Connecting Patients and Clinicians: Shedding Light on Functionalities for Mental Health Apps in Depression Care

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Abstract. This paper evaluates the functionalities of mental health apps by developing and testing a smartphone application focusing on depression. This article follows a design science research approach, reviewing existing literature and app functionalities to identify essential functionalities for mental health care apps. The application integrates the PHQ-9 questionnaire and supports passive data collection for activity levels. The app provides real-time feedback and monitoring to patients and data access to their treating clinician. We evaluated usability and functionality with potential end users and healthcare professionals. The results show high usability scores and highlight the importance of features such as in-app access to emergency services, self-monitoring tools, and progress tracking. Our findings indicate a strong preference for functionalities that support active engagement and immediate access to support in crises.

Keywords: depression monitoring · mobile app · mHealth · smartphone data · PHQ-9 · design science · patient monitoring · requirement engineering

1 Introduction

Mental health care, specifically for depression, is crucial for individuals as it directly affects their overall well-being and quality of life [1]. Without proper care, depression can escalate and lead to more severe consequences such as suicide [2]. Mental health care, including therapy, medication, and self-care practices, can help individuals manage their symptoms and improve their mental and emotional health. By addressing depression early and effectively, individuals can return to fulfilling and productive lives, ultimately benefiting themselves and their families and communities [3].

Mental health clinicians use validated screening tools like the Patient Health Questionnaire (PHQ) [4] to monitor patients' progress during depression treatment. Usually, patients complete the questionnaires according to their recollections of past experiences

M. Kurosu and A. Hashizume (Eds.): HCII 2024, LNCS 14686, pp. 133–148, 2024.
https://doi.org/10.1007/978-3-031-60428-7_10

during the face-to-face sessions with their therapist. However, despite the validity of these tools, retrospective recollection can cause patients to frame or forget important information [5]. Moreover, as conventionally done, filling out questionnaires through pen and paper can be labor-intensive and intrusive for patients [6].

The widespread adoption of smartphones and smart devices has the potential to revolutionize the treatment of depression [7]. By adopting eHealth and mHealth solutions, patients can quickly access their medical records and receive remote care and monitoring through telemedicine apps and other digital health tools. In addition, it can improve patient outcomes by allowing more frequent and convenient check-ins, enabling early detection and intervention of potential health problems, and reducing the need for in-person visits [8]. As technology continues to evolve and integrate with healthcare, it has the potential to improve the patient experience and facilitate better health outcomes.

Currently, it is possible to accompany the therapy of depression by using mobile applications. Still, there are hardly any or no applications that provide the questionnaire data collected from the patients directly to the clinicians in the process. Therefore, this article investigates the functionalities of a mental health monitoring application to improve the connection between patients and clinicians in mental health care, especially depression care, by adopting smartphone usage and mental health apps. Due to the great importance of increasing the acceptance of mental health apps among potential users from the patient group, in this article, we concentrate primarily on the functionalities from the perspective of potential end users. For this reason, we aim to answer the following research question with the present article:

RQ: What are important functionalities of a mental health app for depression care?

Therefore, to answer the research question, we proceed as follows: First, we review existing literature and app store applications to identify functionalities for a mental health app. Then, based on these functionalities, we implemented an application combining and extending the identified functionalities by making the data directly available to the treating clinician. Finally, we evaluate the application in two ways. First, we evaluate the application's usability to ensure a good base for functionality evaluation, and second, we evaluate the implemented functionalities with potential users to rank them according to their importance.

2 Theoretical Background

This section offers an overview of the theoretical underpinnings that informed the development of the present paper.

