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ORIGINALS

Construction and validation of the content and appearance of the application prototype Psychosocial Rehabilitation Project

Construcción y validación del contenido y la apariencia del prototipo de la aplicación Proyecto de Rehabilitación Psicosocial

Construção e validação do conteúdo e aparência do protótipo do aplicativo Projeto de Reabilitação Psicossocial

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ABSTRACT:

Introduction: Mental health applications can optimize the work of professionals, overcoming technical and operational challenges when creating psychosocial rehabilitation projects. However, developing an application requires an initial planning phase, known as prototyping.

Objective: To construct and validate the webapp prototype “App psychosocial rehabilitation project” by mental health professionals.

Method: The prototyping of the application for a Psychosocial Rehabilitation Project was based on the graphic design method, being performed by the main researcher in the Marvel software. The requirements for prototyping were obtained through an integrative literature review and focus group interview. The prototype was evaluated by 15 mental health professionals in two rounds, using the Content Validity Index to evaluate appearance, objectives and relevance, considering valid items that obtained values greater than or equal to 0.8.

Results: The first version obtained an overall Content Validity Index of 0.98. For Objectives, Appearance, Structure and Organization and Relevance, respectively: 1.00, 0.96 and 1.00. In the

second version, the overall Content Validity Index was 0.96. For Objectives, Appearance, Structure and Organization and Relevance, respectively: 0.96, 0.96 and 0.91.
Conclusion: This research enabled the webapp prototype “App psychosocial rehabilitation project”. To be consistent with the objective, structure and organization, as necessary items for the construction of a Psychosocial Rehabilitation Project.

Keywords: Software Design, Mobile Applications and Psychiatric Rehabilitation.

RESUMEN:

Introducción: Las aplicaciones de salud mental pueden optimizar la labor de los profesionales, superando los desafíos técnicos y operativos en la creación de proyectos de rehabilitación psicosocial. Sin embargo, el desarrollo de una aplicación requiere una fase inicial de planificación, conocida como prototipado.
Objetivo: Construir y validar el prototipo de la “App proyecto de rehabilitación psicosocial” por profesionales de la salud mental.
Metodología: El diseño del prototipo de la aplicación para un Proyecto de Rehabilitación Psicosocial se basó en el método de diseño gráfico y se realizó por el investigador principal con el programa Marvel. Los requisitos para diseñar el prototipo se obtuvieron mediante una revisión integradora de la literatura y entrevista con un grupo focal. El prototipo fue evaluado por 15 profesionales de la salud mental en dos rondas, utilizando el Índice de Validez de Contenido para evaluar la apariencia, los objetivos y la pertinencia, donde se consideraron válidos los índices que obtuvieron valores superiores o iguales a 0,8.
Resultados: La primera versión obtuvo un Índice de Validez de Contenido global de 0,98. Para Objetivos, Apariencia, Estructura y Organización y Pertinencia, respectivamente: 1,00, 0,96 y 1,00. En la segunda versión, el Índice de Validez de Contenido global fue de 0,96. Para Objetivos, Apariencia, Estructura y Organización y Pertinencia, respectivamente: 0,96, 0,96 y 0,91.
Conclusión: Esta investigación permitió el prototipo de la “App proyecto de rehabilitación psicosocial”. Es coherente con el objetivo, la estructura y la organización, como elementos necesarios para la construcción de un Proyecto de Rehabilitación Psicosocial.

Palabras clave: Diseño de Software, Aplicaciones Móviles y Rehabilitación Psiquiátrica.

RESUMO:

