care are a great resource for information, especially for those who have health difficulties. The majority of people use the internet as a reputable source of health information while searching for information. One of the most common health problems people nowadays struggle with is mental health disorders including anxiety, depression, etc. Because mental health issues are so prevalent in today's society, it is important to test the usability of existing mental health websites. In this study, usability issues with the two popular mental health websites mentalhelp and goodtherapy are highlighted, and the best possible solutions are suggested. For this purpose, a questionnaire-based study is conducted, and current usability heuristics provided by Jakob Nielsen served as the basis for the study's questions. The 5-point Likert scale-based questionnaire also contains the permission form, pre-study questionnaire, tasks to be completed and post-study questionnaire. The 25 participants were initially given a pre-study questionnaire and an informed consent form. Following that, visitors completed a post-study questionnaire on a 5-point Likert scale on each website. Additionally, some solutions are provided to get around usability criteria that will assist the designer in resolving these problems in the future and giving consumers of mental health websites a better user experience.*

**KEYWORDS:** Human Computer Interaction, Mental Health, Website Usability, Heuristic Evaluation, Interface Design, Questionnaire, Usability Heuristics, Interaction Design.

## INTRODUCTION

Anxiety is common mental disorder, about 7-17% of the population are diagnosed with is this disorder globally [Baxter, et al. 2013; Somers, et al. 2006] whereas 14-25% patients with anxiety disorder are perinatal pupils [Fair brother, et al. 2016]. As the World Wide Web got rapid growth in healthcare sector, evolution coming in information delivery from paper based to software-based systems. Beside healthcare information the web provide support, anonymity and manage health care sector. According to a study by Duggan and Fox, adults utilize the internet, and 72 percent of them visit websites for health-related information. User satisfaction is directly correlated with the website's quality. Now days, a large number of people can reach internet for healthcare information within seconds. Usability issues of healthcare websites are important to be discussed because more and more people are likely to use healthcare websites in order to get at effective information in an easy way which is still an issue.

A group of procedures known as usability evaluation methods can be employed to get rid of potential roadblocks that users may have when utilizing an interface. Usability

advice is defined as "achieving the goal in a certain situation by the user to fulfill the goals in an effective and efficient manner" (ISO9241-11, 1998). Though there are numerous factors to consider, these five—efficiency, learnability, memorability, error prevention, and user satisfaction—are viewed as being of utmost importance. Usability is a crucial element in the design process because the objective is to solve user concerns with the products. Designers ignore proven usability evaluation methods that are proven through testing used for enhancing the efficiency and interaction of a system.

Heuristic evolution is carried out by experts in human factor evaluation. The evaluation team's task is to explain their findings, identify any widespread or serious issues, and offer a recommendation or solution. The heuristic evaluations are typically conducted using the ten usability heuristics that Nielsen provided in (1995, 2001) and that are necessary for a decent interface. Usability testing is one of the most popular methods for evaluating usability. For usability testing, participants are chosen from the target market to carry out a predetermined task on the system or product. For the purpose of identifying any usability issues, the performance of the recruited participants is evaluated using a variety of techniques, including video recording, direct observation, questionnaires, and the think aloud method, etc.

This is a fact that very little research is performed on healthcare website's usability in the recent years. The purpose of this paper is to pinpoint usability issues with two websites for mental health, mentalhelp and goodtherapy. Quantitative research is conducted using a questionnaire developed utilizing Nielsen's 10 usability guidelines. The Participants were given a consent form, which they must sign. Participants complete a consent form before being given the pre-study questionnaire. Participants were asked to answer a post-study questionnaire that was created using Nielsen's 10 usability heuristics after finishing a task.

The goal of the study was to look into different points of view about the usability of particular websites related to mental health. We solicit feedback from the participants regarding the usability of the heuristic. The research will be useful in identifying the upsides and downsides of each website as well as the areas that require improvement.

The rest of the article is organized as follows: A short background of mental health and usability evaluation is covered in Section 2. The suggested research's methodology and design is presented in Section 3. Results analysis and discussion are covered in Section 4. The potential remedies against the concerns highlighted are suggested in Section 5. Section 6 concludes the research with future directions.

## LITERATURE REVIEW

The term "usability" has become more common since the 1980s. The "usability" was widely replaced by the term "user friendliness," and "ease of use" was also frequently used. Bennett et al. were the first to use the term "usability". When considering healthcare websites, some problems have been found, including contrast, empty links, and alternate text problems [Acosta-Vargas, et al. 2021]. A review of the hospital website found that it did not adequately address visitors' questions [Gentry, et al. 2021]. Because both patient and professional experience are required for a functional interface, a User Experience (UX) design should be considered during the design process of health-related devices [Bitkina, et al. 2020]. One limitation of the questionnaire is that it does not specify which usability issue should be considered specifically, so you will need to create a questionnaire that addresses that issue specifically in order to measure the overall usability of the websites and applications that are related to E-health [Lewis, et al. 2006; Maramba, et al. 2019]. As more individuals are likely to use healthcare websites as a source of information for health and medical-related data, sufficient information must be made available to users in order to meet their needs. To do this, a user experience (UX) cantered design should be prepared. The usefulness of a website for users is measured by its usability. A study on the usability of digital health centers' websites offers some recommendations for improving the usability, including using the most recent technology, improving the websites' speed and efficiency, and improving their accessibility. For a better behavioral change, there are various techniques that may be utilized to test and overcome these qualities. Studies show that a better design understands the knowledge of the online environment and the needs of the user of mental health websites so it is an important factor which is not taken as a serious factor due to which user are then unable to access what they are searching for [Calvano, et al. 2021; Mills, et al. 2020]. Interventions before the alarming situation, the information provided by the healthcare providers plays an important role. Therefore, there should be some rules for this purpose, which may lead to a better interface and better user experience that benefits patients, especially those with mental problems [Kanuri, et al. 2020].