2.1 Patient Clinician Interaction

The chronic care model (CCM) [9] is a theoretical framework developed to guide the provision of high-quality care to individuals with chronic conditions, such as diabetes, heart disease, and depression. The CCM emphasizes the need for a proactive, patient-centered approach to care delivered through a coordinated, integrated healthcare system. While the model comprises different vital elements, it emphasizes that patients should be actively

involved in their treatment to improve its outcome. Mental health patients pose a particular challenge regarding active monitoring because they tend towards non-adherence and lack collaboration [10]. Moreover, active monitoring may exacerbate stress levels in already vulnerable patients, leading them to discontinue tracking [11]. Despite the challenges, methods like mental health questionnaires for active data collection remain relevant [12]. This paper connects to this theory and explores a technology-enabled approach to actively engage depression patients in their treatment while highlighting patient/physician interaction. A suitable path from a data perspective is integrating patient-generated health data (PGHD) into the treatment workflow.

PGHD refers to health-related information created, recorded, or gathered by individuals outside traditional healthcare settings [13]. PGHD can include a wide variety of data, such as information about symptoms, physical activity, mood, sleep patterns, and diet and measurements of physiological parameters like blood pressure, heart rate, and blood glucose levels [14]. PGHD is often collected using various digital devices, such as smartphones, wearables, and sensors, and can be transmitted to healthcare providers for analysis and use in clinical decision-making. By enabling patients to collect and share their health data with their healthcare providers, PGHD has the potential to facilitate more personalized and precise healthcare. This way, PGHD enables treatment that is tailored to an individual's unique health needs and, at the same time, involves patients actively in their treatment [15, 16].

2.2 Mental Health Applications

In recent years, mental health applications have become increasingly popular to support and improve mental health [17]. These apps offer a range of features, including mood tracking, meditation and mindfulness exercises, cognitive behavioral therapy techniques, and access to mental health professionals. They can potentially increase access to mental health care, particularly for underserved populations, by providing low-cost or free resources that may be accessed from the comfort and privacy of one's own home [18]. However, the quality and effectiveness of mental health apps can vary widely, and their use should be considered complementary, rather than a replacement, to traditional mental health care. It is crucial that mental health apps are evidence-based (especially when recommended by a clinician) and that their effectiveness is evaluated to ensure they provide safe and practical support to individuals struggling with mental health concerns [19].

Incorporating the above-described PGHD in patient-clinician interactions can enhance consultations by better understanding the evolving disease and treatment outcomes [20]. For instance, mental health questionnaires can collect these patients' reported outcomes through mental health applications. However, directly communicating the collected data from the patient to the clinician (i.e., through an application) is still not very common [21].

3 Research Methodology

To answer our research question, we decided to use a design science research approach [22]. We divided the procedure into three different cycles [23]. This structure supports our implementation in representing the individual steps in a targeted way and implementing an application on a well-founded basis to perform the intended evaluation.

For the Rigor Cycle, we chose a two-fold approach. First, to create a basis for developing the application, we conducted a selective literature review on depression screening in the context of smartphones to get further insights into how scientific studies suggest collecting mental health questionnaire data from patients and additional functionalities for the artifact. For this purpose, we searched the journals listed in the Association for Information Systems (AIS) Special Interest Group (SIG) of "IT in Healthcare" [24] and the sub-journals of the Journal of Medical Internet Research (JMIR), like JMIR mental health. Overall, we identified 11 articles that suit our demands.

In addition to this literature review, we identified applications from the App Store and investigated their functionalities for mental health care applications. Due to the large number of apps in the App Store that meet our expectations, we constrain our review to apps with more than twenty user ratings and scores better than four stars. We believe that these limitations allow us to disregard lower-quality apps. Moreover, our analysis excludes applications designed as educational or therapeutic tools. With these limitations, we identified 17 applications that met our requirements.

Following identifying functionalities for mental health monitoring apps through the Rigor Cycle, we created a prototype iOS app during this project's Design Cycle. This step aimed to create the first version of a possible app, which we could use to evaluate the functionalities from the Rigor Cycle with potential users.