Introdução: Aplicativos para saúde mental podem otimizar o trabalho de profissionais, superando desafios técnicos e operacionais na criação de projetos de reabilitação psicossocial. No entanto, o desenvolvimento de um aplicativo exige uma fase inicial de planejamento, conhecida como prototipação.
Objetivo: construir e validar o protótipo do *webapp* “App projeto de reabilitação psicossocial” por profissionais de saúde mental.
Método: a prototipação do aplicativo para um Projeto de Reabilitação Psicossocial foi fundamentada no método de *design* gráfico, sendo realizada pelo pesquisador principal no *software* Marvel. Os requisitos para a prototipação foram obtidos por meio de uma revisão integrativa da literatura e entrevista de grupo focal. O protótipo foi avaliado por 15 profissionais de saúde mental em duas rodadas, utilizando o Índice de Validade de Conteúdo para avaliar a aparência, objetivos e relevância, sendo considerados itens válidos que obtiveram valores maiores ou iguais a 0,8.
Resultados: a primeira versão obteve Índice de Validade de Conteúdo geral de 0,98. Para Objetivos, Aparência, Estrutura e Organização e Relevância, respectivamente: 1,00, 0,96 e 1,00. Na segunda versão, o Índice de Validade de Conteúdo geral foi de 0,96. Para Objetivos, Aparência, Estrutura e Organização e Relevância, respectivamente: 0,96, 0,96 e 0,91.
Conclusão: a presente pesquisa viabilizou o protótipo do *webapp* “App projeto de reabilitação psicossocial”. Es coerente com o objetivo, a estrutura e a organização, enquanto itens necessários para a construção de um Projeto de Reabilitação Psicossocial.

Palavras-chave: Design de Software, Aplicativos Móveis e Reabilitação Psiquiátrica.

INTRODUCTION

The concept of Psychosocial Rehabilitation (PR) is defined as the process of facilitating the restoration of the autonomy of psychiatric patients with personal, socio-affective and socio-economic limitations, with a view to enabling them to exercise their social role in the community [1], allowing these patients to play a leading role in their citizenship [2].

The Psychosocial Rehabilitation Project (PRP) is the clinical instrument that systematizes the PR process in the care of psychiatric patients offered by mental health professionals [3]. It enables the restitution of contractual power to psychiatric patients, in order to expand their autonomy, independence, social functionality and exercise of their rights as citizens [4].

The PRP is a complex instrument, as it requires from professionals theoretical and practical knowledge in mental health, clinical skills, attitudinal behaviors (empathy, qualified listening and sensitivity) and ability to plan and manage the life project of psychiatric patients, without leaving them decontextualized in relation to their needs [3].

An application (app) for the construction of psychosocial rehabilitation projects [5] developed by mental health professionals can redeem much of the difficulties (conceptual complexity of PRP, low team engagement, failures in interprofessional communication and fragmented psychosocial care network) reported by these professionals in the construction of psychosocial rehabilitation projects in clinical contexts [5-8].

This is because mental health apps have been pointed out in the literature as revolutionary tools that provoke radical changes in health. In addition, they can improve the quality of their care, promote well-being and quality of life, reduce barriers to access their services, as well as speed up consultations, interventions, referrals and information sharing in mental health [5,9].

However, it is not easy to prototype a mental health app. Most health apps do not have a satisfactory evaluation in terms of structure, content, function and esthetics, requiring a new prototyping according to the needs of its users/professionals [10].

In this sense, the development of the webapp “App psychosocial rehabilitation project” must have a prototype anchored in scientific evidence that legitimizes its purpose (to construct psychosocial rehabilitation projects), feasibility, impact/effectiveness/efficiency and bioethical responsibility [11,12]. In addition, it must prevent it from having technological defects (bugs and “broken” interfaces) [13], preventing it from becoming useless to its users/professionals, as it results in another zombie app and no demand in virtual purchase/download stores [14].

Therefore, the prototyping focused on mental health professionals ensures their participation in the interpretation and adaptation of how the webapp “App psychosocial rehabilitation project” can solve their difficulties in the construction of psychosocial rehabilitation projects, making it useful in their daily practice [13,15].

During prototyping to enhance interactivity with mental health professionals, researchers/developers can collect their feedback using qualitative methods, such as focus groups [13] or/and validation of their content and appearance using the Content Validity Index (CVI) (quantitative) [15,16]. In addition, they have the possibility of using interactive software, such as Marvel software, which has features that seek active user participation through the experimentation of functionalities that simulate some features of an app in real time in a realistic way. [17,18].

Through the prototyping of the webapp prototype "App psychosocial rehabilitation project", it is aimed to enable a coherent design with the stages of PRP, attractiveness, simplicity, legibility and applicability to the clinical reality of mental health of professionals [6,9]. Thus, the study aimed to construct and validate the webapp prototype "App psychosocial rehabilitation project" by mental health professionals.