Digital interventions, especially for those with mental health illnesses, can be a significant source of knowledge delivery. Finding the buttons, links, and other elements on a website like socialNet were some usability problems discovered [Toribio-Guzmán, et al. 2017]. The solutions provided by websites typically take the shape of well-organized text, provide a wealth of psychology-related information, assign patients tasks, use questions and answers based on the symptoms, and facilitate it using a variety of resources. In addition to reading helpful materials, patients can watch videos, audio files, and animated content while receiving therapy. Online consultations with specialists, video therapy, email, phone, and message are all ways to learn about available treatments. The fact that internet-based therapy does not guide the user during use is one of its

drawbacks. Don't provide them automated feedback right away that satisfies their needs. Most researchers agree that receiving therapy online is both most effective and sufficient [Andersson, et al. 2009; Carlbring, et al. 2018]. Compared to traditional approaches, such as face-to-face counseling, internet-based treatment is highly effective at protecting patients from severe mental disorders. [Ebert, et al. 2018; Andersson, et al. 2014]. In light of this fact, a growing number of healthcare providers, particularly in North America, Europe, and Australia, are now regularly treating patients with mental health issues through online platforms both inside and outside of their own nation [Titov, et al. 2018; Folker, et al. 2018]. Examples of other nations include Denmark, Norway, Sweden, and others. [Simpson, et al. 2012]. Despite the fact that the use of internet-delivered healthcare is expanding daily, there are still restrictions that could affect the website's utility, interactive design, and numerous other usability concerns, which could provide patients and healthcare professionals a poor user experience. In order to produce a better result, one should look into the relationship between the technology and its usability. There are some requirements for the interface that must be adhered to by the interface design, such as knowing what the user requires, understanding the user knowledge level as user knowledge may impact its method of use, being flexible and changing itself in accordance with the user needs, user motivational level, and functional level, and being responsive to user needs. The usability of the design would indeed be improved if the interface met the requirements and understood the user's need and motivation [Folker, et al. 2018]. Studies indicate that adherence can benefit patients with OCD, although there is still insufficient study on the relationship between adherence, usability, and engagement with internet-based treatments [Nielsen, et al. 2005; Bashir, et al. 2020;

Bañez, et al. 2021; Quiñones, et al. 2017]. We can utilize a set of evaluation criteria based on the WCAG 2.0 framework to determine this relationship in regard to internet-based treatment.

In the modern world, mental health disorder is a severe problem that is affecting an increasing number of people. According to a survey, approximately 50 percent of people worldwide have a mental illness. The internet has been a terrific resource for persons with mental health disorders thanks to modern technology because patients may obtain quick and reasonably priced therapy online. Those who suffer from mental health illnesses have multiple possibilities due to the internet. Even though the internet has greatly assisted folks with mental illnesses, its accessibility is a critical issue that affects how information is provided and how people are treated. To effectively provide the content, more research is required on this issue.

## METHODOLOGY AND DESIGN

We have adopted the methodology of heuristic evaluation here. The websites were chosen using the Alexa website and the Google search engine. According to Alexa, Google is the most widely used search engine. The search term placed into the Google search field was top mental health websites. Two websites from the category of "Health/Mental Health" were randomly selected when we clicked. Testing will be conducted on the websites. In this study twenty-five (25) individuals were selected who have previously used both healthcare websites. The survey was developed utilizing the ten (10) Nielsen usability heuristics, which are stated in Table 1.

The user study was conducted using a questionnaire, which has five sections. Ten (10) questions make up the post-study

**Table 1.**
10 Usability Heuristics by Jakob Nielsen.

| Principle Number | Usability Heuristic | Description |
|---|---|---|
| 1. | Visibility of system status | A decent user interface with a pleasant response mechanism and progress tracking over time. |
| 2. | Match between system and the real world | Communicating in user understandable language not machine-oriented. |
| 3. | User control and freedom | A user-friendly environment where they can quickly return to their prior state. |
| 4. | Consistency and standards | There must be continuity throughout, such as similar language, events, or behaviors. |
| 5. | Error prevention | It would be preferable if the design prevented you from making a mistake rather than just showing you a helpful error notice. A confirmation notice should appear before starting. |
| 6. | Recognition rather than recall | Everything should be comprehended, rather than recalling specifics from previous dialogues. |
| 7. | Flexibility and efficiency of use | The user interface needs to be straightforward, simple enough for beginners to use, and flexible enough to accommodate routine actions. |
| 8. | Aesthetic and minimalist design | Avoid unnecessary and extraneous information. |
| 9. | Help users recognize, diagnose, and recover from errors | No code should be used in the error message, the error can be easily indicated and a solution should be provided to the error. |
| 10. | Help and documentation | Offer help to user during interaction [Nielsen's, 1995]. |

questionnaire, and each question is followed by a five-point Likert scale with the options "strongly disagree, disagree, neutral, agree, strongly agree."

**PARTICIPANTS:** The total number of participants in the usability testing is twenty-five (25). Every participant visits websites about health care on a regular basis. The study excluded participants who had no prior experience using healthcare websites or those who had never utilized such websites.

**EXPERIMENTAL DESIGN:** The user is given a relaxing environment in which to conduct the user study where some participants utilize laptops provided by the event, others use their own computers.

**TASKS:** The participants were required to execute a variety of tasks while using the website in order to identify any usability difficulties. In order to obtain accurate data from the participants, these tasks must be straightforward and comparable to those that participants carry out on a daily basis.

The study includes the following tasks:

- Use the websites for 3 minutes.
- Do some research on "Anxiety Disorder"
- Locate a cure for "Anxiety Disorder"
- Discover the contact information of mental healthcare professional.
- Make an appointment to the doctor.

**PROCEDURE:**

- Each participant is visited for user testing.
- The user is provided with a tranquil setting in which to complete their work correctly.
- Some participants use their personal computers, while others receive laptops.
- Before commencing, each participant receives a brief description of the questionnaire's goals.
- After receiving the questionnaires, the user is asked to complete the pre-study form and sign the consent document.
- After that, participants were told to go to the websites and complete the activities there.
- Each activity must be finished within 10 minutes.
- Participants were able to stop working on the exercise if they were frustrated.
- Participants were required to complete a post-study questionnaire for each website after completing assignments.