Finally, for this paper's Relevance Cycle, we chose a two-stage approach to evaluate the functionalities we identified through the implemented prototype. Therefore, we first evaluated the iOS application with healthcare professionals and potential users for its usability. We included this step to ensure the app provided good usability before using it for the functionality evaluation. Lastly, we tested the application with potential users to determine the importance of the functionalities for mental health apps and used the

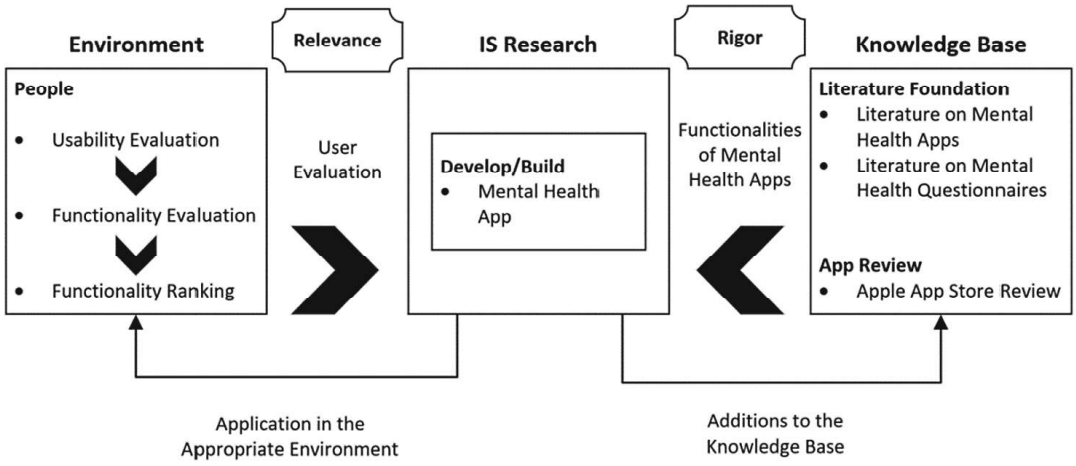

Fig. 1. Conceptual framework of the research approach. Based on Hevner [23]

app to create a ranking for the identified functionalities. Figure 1 shows a conceptual schematic representation of the employed research methodology.

4 Functionalities

In the first step of the Rigor Cycle, we looked at functionalities for mental health monitoring apps from the literature in the IS field, as described above. We were able to identify 11 relevant articles that met our requirements. Although both patients and healthcare professionals can use our prototype, we are concentrating exclusively on functionalities for patients in this step. We could derive five functionalities relevant to implementing the planned app from these articles. First, the app should offer depression screening via a questionnaire [25–31]. Based on the questionnaire, the app should provide users with feedback on their entries as part of self-monitoring, thereby promoting and supporting patient self-monitoring [32]. The app should offer patients mood monitoring, which can predict depressive moods [28, 30, 33]. Some of the included articles describe that patients can be discharged using passively collected data via sensors or smartwatches, for example, and that further valuable data can be included in the monitoring [29, 31, 33]. Table 1 shows the functionalities we identified within the included literature.

Table 1. Functionalities from literature review.

Functionality	Description
Questionnaire Screening	Enables completion of mental health assessment questionnaires [25–31]
Feedback on questionnaire results	Analyzes and provides insights on questionnaire responses [32]
Implements self-monitoring	Tracking of symptoms and behaviors over time [28, 30, 33]
Mood Monitoring	Logging and tracking of emotional states [28, 30, 33]
Supports passive data collection	Automatic data gathering, like sleep and activity patterns [29, 31, 33]

In the second step of this Rigor Cycle, we reviewed mental health apps from the Apple App Store to complement the functionalities identified in the scientific literature. We observed three main App Store categories to where these apps belong: Health and Fitness, Lifestyle, and Medical, of which Health and Fitness were the most popular. Through this step, we identified nine further functionalities for our application.