METHOD

The research developed in this article consists of a methodological study [19], being an excerpt from the research approved by the Ethics and Research Committee of the School of Nursing of Ribeirão Preto, which belongs to the University of São Paulo (EERP-USP), through Opinion number 6.605.152, dated January 3, 2024 (CAAE: 75372623.5.0000.5393). In this article, the stage of prototyping the webapp "App project for psychosocial rehabilitation" and the validation of its content and appearance by the IVC will be described.

Prototyping of the webapp "App psychosocial rehabilitation project" and validation of its content and appearance

The prototyping of the webapp "App psychosocial rehabilitation project" was based on the graphic design methodology, which allows researchers/developers to use subjective aspects, such as intuitiveness and professional experience, during the creative process of developing technological products [20]. All the construction of the screens of this app took place in the Marvel software [18], and the creative process was guided by the search for simplicity [14], translation and dialogue between technology and mental health [21].

Thus, the main researcher of this work constructed the screens by choosing the technological resources and functions made available in the Marvel software, giving life to the webapp prototype "App psychosocial rehabilitation project". For the prototyping of the first version of the webapp prototype "App psychosocial rehabilitation project" in the Marvel software, it was first necessary to raise the requirements for its prototyping through Integrative Literature Review (ILR) and Focus Group (FG).

The ILR was carried out in several national and international databases (36 articles and 1 mental health app), contributing to the webapp prototype "App psychosocial rehabilitation project" regarding its structure, based on the phases of the PRP, insertion of a video explaining to the user about PR and PRP theory, possibility of locating user support services through GPS, login through password for security requirement, permission for the users to be aware of security and privacy policies

before creating their account, creation of buttons, menu, settings, changeable screens and profile and operationalization in the Android[MT] operating system [22].

The FG was carried out with the participation of eight mental health professionals (nurses, physicians, social workers, occupational therapists and psychologists) from a psychosocial care center (type 3) in a municipality in the countryside of São Paulo, resulting in knowledge of ideas of technological resources to be used in the management of mental health care, guided by the Psychosocial Rehabilitation Process during the stages of the PRP to be built, monitored and evaluated in the webapp "App psychosocial rehabilitation project" [23].

Thus, for the webapp prototype "App psychosocial rehabilitation project", the following were considered: design that makes it possible to insert interventions/activities to be planned/carried out with psychiatric patients individually; reminder/warning feature for patients and professionals, by sending links to access "parts" of the PRP; articulation of the stages of the PRP with technology (visualizing patient activities and agreements with social authors); and visualization of reports and interfaces for various platforms and physical and electronic components (hardware) [23].

Chart 1. Description of the construction of the webapp prototype "App psychosocial rehabilitation project" by the main researcher.

Stages	Version 1	Version 2
Pre-prototyping	Access to the online virtual platform of the Marvel software, appropriation of resources and functionality available upon individual reading. Reading the reports of the results of the integrative literature review and focus group interview.	Not applicable.
Prototyping	On the Marvel platform, the main researcher built the screens of the webapp "App psychosocial rehabilitation project", based on the stages of the Psychosocial Rehabilitation Process, interspersing Marvel technological resources, such as icons, symbols, virtual app structure for smartphones, buttons and Google Images consultation of free availability to compose the layout of the screens and reference figures for functionalities and design.	Use of the structure provided in the "projects" tab of version 1 of the webapp prototype "App psychosocial rehabilitation project", which was renamed version 2, after the improvement changes, as recommended by the mental health professionals evaluators. During the prototyping of improvement suggestions, the principal investigator modified the design in order to improve the readability and structural organization of the Psychosocial Rehabilitation Project.

Source: prepared by the authors (2024).

The first version of the webapp prototype "App psychosocial rehabilitation project", prototyped in the Marvel software, was submitted via link, which automatically and

virtually directs to the Google Forms platform, which was hosting, in addition to this version, the validation instrument [24,25], individually, for 15 mental health professionals with more than 1 year of experience in mental health, CAPS workers [26].