## RESULT ANALYSIS AND DISCUSSION

Information about participants is obtained for the user research. There were fourteen (14) had master's degrees, ten (10) had bachelor's degrees, and one (01) had just completed high school. According to their gender, there were four (4) males and twenty-one (21) females. No one was under the age of twenty (20) or over the age of forty (40); instead, twenty-one (21) people were in that range and four (4) people were between the ages of twenty (20) and thirty (30). While eleven (11) were in the workforce and twelve (12) were enrolled in school, two (02) were recently unemployed and neither students nor workers. Nearly all of the participants frequently visited websites related to healthcare, and one participant used a computer for two years while another two individuals did so for one year. The consensus among all the panelists was that healthcare websites raise the bar for knowledge. Eleven (11) of the participants said they use healthcare websites for other diseases like headache, nausea, vomiting, diet and nutrition, etc., while eleven (10) of the participants said they use healthcare websites for mental health. Three (03) users said they use healthcare websites for skin diseases, one (01) user said they use healthcare websites for blood pressure. The results of the user study are compiled, calculated, and reviewed. The mean and SD for each question is calculated. Ten (10) questions were posed to the participants using Nielsen's usability heuristics. Table 2 displays values on a 5-point Likert scale.

**POST-QUESTIONNAIRE RESULTS FOR MENTAL HELP:** On a 5-point Likert scale, participant's rate the statements as strongly agree, agree, neutral, disagree, and strongly disagree (Table 3).

**VISIBILITY OF SYSTEM STATUS:** The first question asked was related to the system's visibility with Mean=3.88 and SD=0.88 as shown in Figures 1 and 2. The participants' replies to the question of whether the website gives users suitable feedback about progress differed with reference to how visible the system state is. As seen in Figure 3, 20% of participants mark neutral, 24% of participants strongly agree, 48% of participants agree, 8% of participants disagree, and 0% of participants strongly disagree.

**MATCH BETWEEN SYSTEM AND THE REAL WORLD:** The agreement between the system and the real was the subject of the second question, with the Mean and SD as shown in Figure1 being 3.72 and 0.98 respectively. The participants were asked whether they thought the language used on the websites was appropriate, suitable, and clear. Figure 3 shows the results, which are as follows: 20% of participants believe, 48% of participants agree, 16% of participants mark neutral, 16% of participants disagree, and 0% of participants strongly disagree.

**USER CONTROL AND FREEDOM:** The third question concerned was about the user freedom and control, with the results displayed in Figure1 as Mean=3.76 and SD=1.09.

**Table 2.**

5-Point Likert Scale.

| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**Table 3.**

Post-Questionnaire Results with respect to Scales.

| # | Questions | Scale | Mentalhelp | Goodtherapy |
|---|---|---|---|---|
| 1 | Does the website give appropriate feedback to user about the progress? | Strongly Disagree | 0% | 0% |
| | | Disagree | 8% | 4% |
| | | Neutral | 20% | 8% |
| | | Agree | 48% | 72% |
| | | Strongly Agree | 24% | 16% |
| 2 | Is the language used in the websites is appropriate, suitable and clear to you? | Strongly Disagree | 0% | 0% |
| | | Disagree | 16% | 28% |
| | | Neutral | 48% | 4% |
| | | Agree | 48% | 44% |
| | | Strongly Agree | 20% | 24% |
| 3 | Can you easily undo an action after clicking the button by mistake? | Strongly Disagree | 0% | 0% |
| | | Disagree | 12% | 4% |
| | | Neutral | 36% | 28% |
| | | Agree | 16% | 40% |
| | | Strongly Agree | 36% | 28% |
| 4 | Is the designing simple and consistent? | Strongly Disagree | 0% | 0% |
| | | Disagree | 24% | 24% |
| | | Neutral | 28% | 20% |
| | | Agree | 32% | 40% |
| | | Strongly Agree | 16% | 16% |
| 5 | Does the websites display a confirmation message to user before committing any error? | Strongly Disagree | 0% | 0% |
| | | Disagree | 12% | 16% |
| | | Neutral | 56% | 56% |
| | | Agree | 16% | 16% |
| | | Strongly Agree | 16% | 12% |
| 6 | Did you complete your task quickly? | Strongly Disagree | 0% | 0% |
| | | Disagree | 12% | 20% |
| | | Neutral | 16% | 12% |
| | | Agree | 60% | 36% |
| | | Strongly Agree | 12% | 32% |
| 7 | Does the website provide multiple methods for each single task? | Strongly Disagree | 0% | 16% |
| | | Disagree | 16% | 4% |
| | | Neutral | 0% | 0% |
| | | Agree | 28 | 24% |
| | | Strongly Agree | 56% | 56% |
| 8 | Does the website provide the necessary information as per need and use simple design? | Strongly Disagree | 0% | 0% |
| | | Disagree | 20% | 16% |
| | | Neutral | 56% | 44% |
| | | Agree | 12% | 28% |
| | | Strongly Agree | 12% | 12% |
| 9 | Does the website notify you when an error arises, that what is happened, why and how to repair or fix it? | Strongly Disagree | 0% | 0% |

| | | Disagree | 8% | 20% |
|---|---|---|---|---|
| | | Neutral | 20% | 16% |
| | | Agree | 38% | 48% |
| | | Strongly Agree | 24% | 16% |
| 10 | Is Information provided by the websites for help is enough to complete the task? | Strongly Disagree | 0% | 0% |
| | | Disagree | 8% | 28% |
| | | Neutral | 16% | 24% |
| | | Agree | 56% | 36% |
| | | Strongly Agree | 20% | 12% |
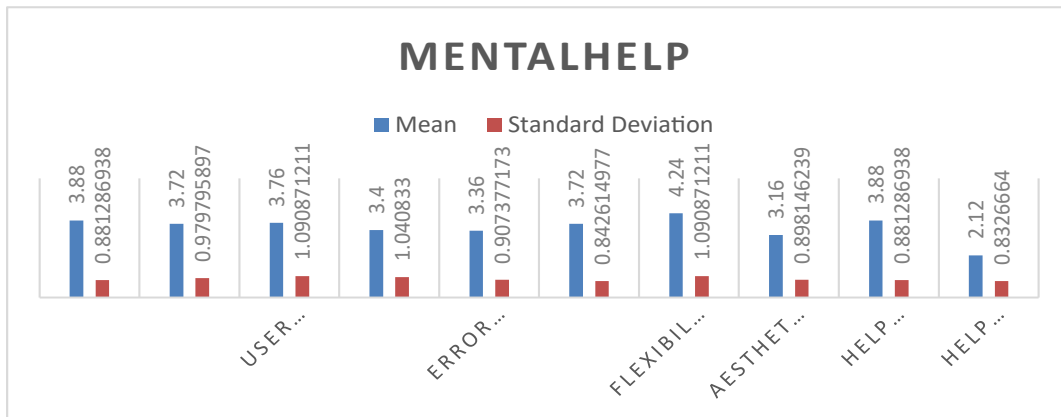