We divide these functionalities into five categories for a better overview. The categories contain at least one functionality and can also contain functionalities identified

in the literature research. The first category, "Track Progress," describes functionalities that track the user's progress. This includes tracking the patient's progress (e.g., Display of Trends), viewing previous results, and feedback based on the questionnaire (e.g., Evaluation of Questionnaires). The second category, "Track Consistency," describes functionalities that track how regularly the user completed the screening of either mood or depression in the past. This category also includes the functionality to overview the results and history of past questionnaires and mood entries. The third category describes screening for depression. This refers to the functionalities that allow the app to provide clues for a diagnosis of depression based on the questionnaires used. The next category includes all functionalities that give the patient/user access to the contact details of the attending physician in the app or the case of a suicidal result, the number of the suicide prevention hotline. The last category contains functionalities that allow the app to collect further health data about the user. Table 2 provides an overview of the categories of functionalities included in the applications. Table 3 shows the identified functionalities with a brief description.

Table 2. Functionality Categories and App Store Applications

App	Track Progress	Track Consistency	Depression Screening	Contact Data	Health Data Collection
Moodnotes	X	X			
Moodflow	X	X			X
Depression Test	X		X		
InnerHour	X	X	X		
Depressed			X	X	
Vos	X	X			X
Emoods	X	X	X	X	X
Moodistory	X	X			
Youper	X	X	X		X
Woebot	X			X	
Daylio Journal	X	X			
Mind Doc	X	X	X	X	X
Inquiry Health	X		X	X	
Selfapy	X	X		X	
Hello Better	X	X			
CBT Thought Diary	X	X			

Table 3. Functionalities from App Store Review

Functionality	Description
Monitoring patient's progress	Progress tracking through charted questionnaire scores
Tracking Questionnaire Consistency	Tracking questionnaire completion by marking calendar days
In-app access to the clinician's contact information	Clinicians' contact information is visible to the patient
In-app access to emergency services	The patient can use the app to contact the suicide prevention hotline
Review previous results	The patient can see the questionnaire scores achieved in the past
Depression Screening	Tools to diagnose depression such as the use of the PHQ-9 questionnaire
Tracking Activity Data	Collecting activity data from the health app to present it on a timeline
Questionnaire result overview and history	The app provides an overview of the results of past questionnaires
Patient's insights in the clinician component	The clinician can monitor patients' progress through questionnaire scores and activity data

5 Design Cycle

Subsequently, we applied the knowledge we gathered during the Rigor Cycle. Within the Design Cycle, we implemented a prototypical application. Our application combines and implements the functionalities we identified in the Rigor Cycle. Therefore, we added basic functionalities to feed the collected data directly to the clinicians. In this section of the paper, we showcase the features of the designed artifact.

5.1 Common Functionalities

The app uses the same views for both components with minor differences to implement standard functionalities. Further, both share the same color scheme that changes depending on the appearance of the device's display. The essential functionalities available to both user categories are the app settings, patient insights, and authentication and registration. The last one is responsible for securing a user's private data and providing a safe link for data transfers between clinicians and their patients.

5.2 Patient View

After the user login, the home screen displays a calendar with a completion ring for every day the user completed the questionnaire. Within the application, the PHQ-9 questionnaire is the only active task for the patient. The questionnaire is designed in a nine-item

form and is available in German and English, with the answer possibilities transformed to a 5-point Likert scale. After completing the questionnaire, the app presents the user with their score and a short explanation of the score. If the patient receives an alarming score, they are prompted to contact their clinician, friend, and the suicide prevention hotline [25, 32, 34].

The Insights view features two charts: one for the questionnaire results and one for the activity data. The questionnaire chart is updated in real-time for the patient and their clinician after completing it. Additionally, we synchronize all patient activity data gathered by HealthKit from the day preceding the patient's final app interaction to the current date. The data is visualized in a chart. The y-axis on the questionnaire chart indicates the scores of the patients, whereas the y-axis on the activity chart shows the step count. The y-axis's maximum value corresponds to the highest data point gathered in the chosen period, while the x-axis represents the duration over which the data was collected.