These professionals were screened by researchers on social networks (WhatsApp and Instagram professional groups) and became evaluators of the webapp prototype "App psychosocial rehabilitation project" (the literature recommends between 6 and 20 participants) [15]. Thus, they participated in the first round (evaluating the first version), through the content and appearance validation instrument, adapted from the studies [24,25], which has items to evaluate the prototype for objectives, appearance, structure and organization and relevance. There was room in this instrument to add notes with suggestions and recommendations.

Based on the suggestions from these professionals for the improvement of the first version of the webapp prototype "App project for psychosocial rehabilitation" in the first round of evaluation, the researchers accepted the modifications, making the changes in the Marvel software, resulting in the construction of the second version of the webapp prototype "App psychosocial rehabilitation project", which was again submitted to content and appearance validation, using the same instrument and evaluation criteria mentioned above for the second round of evaluation [24,25].

In order to obtain the degree of validity, the CVI was calculated using the formula: sum of the responses of values 3 and 4 (measured on the Likert scale) of expert judges, divided by the total number of their responses issued [27]. Those who obtained CVI greater than or equal to 0.8 [15,27] are considered desirable agreement or valid items.

As for the presentation of the validated items of the prototype (Objectives, Appearance, Structure and Organization and Relevance), the arithmetic mean of the results obtained for each sub-item of the instrument used in this research was applied, derived from the answers given by participants [24,25].

RESULTS

In Table 1, it can be perceived that the following predominated among the participants: female (N=15 evaluators), white (N=10), professional nurses (N=6), mental health specialists (N=15), being a master participant and a PhD in mental health, aged between 31 and 40 years (N=7), with experience in mental health between 7 and 11 years (N=7).

Table 1. Characterization of the evaluators of the webapp prototype “App psychosocial rehabilitation project” (N=15)

QUANTITATIVE VARIABLES	**n**	**%**		**σ**	**Md**	**Mo**
Age (years)	15	100.0	40.4	12.7	35	34
Mental health experience (years)	15	100.0	8.0	6.0	7	2 and 6
QUALITATIVE VARIABLES	N	%				
SEX	15	100.0				
Female	15	100.0				
Male	0	0.0				
ETHNICITY	15	100.0				
White	10	66.6				
Mixed	5	33.4				
OCCUPATION	8	100.0				
Nurse	6	40.0				
Psychologist	4	26.6				
Social worker	2	13.3				
Physical therapist	1	6.7				
Occupational therapist	1	6.7				
Physician	1	6.7				
EDUCATION	15	100%				
Mental health experts.	15	100.0				
AGE (BY GROUPS)	15	100%				
20-30 years	3	20.0				
31-40 years	7	46.6				
41-50 years	1	6.7				
51-60 years	3	20.0				
61-70 years	1	6.7				
EXPERIENCE IN MENTAL HEALTH (BY GROUPS)	15	100.0				
1-5	5	33.4				
6-11	7	46.6				
12-17	2	13.3				
18–29	1	6.7				

Source: prepared by the authors (2024).

The first version of the webapp prototype “App psychosocial rehabilitation project” presented 24 screens. Screens 1 to 2 present the registration interface of the mental health professional, through e-mail and password, with prior visualization of the data security and privacy policy. Screens 3 to 4 demonstrate the main screen of the webapp “App psychosocial rehabilitation project” with command menu and orientation videos on PR and PRP.

On screens 5 to 14, the structure of the PRP is presented, with a panel of projects built/under construction, “visualize the individual PRP of each patient”, as well as the stages of the PRP (insert Patient Data, Situational Diagnosis in Mental Health, Mental Health Care Goals, Mental Health Intervention, Mental Health Agreements and Evaluation). In addition, there is the interface for scheduling a case study.

On screens 15 to 20, there are user support resources, such as availability of mental health references, legislation and search for RAPs services, sending of a link with part of the PRP to users/professionals and services and reporting. Finally, screens 21 to 23 present acknowledgments, information from developers and technical information from the webapp "App psychosocial rehabilitation project", which will be developed in the future.