**Figure 1.** Mean and SD (SD) for mentalhelp.
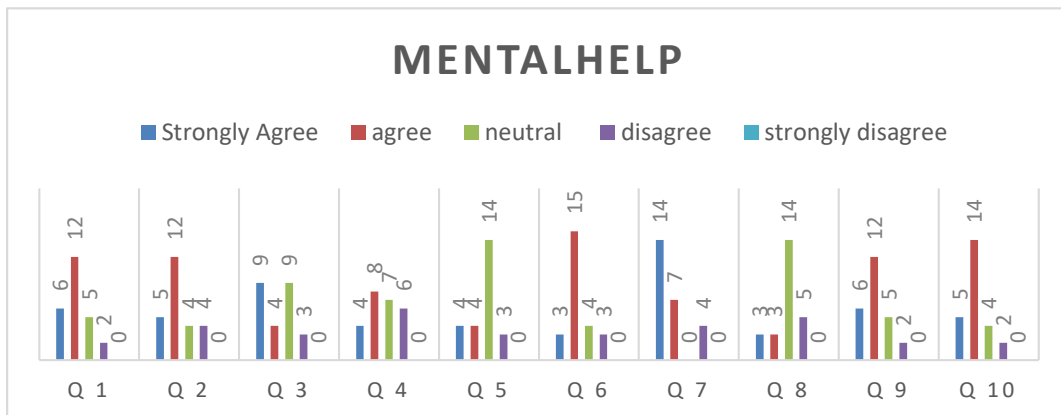


**Figure 2.** Questionnaire Bar and User Preference for mentalhelp.
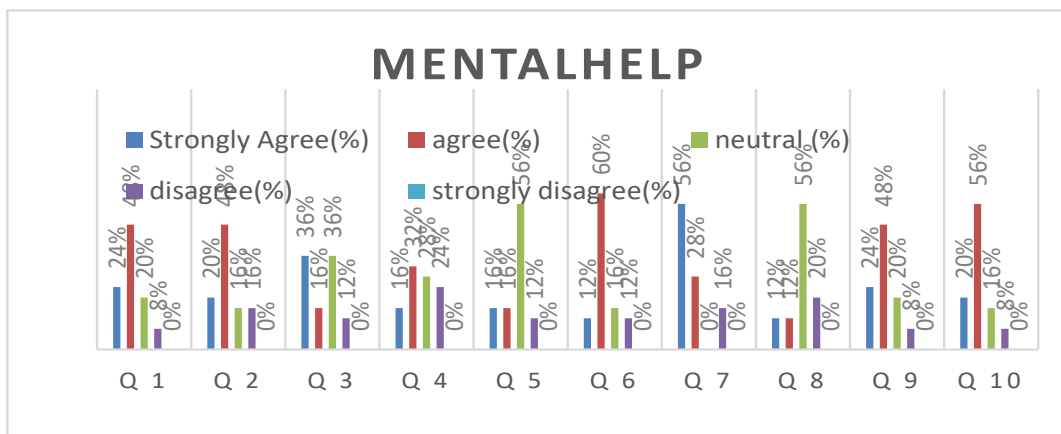


**Figure 3.** Questionnaire Bar and User Preference in Percentage for mentalhelp.

The participants were asked if they could quickly undo a mistaken button click. Figure 3 displays the following percentages: 36% strongly agree, 16% of participants agree, 36% mark neutral, 12% of participants disagree, and 0 percent strongly disagree.

**CONSISTENCY AND STANDARDS**: Figure 1's Mean=3.4 and SD=1.04 offered the response to the fourth question with regard to consistency and standards. Participants gave a range of responses about the visibility of the system state when asked if the design was simple and logical. Figure 3 shows that 16% of participants have a strongly agree, 32% have an agree, 28% are neutral, 24% disagree, and 0% have a strongly disagree.

**ERROR PREVENTION:** The fifth question addressed error prevention, with the results as shown in Figure1: Mean=3.36 and SD=0.90. Participants were asked if websites show users a confirmation notice before they make a mistake. As illustrated in Figure 3, 16% of participants strongly agree, 16% of participants agree, 56% mark neutral, 12% of participants disagree, and 0% of participants strongly disagree.

**RECOGNITION RATHER THAN RECALL:** The focus of sixth question was more on recognition than memory, and its Mean and SD were 3.72 and 0.84 respectively. The question asked from the participant was "Do you think you finished your assignment quickly? Figure 3 shows that 12% of participants strongly agree, 60% agree, 16% mark neutral, 12% disagree, and 0% strongly disagree.

**FLEXIBILITY AND EFFICIENCY OF USE**: The seventh question examined flexibility and effectiveness of usage, with a mean and SD of 4.24 and 1.09, respectively, as shown in Figure 1. When the participants were asked, does the website provide multiple methods for each single task? According to Figure 3, 56% strongly agree, 28% of participants agree, 0% mark neutral, 16% of participants disagree, and 0% strongly disagree.

**AESTHETIC AND MINIMALIST DESIGN:** The eighth question concerned the aesthetically pleasing and minimal design, with a mean and SD of 3.16 and 0.89, respectively, as shown in Figure 1. When participants were questioned, "Does the website use basic design and deliver the necessary information as per need?" Figure 3 illustrates the following percentages: 20% mark neutral, 48% of participants agree, 24% strongly agree, 8% of participants disagree, and 0% severely disagree.