In Fig. 2, the first three screenshots present the questionnaire screen, the insights feature, and the screen the user receives after completing the questionnaire with an alarming score.

5.3 Clinician View

The main page of the clinician component is the Patient Overview. This page displays a list of all the patients currently in treatment by the clinician in the form of small cards showing the patient's full name. The clinician can tap on a patient to view their insights through charts. The name of the respective patient is displayed at the top of the Insights tab. After selecting a patient, the app provides the same insights for the clinician as for the patient. The collected data/screenings are always accessible for later examination, as real-time data assessment is not always feasible for clinicians [30]. In addition to presenting the collected data to the patients, clinicians can see the patient's progress over time [30].

In Fig. 2, the last screenshot represents the clinicians' patient overview. The charts/insights screen is the same for patients and clinicians and can be seen in screenshot two.

6 Evaluation

We opted for a two-stage approach to evaluate our application and the identified functionalities. In the first step, we check the application's usability, and in the second step, we check the functionalities identified during the Rigor Cycle.

For the first step, we evaluated the developed artifact using the System Usability Scale (SUS) questionnaire [35] to assess the usability of the implemented artifact. We decided to use the SUS questionnaire for its reliability and robustness in measuring subjective usability. Additionally, we added open questions to the questionnaire to explore further aspects of such applications. We chose to evaluate the artifact with potential users for the patient side of the applications and healthcare professionals.

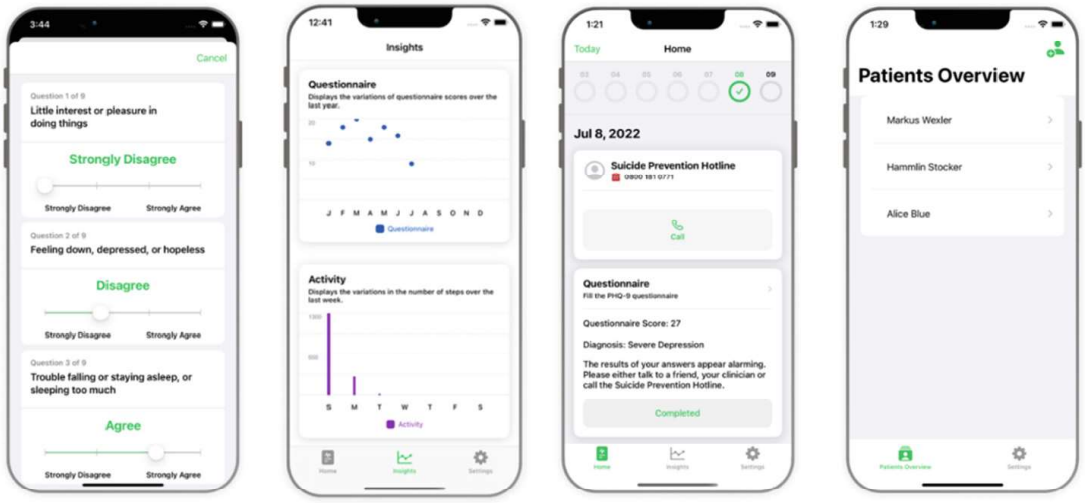

Fig. 2. Patient-Clinician Application Screenshots

For the evaluation, we first introduced the participants to the app and asked them to complete several typical tasks, including registering, logging in, and accepting terms and conditions. We then showed them the app's core functionalities, such as the charts, completing a questionnaire, and the ability to contact care providers, and introduced them to its charting function. In addition, we presented the clinical side of the application to healthcare professionals. These tasks aimed to determine if the app met the usability goals. After completing the tasks, we asked the participants to complete the questionnaire.

We went conducted the evaluation of the functionalities in a modified form. We presented the application to the participants and gave them a list of all identified functionalities. The participants could then rate these functionalities on a 7-point Likert scale according to their importance for the application.