Figure 1. Example of screens of the webapp "App psychosocial rehabilitation project" (version 1)

Source: Marvel Software, 2024

In this study, the mental health professionals who were evaluators also made suggestions for improvement on the screens of the first version of the webapp prototype "App psychosocial rehabilitation project" (first round), producing the second version, which was again submitted to the second round of evaluation. Below, one can check the changes in Table 2.

Table 2. Presentation of suggestions for the improvement of mental health professionals who evaluated the webapp prototype "App psychosocial rehabilitation project" (versions 1 and 2).

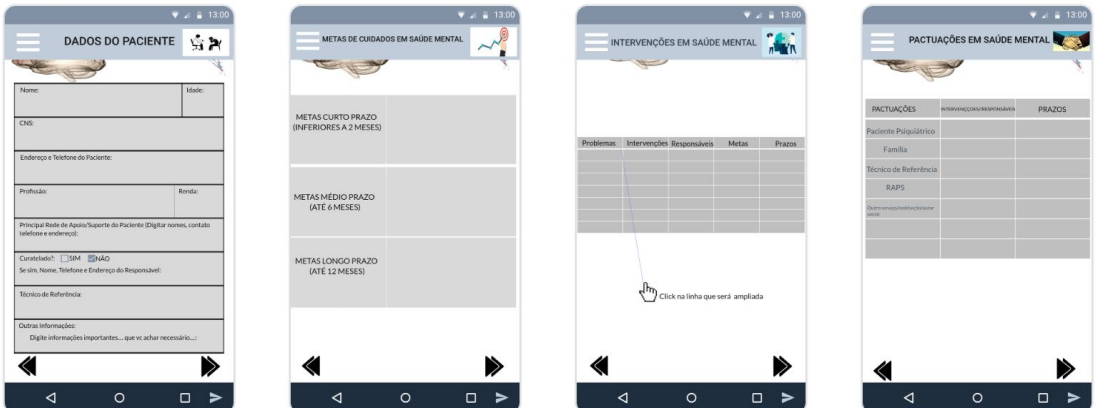
VERSION 1 (Figure 1) Screens	CHANGES	VERSION 2 (Figure 2) Screens	CHANGES
1	Tutorial resource on how to use the webapp "App psychosocial rehabilitation project" to know and learn its features before the user logs in (suggestions from psychologist 1).	3	The "share" icon was changed to "send" (researcher).
6 and 7	Leaving only the topic "agreement" (suggestions from nurse 3).		
8	Option of ward or not, contacts and addresses of the main support network of the psychiatric patient in PR (suggestions from psychologist	8, 9, 10, 11, 12 and 13.	Improvements in the organization of content (optimization of the distribution of content in the spaces of the screens),

VERSION 1 (Figure 1) Screens	CHANGES	VERSION 2 (Figure 2) Screens	CHANGES
	1).		leaving a more pleasant layout, in addition to being less loaded and polluted (researcher).
8 to 9	The information to be collected from the patient/family was inserted to better support the evaluation of the professional in the topics “Patient Data” and “Situational Diagnosis in Mental Health” (suggestions from nurse 3 and occupational therapist).	9	Space was added for the mental health professional to type “Individual Resources/Skills”, “Potentialities” and “Desires and Dreams of Life” to be collected from the patient as a guide to the uniqueness in the PR process (suggestions from nurse 3).
11	The topic “Mental Health Interventions” was organized according to the order: Problem, Intervention, Responsible, Goal and Deadline. In addition, a technological resource to expand by “clicking on the line” was accepted (suggestions from nurse 3).	9 and 10	It was corrected in the "medium" term; and it was asked to correct the term that has a spelling error ("Potentialities") (suggestions from nurse 3).
12	The topic “Agreements in Mental Health” was maintained (suggestions from nurse 3).	12	In the topic “Agreements in Mental Health”, spaces were included for insertion of agreements with “Psychiatric Patient”, “Family”, “Reference Technician” and “RAPS”, among other options, which can be seen on this screen (suggestions from the physical therapist and nurse 3).
8 to 14	Consistently improves in relation to appearance, design and content, font of letters, especially with regard to the PRP stage (suggestions from nurses 3 and 7 and the physical therapist).		
8 to 16	Consistently improves in relation to the presentation and esthetics of the webapp “App		