**HELP USERS RECOGNIZE, DIAGNOSE, AND RECOVER FROM ERRORS:** The ninth question asked users for assistance in defect identification, diagnosis, and recovery from faults. The answers are shown in Figure 1 with a mean value of 3.88 and a SD of 0.89. Participants were questioned about if the website tells them when an issue happens, detailing what happened, why it occurred, and providing guidance on how to fix it. Figure 3 shows that 12% of participants strongly agree, 12% of participants agree, 56% of participants mark neutral, 20% of participants disagree, and 0% of participants strongly disagree.

**HELP AND DOCUMENTATION:** The tenth query concerned Help and documentation, with a mean of 2.12 and a SD of 0.83, as shown in Figure 1. The question was, "Does the information offered by the websites for assistance adequate to complete the task?" Figure 3 displays the following percentages: 20% strongly agree, 60% of participants agree, 16% mark neutral, 8% of participants disagree, and 0% of participants strongly disagnree.

**POST QUESTIONNAIRE RESULTS FOR GOODTHERAPY:** The questions were rated by the participants according to 5-point Likert Scale that are agree, strongly agree, neutral, disagree and strongly disagree.

**VISIBILITY OF SYSTEM STATUS:** First question was regarding visibility of a system with the Mean=4 and SD=0.64 as shown in Figures 4 and 5. Different participants show different results about visibility of system status when the participants were asked, does the website give appropriate feedback to user about the progress. 16% strongly agree, 72% of participant agree, 8% mark neutral, 4% participant disagree and 0% strongly disagrees as shown in Figure 6.
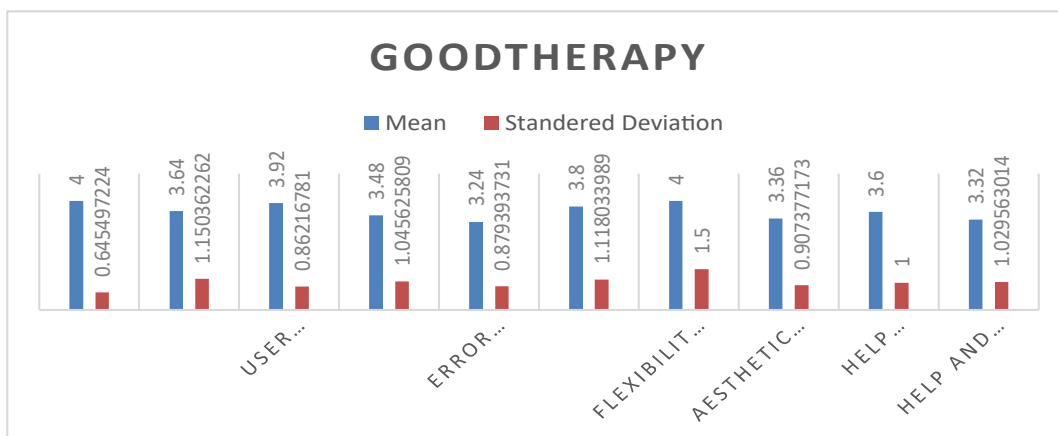


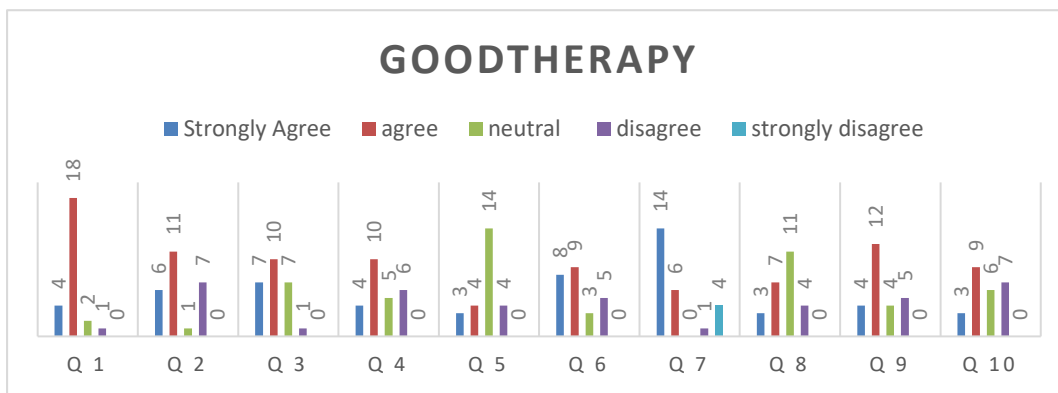**Figure 4.** Post study Result for goodtherapy.

**Figure 5.** Questionnaire Bar and User Preference For goodtherapy.
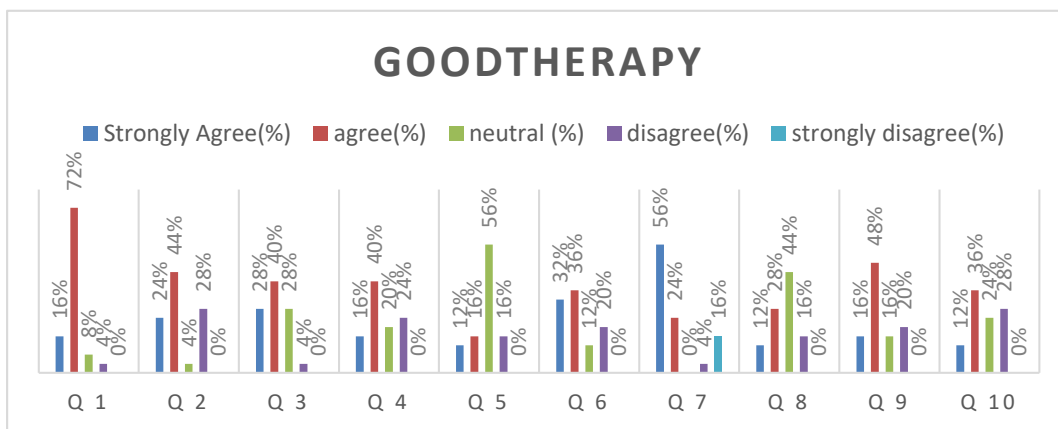


**Figure 6.** Questionnaire Bars and User Preference in Percentage for goodtherapy.

**MATCH BETWEEN SYSTEM AND THE REAL WORLD**: Second question was regarding match between system and the real world with the Mean=3.64 and SD=1.15 as shown in Figure 4. When the participants were asked, is the language used in the websites is appropriate, suitable and clear to you? 24% strongly agree, 44% of participant agree, 4% mark neutral, 28% participant disagree and 0% strongly disagrees as shown in Figure 6.