6.1 Usability Evaluation

For the usability evaluation, we recruited 30 participants with potential interest in such an application. The recruited group consists of potential end users and healthcare professionals. For the end user group, we recruited 26 participants. The participants ranged from 21 to 35 years old, with different backgrounds, most of whom were students. Additionally, four healthcare professionals with expertise in mental health research participated in this evaluation process. Their backgrounds are psychotherapists in training, general practitioners, and medical researchers.

Table 4 describes the results of the SUS survey. The application scored well above average. SUS scores of 82.6 and 86.25 are generally considered a good rating for the usability of an application. These high usability values for the app enabled us to ensure that the implemented functionalities are well integrated and, therefore, suitable for testing the functionalities.

6.2 Functionality Evaluation

For the final step in this design science project, we evaluated the functionalities implemented in the app. For this purpose, we recruited 36 participants from the group of potential end users with an age range from 18 to 62 years old, averaging around 36.8 years old. The group is predominantly male, with 24 male participants compared to 10 females. Additionally, two people either did not respond or did not identify as either male or female. Fifteen participants answered that they suffered from depression, and 21 answered that they did not. This diversity in both age and mental health status provides a broad perspective on preferences and needs concerning the functionalities of mental health apps, particularly in the context of depression treatment.

The evaluation results provide insightful data on the preferences and perceived importance of various features in the implemented app. The highest-rated feature, with an average score of 6.25, is in-app access to emergency services. This highlights the critical need for immediate support in crises. This is closely followed by the implementation of self-monitoring (6.19) and patient progress monitoring (6.05), with scores above 6, showing a strong preference for features allowing users to track their mental health status and progress. Feedback on questionnaire results (6.03) and the ability to view previous results (5.84) were also rated as very important, suggesting that the users appreciate insights into their collected data. At the lower end of the scale, the tracking of activity data (4.75) and passive data collection (4.48) were considered the least important, although still important on the absolute scale. The results' standard deviations range from 1.16 to 1.87. This data highlights the importance of active user engagement and direct access to support in mental health apps but also recognizes the value of comprehensive monitoring and feedback mechanisms. Table 5 provides a complete overview of the ranking.

Table 4. SUS Results

Participant	No. Participants	Mean	Min	Max
End-Users	26	82.8	50	95
Professionals	4	86.25	75	92.5

Table 5. Results of Functionality Evaluation

Ranking	Functionality	Avg Score	Std Dev
1	In-app access to emergency services	6.25	1.47
2	Implements self-monitoring	6.19	1.22
3	Monitoring patient's progress	6.05	1.16

(*continued*)

Table 5. (*continued*)

Ranking	Functionality	Avg Score	Std Dev
4	Feedback on questionnaire results	6.03	1.30
5	Review previous results	5.84	1.35
6	Questionnaire result overview and history	5.66	1.55
7	In-app access to the clinician's contact information	5.61	1.57
8	Depression Screening	5.44	1.46
9	Tracking Questionnaire Consistency	5.33	1.25
10	Mood Monitoring	5.31	1.56
11	Questionnaire Screening	5.26	1.52
12	Patient's insights in the clinician component	4.89	1.78
13	Tracking Activity Data	4.75	1.77
14	Supports passive data collection	4.48	1.87

7 Discussion

This article aims to analyze functionalities for mental health apps that facilitate data communication. The following section discusses the opportunities for improvement and the potential of introducing such apps in depression treatment.

Based on the CCM, involving patients in their treatment is essential [9]. Mental health apps give patients access to mental health support and monitoring, some of which they would not have had without these apps [36]. With the implemented artifact, we implement functionalities described in scientific literature and used in established apps. The implemented app allows clinicians to access their patients' data whenever they want and always have the most up-to-date data. This accessibility and richness of data enable clinicians to track the effectiveness of treatment over a more extended period, anticipate mood fluctuations in the short term, and identify the early onset of deteriorating symptoms [37]. The usability evaluation results clearly show that healthcare professionals are willing to use such an application in the future. However, the functionality that the healthcare professional has direct access to the data in the doctor component is rated less important by patients compared to other functionalities. Therefore, it is essential to address the potential concerns of end-users and ensure that the application can be easily integrated into the existing treatment processes. This leads to the fact that the app does not represent an additional burden for the patients which can lead to less adherence [10] and increase patients' stress levels [11]. We think that such applications will be used primarily for patients who have overcome the worst phase of their depression and for whom the application can be used to monitor the progress of the subsequent therapy.