VERSION 1 (Figure 1) Screens	CHANGES	VERSION 2 (Figure 2) Screens	CHANGES
	psychosocial rehabilitation project" (suggestions from the physical therapist).		
11, 13, 14 and 23	The "enlarge" feature was inserted to improve readability (based on the suggestions from the physical therapist and the nurse 7).	15, 16	Inserted the function of "Patient Evolution", which also did not have in the first version (suggestion of the physical therapist).
18	The reference of the two books was added: Saraceno (2001) and Pitta (2016) (suggestions from nurse 3).	17	The "Technical Information" was corrected, to the detriment of the corresponding screen in the previous version, which contained "Technical Information" (researcher).
17	Inserted the legislation on harm reduction (Ordinance nº 1.059/2005) (suggestions from nurse 3).		
22	Inserted the print feature on the screen (suggestions from nurse 3).	20	Inserted the feature to locate RAPs devices, with the insertion of the patient's address (researcher).
		21	Added the topic "Reports and Statistics" (researcher).
		23 and 24	The topic "Productivity Record" was inserted and the possibility of generating a report to interface with health information systems (RAAS-Psychosocial Care and BPA) (suggestions from the physical therapist) was included.
21	Resource to share/send parts and/or the entire report regarding the PRP (suggestions from nurse 3).	23	Resource that allows the professional to mark the procedures performed with the patient, according to the RAAS-Psychosocial Care and BPA, such as, for example, the professional can mark the procedure "Individual Care", but can also "touch" it to present its definition (suggestion of the physical therapist).

Source: prepared by the authors (2024).

Figure 2. Example of screens of the webapp “App psychosocial rehabilitation project” (version 2)



Source: Marvel Software, 2024.

Table 3, below, presents the items related to the Content Validation Indexes (CVIs) and appearance indexes of both the first and second versions of the webapp prototype “App psychosocial rehabilitation project” (first and second rounds of evaluation) and CVIs, respectively, for each item, in the first round, regarding the Objectives (1.00), Appearance, Structure and Organization (0.96) and Relevance (1.00). It was possible to notice that the CVIs ranged between 0.93 and 1.0.

In the second round of evaluation, the following were obtained: general CVI (0.96), Objectives (0.96), Appearance, Structure and Organization (0.96) and Relevance (0.91). It was possible to notice that the CVIs ranged between 0.91 and 1.00.

The final validated version can be found at the link: https://marvelapp.com/prototype/31b02f26.

Table 3: Presentation of the content validation and appearance of the webapp prototype “App psychosocial rehabilitation project”.

Content and appearance validation items of the webapp prototype “App psychosocial rehabilitation project”	Round 1 (N=15)	Round 2 (N=11)
	CVI	CVI
Objectives		
Does the prototype achieve the proposal to enable the construction of an app for psychosocial rehabilitation projects?	1.00	0.91
Does the proposed prototype achieve the goal of constructing a mental health app to facilitate the construction of psychosocial rehabilitation projects by mental health professionals?	1.00	1.00
Mean	**1.00**	**0.96**
Appearance Structure and Organization		
Is the language written in the prototype adequate for agreement and spelling?	0.93	1.00
Is the written language clear and appropriate for the intended audience (mental health professionals)?	1.00	1.00
Are the font sizes, titles, and content written in the prototype clear and appropriate?	1.00	0.91

Is the content written in the prototype consistent with the assumptions of constructing a Psychosocial Rehabilitation Project?	0.93	1.00
Is the content written in the prototype consistent with the theory of Psychosocial Rehabilitation and content of mental health?	0.93	0.91
In the prototype, is there a linear, logical and interdependent coherence in relation to the construction of a Psychosocial Rehabilitation Project?	1.00	1.00
Are the visual elements present in the prototype consistent with the proposal to construct a Psychosocial Rehabilitation Project?	1.00	1.00
Are the sizes of the visual elements adequate?	0.93	1.00
Are the colors and shades of the visual elements esthetically pleasing?	1.00	1.00
Are the visual elements attractive?	0.93	0.91
Is the overall look of the prototype appealing?	0.93	0.91
Is the prototype generally organized in a logical and interdependent sequence?	0.93	1.00
Mean	**0.96**	**0.96**
Relevance		
Does the prototype provide theoretical and practical support to mental health professionals in the construction of a Psychosocial Rehabilitation Project?	**1.00**	**0.91**
General CVI of the webapp "App psychosocial rehabilitation project"	**0.98**	**0.96**

Source: prepared by the authors (2024).