**USER CONTROL AND FREEDOM:** Third question was regarding user control and freedom with the Mean=3.92 and SD=0.86 as shown in Figure 4. The participants were asked, can you easily undo an action after clicking the button by mistake? 28% strongly agree, 40% of participant agree, 28% mark neutral, 4% participant disagree and 0% strongly disagrees as shown in Figure 6.

**CONSISTENCY AND STANDARDS:** Fourth question was regarding Consistency and standards with the Mean=3.48 and SD=1.04 as shown in Figure 4. Different participants show different results about visibility of system status when the participants were asked, is the design simple and consistent? 16% strongly agree, 40% of participant agrees, 20% mark neutral, 24% participant disagree and 0% strongly disagrees as shown in Figure 6.

**ERROR PREVENTION:** Fifth question was regarding Error prevention with the Mean=3.24 and SD=0.88 as shown

in Figure 4. The participants were asked, does the websites display a confirmation message to user before committing any error? 12% strongly agree, 16% of participant agrees, 56% mark neutral, 16% participant disagree and 0% strongly disagrees as shown in Figure 6.

**RECOGNITION RATHER THAN RECALL:** Sixth question was regarding recognition rather than recall with the Mean=3.8 and SD=1.13 as shown in Figure 4. When the participants were asked, did you complete your task quickly? 32% strongly agree, 36% of participant agrees, 12% mark neutral, 20% participant disagree and 0% strongly disagrees as shown in Figure 6.

**FLEXIBILITY AND EFFICIENCY OF USE:** Seventh question was regarding Flexibility and efficiency of use with the Mean=4 and SD=1.5 as shown in Figure 4. When the participants were asked, does the website provide multiple methods for each single task? 56% strongly agree, 24% of participant agree, 0% mark neutral, 4% participant disagree and 16% strongly disagrees as shown in Figure 6.

**AESTHETIC AND MINIMALIST DESIGN:** Eighth question was regarding error existence in design with the Mean=3.36 and SD=1 as shown in Figure 4. When the participants were asked, does the website provide the necessary information as per need and use simple design?

16% strongly agree, 48% of participant agree, 16% mark neutral, 20% participant disagree and 0% strongly disagrees as shown in Figure 6.

**HELP USERS RECOGNIZE, DIAGNOSE, AND RECOVER FROM ERRORS:** Ninth question was regarding Help users recognize, diagnose, and recover from errors with the Mean=3.6 and SD=0.91 as shown in Figure 4. The participants were asked does the website notify you when an error arises, that what is happened, why and how to repair or fix it? 12% strongly agree, 28% of participant agree, 44% mark neutral, 16% participant disagree and 0% strongly disagrees as shown in Figure 6.

**HELP AND DOCUMENTATION:** Tenth question was regarding Help and documentation with the Mean=3.32 and SD=1.03 as shown in Figure 4. The question, is Information provided by the websites for help is enough to complete the task? 12% strongly agree, 36% of participant agree, 24% mark neutral, 28% participant disagree and 0% strongly disagrees as shown in Figure 6.

## POSSIBLE SOLUTIONS

The two most significant heuristics to consider during the design process are "Error prevention" and "Help and documentation." These problems must be considered, and potential solutions must be offered to assist the designers as they work on their designs. By imposing some sort of constructive restrictions on users, the likelihood that they will make mistakes can be reduced (Laubheimer, 2015). Nielsen claims that if a person is given access to a source of useful information, their experience will be favorable (Nielsen, 1991).

## INTERFACE DESIGN

An interface has been developed in response to the aforementioned issues. This interface will be useful to individuals who design healthcare websites, especially those for mental health.

Figure 7 above illustrates a method for preventing user errors. The user interface should offer some suggestions, such as in the case of first and last name, so that they may readily grasp what to type and how to enter it.

Figure 8 above demonstrates how mistake avoidance can be achieved by imposing some sort of positive constraint on the user. For example, in the example above, if the doctor is available from dates 4 to 24, the user cannot select a date when the doctor is unavailable other than dates 4 to 24.

A confirmation message or error message should be displayed to users, as illustrated in figure 9 that instructs them on how to avoid making a mistake in order to stop them from doing so.

As the users of the previously evaluated websites gave the heuristic "Help and Documentation" a low rating, we offered some kind of suggestion, as shown in Figure 10, to offer help and documentation to the users. The greatest moment to offer customers assistance and documentation is when the website first launches because most users become confused when they do so, especially if the website has a poor user interface. The following Table 4 lists the additional potential answers for both heuristics.