Our functionalities evaluation shows that, overall, quick access to help when it is needed is essential to potential users. Access to the suicide emergency number directly from the app highlights the critical importance of having immediate access to help in the event of a crisis. In comparison, the participants rated the access to the contact details of

the treating doctor as not reasonably as necessary. We assume that this rating is related to the fact that the participants rated the urgency differently. In the event of an acute suicidal crisis, immediate action must be taken to prevent suicide using the emergency number; for example, the attending physician is more likely to be called in for help in non-life-threatening crises. Given the critical role of crisis support features, it is crucial for applications to enhance their implementation to ensure optimal assistance for patients facing urgent crises. Thus, it appears logical to adopt further strategies as outlined in Martinengo, Van Galen [38], enabling the timely and optimal support of at-risk patients.

Surprisingly, the functionalities for passive data collection and activity tracking were rated the lowest in our app. We can attribute this rating to the different characteristics of these functionalities. First, we think that some of the users might not know or do not make the direct connection between these functionalities and depression or mental health in general. The participants might not be fully aware of how activity data and passive data collection can benefit their mental health and undervalue these features [12]. Due to the implemented and presented functionalities, the participants might perceive features like mood tracking or depression screening as more relevant to their immediate needs. Education on how passive data collection and activity tracking can contribute to a holistic understanding of their health might increase their perceived value. We also think users might prefer more active engagement with the app. Activity data tracking and passive data collection are often background processes that do not require direct user interaction. Users may find active features, like completing questionnaires or receiving direct feedback, more engaging and immediately rewarding. This preference might stem from the users feeling that manually entered data is more accurate or relevant to their condition.

8 Contribution

8.1 Theoretical Contribution

With the present article, we contribute to several research areas. First, our paper can contribute to understanding how user-centered design principles apply specifically to mental health applications. User-centered design principles are fundamental in our context of mental health and depression in particular. Depression is a highly individual illness, which means that user-centered design can help to ensure that the functionalities implemented can be helpful in diagnosis and therapy. Functionalities such as the inclusion of the suicide emergency number or the contact to the attending physician for crises, which were rated very highly in our evaluation, can often be overlooked in technology-centered approaches.

Furthermore, our paper contributes to a broader understanding of PGHD (through self-report questionnaires or passive data collection). Our results show that although data is actively collected, for example, through questionnaires, it is still rated as necessary by the users concerned without much effort in everyday life through smart sensors, smartwatches, or smartphones. This primarily supports theories that support a mix of actively and passively collected PGHD as the most sensible option. This combination of data collected in everyday life can ultimately provide the treating physician with further essential clues in diagnosing and treating the disease.

8.2 Practical Contribution

In addition to our contribution to theory, we also make a practical contribution with our article. First of all, the evaluation of the functionalities can be used by developers to implement Mental Health applications. The ranking can be used to equip the apps with the needed functionalities. This eliminates less popular or less required functionalities, increasing acceptance among potential users. In addition, this allows the focus to be placed on more essential functionalities, thus preventing users from being overwhelmed by too many functionalities. As a result, such apps can be designed to be more user-friendly.

Another practical contribution of our article is the evaluation of the functionalities. The results show a low assessment of the importance of passive data collection and activity data. As described in the discussion, this can be attributed to the fact that respondents potentially do not see much benefit in these data types or believe that a more significant effort is involved in collecting this data. Other studies [12] have shown that facilitators for the use of PGHD in general, including these types of data, are influenced by user characteristics. These include, for example, the perceived usefulness and relevance of these types of data. This article, therefore, demonstrates the need to educate potential users on the relevance and usefulness of passively collected PGHD.