DISCUSSION

Prototyping is the main stage where researchers and developers need to devote attention, time and involvement during the development of mental health applications. According to studies [12,16,28-30], there is no standard way to prototype, as this process is guided by the objectives and desired purposes for the idealized application, so that it, as a product, complies with the esthetic, functional and technical needs of users before its availability [12].

The Marvel platform can make mental health apps attractive and functional prototypes, consisting of a dynamic resource among several platforms and software that may be available to researchers and developers for use during the prototyping of mental health applications and allowing application users to perceive and feel their purpose, usefulness and applicability in the clinical context of mental health. In addition, the main researcher of this work raised the need to develop prototyping skills and competencies in Marvel that are not available in health/mental training [12,31].

During the prototyping of the webapp "App psychosocial rehabilitation project", there was a lot of attention, care and active participation of the main researcher of this work for the construction of his screens on the Marvel platform [12,13,18], being previously guided by the literature review and focus group to the script and knowledge of the

purpose and technological resources to be translated and adapted in this application [12,13]. These aspects are corroborated by studies that also use literature review and focus group to prototype and develop applications on mental health [13,15,16,32].

Complementing the prototyping, during the development stage of the webapp prototype “App psychosocial rehabilitation project” [15,19], the content validation technique enabled the prototype to be customized and consistent with the needs and solution of the problems experienced by the mental health care context [6-8].

This is because the approach focused on mental health professionals [17,33], future users of the webapp "App psychosocial rehabilitation project", allowed to identify specific factors and resources of the needs of mental health, customizing the prototype and provoking greater engagement of these users, for conceiving the resource as a useful application and applicable to professional practice [5,6,17,34-36].

This perception is corroborated by a study that developed and tested an app for the treatment of depression, which realized that the simplicity of resources and integration with the users’ daily life are crucial elements to integrate the app and provide a guarantee of satisfaction and usability [17].

For the literature, the suggestions from mental health professionals, through the content validation technique, is a crucial moment to identify the problems and barriers [13,15,16] that can impair the quality and functionality of mental health applications, influencing their future engagement, search, usability and survival [5,10,13].

These aspects are corroborated by a study that realized that low acceptance and low usability are related to the fact that mental health applications are not applicable to the reality of users [13,17,35-37].

Thus, the prototyping of mental health applications needs to ensure that the prototype does not fall short with regard to items such as: unattractive esthetic, difficult-to-use functions, extensive content without scientific credibility and the impossibility of customizing the application by the users [5,9,13,14,37]. Corroborating a study that developed an app to support mental health teams, where it was perceived that the item “attractiveness” was directly and positively related to simple functionalities and lean language [14].

Care regarding sensitive data and management in relation to its privacy and security are also essential elements for prototyping and developing any application on mental health [5]. Such aspects were considered in the webapp prototype “App psychosocial rehabilitation project” from its ideation, through its pre-prototyping, to its prototyping. In fact, this app is based on the assumptions of a Psychosocial Rehabilitation Project and has a theoretical support that justified its construction [7].

The first version of the webapp prototype “App psychosocial rehabilitation project” was predominantly related to the appearance of the design, esthetics and contents related to the stages of the PRP and the PR process, as well as its managerial aspects of planning, organizing, coordinating and evaluating the care offered by the mental health team to the psychiatric patients [6-8].

This first version obtained, respectively, regarding the Objectives, Appearance, Structure and Organization and Relevance, CVIs of 1.00, 0.96 and 1.00, which were much higher, even with the design problems pointed out by the evaluating professionals, when compared to a study that evaluated an educational technology on alcohol consumption, which obtained for these items, respectively, CVIs of 0.49, 0.63 and 0.72, in the first round of evaluation [38].