The outcomes of the mean and SD calculations made after the data analysis are utilized to choose the best heuristic. According to calculated data, the mentalhelp website is easier to use than goodtherapy. The heuristics "help and documentation," "error prevention," and "help users recognize, diagnose, and recover from errors" received low ratings from mentalhelp users, whereas the heuristics "flexibility and efficiency of use," "visibility of system status," and "flexibility and efficiency of use" received high ratings from users. The participants gave the heuristics "Visibility of system status" and "Flexibility and efficiency of usage" high scores on the goodtherapy website, but gave the heuristics "Error prevention" and "Help and documentation" low ratings. The two heuristics "Error prevention" and "Help and Documentation" should be taken into consideration during the design phase because they are the main issues that this study supports. Additionally, a
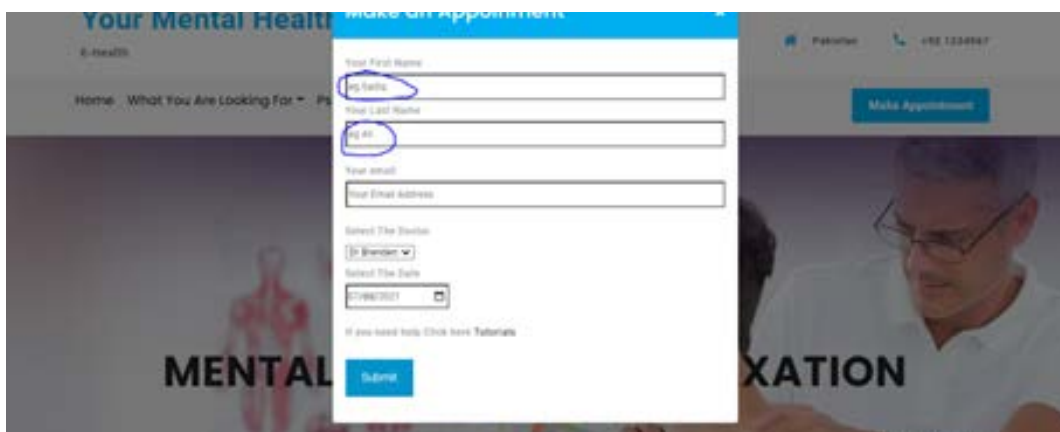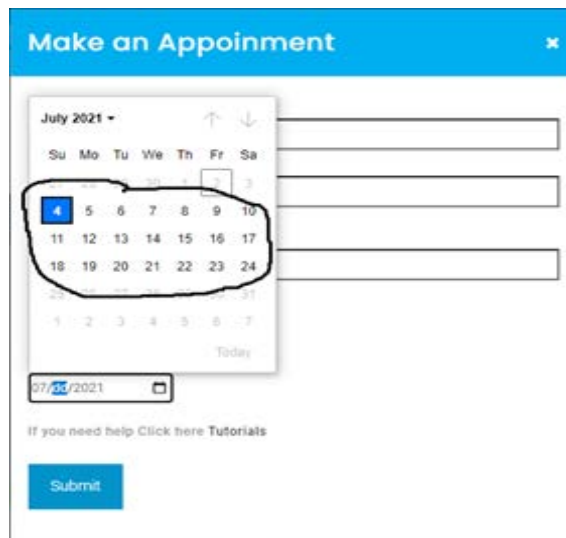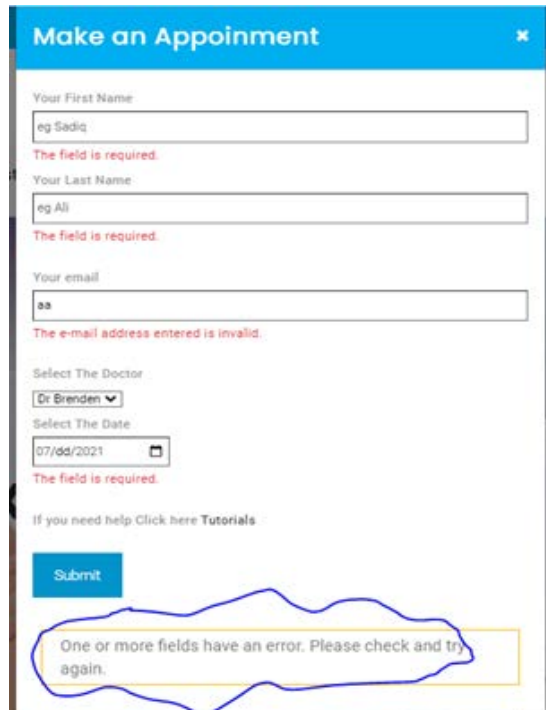


**Figure 7.** Error Prevention.

**Figure 8.** Error Prevention.



**Figure 9.** Error Prevention.
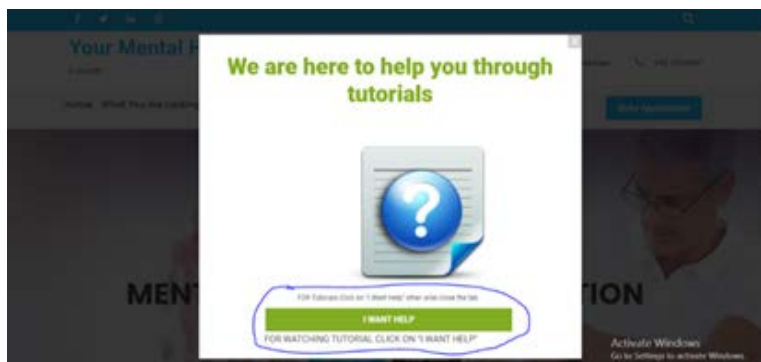


**Figure 10.** Help and Documentation.

**Table 4.**

Possible Solutions of Two Usability Heuristics.

| Heuristics | Solutions |
|---|---|
| Error prevention | i. There must be an error prone condition. |
| | ii. Before commenting any kind of action there must be confirmation message. |
| | iii. High level Errors to be consider first and then low-level errors in order to follow continuity. |
| | iv. Constraints and good defaults are the best way to avoid error and prevent errors from occurring the errors. |
| | v. Prevent mistakes by removing memory burdens, supporting undo, and warning your users. |
| | vi. There must be a navigation bar which may contains the pages so that user can easily enter to the desired page. |
| Help and Documentation | i. Provide a list of solutions and task/tasks to the user as the issue occurs. |
| | ii. Providing user with help and documentation at the mean time as needed. |
| | iii. Provide the user with documentation for help that can be easily searchable. |
| | iv. Providing the interface with option with FAQ (Frequently Asked Questions). That can used when someone needs help. |
| | v. Provide the user with the help disk having a clear icon of help |

number of usability standard solutions are provided, which will assist the designer in resolving these problems later on and improving the user experience for visitors to mental health websites.