9 Limitations

Like other studies, some constraints apply to our research. In this paper, we tested an application, and despite our efforts to remain impartial, confirmation bias could have influenced our results. Specifically, through being present during user testing and evaluation, we may unintentionally have influenced participants' perceptions of the usability and usefulness of the application. Respondents might provide socially desirable answers or might not have a complete understanding of their behaviors and preferences. This could lead to inaccuracies in the data about the importance and effectiveness of different app functionalities.

A further potential limitation of our app evaluation is the small sample size. With only 36 respondents in the functionality evaluation, the sample size is relatively small, which may limit the generalizability of the findings. In addition, the sample appears biased towards a younger, predominantly male population. This lack of diversity in terms of age and gender may not accurately reflect the needs and preferences of the wider population, especially considering that mental health problems and the usability of mental health apps can vary significantly across age groups and between genders. With a larger sample size, we could have gathered more diverse perspectives and identified additional issues or opportunities for improvement that were not captured by our current sample.

With our study setup, we primarily focus on the functionalities of mental health apps for depression care. This excludes the consideration of the broader context in which these apps are used. Additionally, the user's acceptance of technology, the severity of their conditions, and treatment methods may influence their perception and relevance of the evaluated functionalities.

10 Future Research

Future research could focus on investigating clinical workflows to incorporate mental health applications. This research could entail examining existing clinical workflows to identify gaps in mental health monitoring, particularly concerning patient adherence and patient-clinician collaboration. Furthermore, it may involve evaluating the feasibility of incorporating mental health monitoring applications like the implemented prototype into existing clinical workflows. This research could also explore the effectiveness of these monitoring tools in improving patient outcomes and identify barriers to their adoption and strategies for overcoming them. Ultimately, the findings from this research could inform the development of more effective clinical workflows that incorporate mental health applications to enhance mental health care delivery.

A future addition to the present study could be a more comprehensive study on the functionalities of mental health apps. It would be conceivable to create a more comprehensive list of functionalities based on this study and to test them quantitatively with a larger sample. This could result in a more meaningful list of functionalities for all demographic groups. This more comprehensive quantitatively validated list could then be used to implement a new prototype to be evaluated in a longitudinal study. This could help understand whether certain features become more or less important to users as their mental health journey progresses.

11 Conclusion

In this paper, we address the question of which functionalities of a doctor-patient interface are most important to potential users. For this purpose, we developed a prototype for a mental health app for depression care, which we evaluated for its functionalities and their importance after a usability evaluation. Both evaluations confirm such applications' importance and their functions' value. The implemented app shows high usability, and by evaluating the implemented functionalities, we identified a strong preference for quickly accessible crisis support and self-monitoring options. Our paper contributes to a broader understanding of information systems within the field of mHealth apps for mental health care and depression care.

Acknowledgments. The POKAL-Study-Group (PrädiktOren und Klinische Ergebnisse bei depressiven ErkrAnkungen in der hausärztLichen Versorgung (POKAL, DFG-GRK 2621)) consists of the following principle investigators: Tobias Dreischulte, Peter Falkai, Jochen Gensichen, PeterHenningsen, Markus Bühner, Caroline Jung-Sievers, Helmut Krcmar, Barbara Prommegger, Karoline Lukaschek, Gabriele Pitschel-Walz and Antonius Schneider. The following doctoral students are as well members of the POKAL-Study-Group: Jochen Vukas, Puya Younesi, Feyza Gökce, Victoria von Schrottenberg, Petra Schönweger, Hannah Schillock, Jonas Raub, Philipp Reindl-Spanner, Lisa Hattenkofer, Lukas Kaupe, Carolin Haas, Julia Eder, Vita Brisnik, Constantin Brand and Katharina Biersack.

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