## CONCLUSION

In this article, two websites' usability has been selected for analysis and testing. Their usability is assessed using post-questionnaires finished after task completion. Results are assessed when data from the twenty-five (25) individuals is collected. After discussing the findings, we conclude that good treatment is less usable overall than mental support. Both websites have various limitations even though they are quite functional. Users give heuristics very low ratings for "Help and documentation" and "Error Prevention." Because of its "flexibility and efficiency," the mentalhelp website is recommended for inexperienced or novice users. The mentalhelp uses clear and straightforward language that is easily understandable to participants. Participants concurred that people had the ability to swiftly undo a mentalhelp activity. After completing the tasks on goodtherapy, the participants gave high ratings to the system state visibility, recognition rather than recall, user control, and freedom. The majority of participants concurred that the website provides appropriate feedback throughout use. The participants also concurred that they finished their jobs on goodtherapy rapidly. Participants are not overly satisfied with error detection, diagnosis, and recovery assistance, error prevention, or with help and documentation. The appropriate and admirable wording employed has also satisfied the participants. Few individuals disagreed that excellent therapy should have simple, consistent designs. The majority of participants firmly believed that effective therapy does not require practice before use. Some of the possible alternatives are provided and shown with the use of an interface created to somewhat get around these restrictions. Future research will also look at the usability of websites for mental health utilizing standards put forward by other scholars, like Ben Schneiderman (the notion of a decent interface), among others.

## REFERENCES

Acosta-Vargas, G., Acosta-Vargas, P., Jadán-Guerrero, J., Salvador-Ullaur,i L., Gonzalez, M. (2021). Improvement of Accessibility in Medical and Healthcare Websites. *AHFE.* Springer, Cham, 266-273.

Andersson, G., Cuijpers, P. (2009). Internet-based and other computerized psychological treatments for adult depression: a meta-analysis. *Cogn Behav Ther, 38*(4), 196-205.

Andersson, G., Cuijpers, P., Carlbring, P., Riper, H., Hedman, E. (2014). Guided Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: a systematic review and meta-analysis. *World Psychiatry, 13*(3), 288-295.

Bashir, M.S., Farooq, A., Humayoun, S.R., Iqbal, M.M., Iqbal, M.J. (2020). EAUHHCAMA: Extending and Adapting Usability Heuristics for Healthcare Related Context-Aware Mobile Applications. *J Med Imaging & Health Infor, 10*(10), 2345-2360.

Bañez, C., Carruthers, J., Gelmi, S., Kraft, A., Gaulton, C., Hall, T. (2021). Applying Human Factors Methods to Improve Healthcare Risk Management Tools. In *Proceedings of the International Symposium on Human Factors and Ergonomics in Health Care,* 10(1), 185-187.

Bitkina, O.V., Kim, H.K., Park, J. (2020). Usability and user experience of medical devices: An overview of the current state, analysis methodologies, and future challenges. Int J Ind Ergon, 76, 102932.

Blank, L., Baxter, S., Buckley, W.H., Fairbrother, H., Bissell, P., Goyder, E., et al. (2016). Multidisciplinary systematic review of the relationships between poverty and stress, low level anxiety and depression across the life course.

Calvano, J.D., Fundingsland, Jr, E.L., Lai, D., Silacci, S., Raja, A.S., He, S. (2021). Applying website rankings to digital health centers in the United States to assess public engagement: website usability study. *JMIR human factors, 8*(1), e20721.

Carlbring, P., Andersson, G., Cuijpers, P., Riper, H., Hedman-Lagerlöf, E. (2018). Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. *Cogn Behav Ther, 47*(1), 1-18.

Ebert, D.D., Van Daele, T., Nordgreen, T., Karekla, M., Compare, A., Zarbo, C. (2018). Internet-and mobile-based

psychological interventions: Applications, efficacy, and potential for improving mental health: A report of the EFPA E-Health Taskforce. *Eur Psychol, 23*(2), 167.

Folker, A.P., Mathiasen, K., Lauridsen, S.M., Stenderup, E., Dozeman, E., Folker, M.P. (2018). Implementing internet-delivered cognitive behavior therapy for common mental health disorders: A comparative case study of implementation challenges perceived by therapists and managers in five European internet services. *Internet Interv*, *11*, 60-70.

Gentry, Z.L., Ananthasekar, S., Yeatts, M., Chen, H., Dream, S. (2021). Can patients find an endocrine surgeon? How hospital websites hide the expertise of these medical professionals. *Am J Surg, 221*(1), 101-105.

https://www.iso.org/obp/ui/#iso:std:iso:9241:-11:ed-1:v1:en,

Kanuri, N., Arora, P., Talluru, S., Colaco, B., Dutta, R., Rawat, A., Newman, M.G. (2020). Examining the initial usability, acceptability and feasibility of a digital mental health intervention for college students in India. *Int J Psychol, 55*(4), 657-673.

Lewis, J.R. (2006). Usability testing. Handbook of human factors and ergonomics, 12, e30.

Maramba, I., Chatterjee, A., Newman, C. (2019). Methods of usability testing in the development of eHealth applications: a scoping review. *Int J Med Inform, 126*, 95-104.

Mills, K., Griffin, S.J., Sutton, S., Usher-Smith, J.A. (2020). Development and usability testing of a very brief intervention for personalised cancer risk assessment to promote behaviour change in primary care using normalisation process theory. *Prim Health Care Res Dev, 21*.

Nielsen, J. (2005). Ten usability heuristics.

Quiñones, D., Rusu, C. (2017). How to develop usability heuristics: A systematic literature review. *Comput Stand Interfaces, 53*, 89-122.

Simpson, H.B., Marcus, S.M., Zuckoff, A., Franklin, M., Foa, E.B. (2012). Patient adherence to cognitive-behavioral therapy predicts long-term outcome in obsessive-compulsive disorder. *J Clin Psychiatry, 73*(9), 13941.

Titov, N., Dear, B., Nielssen, O., Staples, L., Hadjistavropoulos, H., Nugent, M., Kaldo, V. (2018). ICBT in routine care: a descriptive analysis of successful clinics in five countries. *Internet Interv, 13*, 108-115.

Toribio-Guzmán, J.M., García-Holgado, A., Soto Pérez, F., García-Peñalvo, F.J., Franco, M.M. (2017). Usability evaluation of a private social network on mental health for relatives. *J Med Syst, 41*(9), 1-7.

Whiteford, H.A., Degenhardt, L., Rehm, J., Baxter, A.J., Ferrari, A.J., Erskine, H.E., et al (2013). Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *Lancet*, *382*(9904), 1575-1586.