Another study that developed the app for the prevention of drug abuse, suicide and harm reduction identified that the items that received more modifications were related to design (receiving CVI = 0.6), while other evaluated parameters obtained maximum degree (CVI = 1.0) [15]. This is corroborated by the study that developed the "Networked Nasf" app, which also did not obtain a maximum CVI (1.00) for appearance, design, content, language, sizes of visual elements and organization.

It is believed that the design of any mental health app is the Achilles heel of its developers during its prototyping, and it is expected in app development studies to make improvement modifications to meet the recommendations of users/health professionals [10]. This is corroborated by the study that received substantial improvements in the prototype of the app for depression in terms of appearance, navigation, content and organization [17].

In another study that developed a prototype of a mental health application for intervention in the rumination of negative content during a depression, 96% of the 22 participants suggested in some aspect modifications and improvements in its design, esthetics and color schemes [16].

Thus, due to the modifications made in the first version, upon the suggestions from the evaluators, it was possible to produce the second version of the webapp prototype "App psychosocial rehabilitation project", which presented as CVIs, respectively, Objectives, Appearance, Structure and Organization and Relevance (0.96), slightly higher for Objectives, Appearance, Structure and slightly lower for Relevance, when compared, also, in the second round of evaluation that took place in this study (0.93, 0.95 and 0.99) [38].

In the study on the "Networked Nasf" app, the CVIs were lower than the findings of the present study in the second round of evaluation, being, respectively, for Objectives and Content of 0.88 and 0.81 [19]. In another study that developed a digital technology to promote mental health among adolescents, the CVI of 1.00 was obtained for the item "Relevance", higher than that obtained in the present study for this item [39].

It is also important to note that the second version did not receive a maximum CVI (1.00) for items such as objectives, font sizes and titles, written content, attractiveness and relevance, collaborating with research that also had suggestions for improvement and did not obtain a maximum CVI for some of these items, demonstrating the complexity in aligning the prototype of a mental health app with the desires, expectations and aspirations of its future users, that is, mental health professionals [15,19,38,39].

In this sense, the literature is emphatic in realizing that it is not easy to meet the recommendations of app evaluators on mental health regarding structure, content, function and esthetics [10]. It also delimits in terms of CVIs when considering that, for

the development of new technologies, researchers need to achieve indexes equal to or greater than 0.90. These aspects are congruent with the present research, in which CVIs above 0.90 were obtained, both in the first and second round of evaluation of the webapp prototype “App psychosocial rehabilitation project” [27].

It is important to note that details about programming are not supported in the interactive webapp prototype “App psychosocial rehabilitation project”, developed in the Marvel software [18]. This will occur in the next stages of research, in which the webapp "App psychosocial rehabilitation project" will be developed by technology and information professionals, guided by the prototype built and validated in this research [40].

Furthermore, prototyping is an ongoing process, as it can be repeated throughout the development of the webapp “App psychosocial rehabilitation project”, as long as it is justified by the developers or researchers as important so as not to make this prototyped application unfeasible. [12,17,34].

Finally, the prototyping of the webapp “App psychosocial rehabilitation project” allowed us to perceive that teamwork should mediate the health work process, as well as the search for transversal and different formations of mental health, which, when focused on technology, enrich professional experience [12].

In addition, it can be seen that the webapp "App psychosocial rehabilitation project" should have the possibility of training in the service that demonstrates its functionality, that is, how to use it, in order to modify the resistant behaviors of mental health professionals in relation to technology [5].

The present study presents some limitations that should be considered. First, among the participants in the validation of the webapp prototype “App psychosocial rehabilitation project”, there was no participation of male professionals, which could have enriched the evaluation with different gender perspectives.

As the authors did not find a specific app for psychosocial rehabilitation projects in the integrative review carried out, there was no “template” of the Psychosocial Rehabilitation Project app as a reference to guide during the prototyping of the webapp “App psychosocial rehabilitation project”.

The absence of four professionals in the second round of validation may have influenced the results of the Content Validation Index (CVI), removing the values of maximum agreement (CVI = 1.00).

CONCLUSIONS

The webapp prototype “App psychosocial rehabilitation project” aims to visually present how this resource will be, which aims to facilitate and streamline the construction of psychosocial rehabilitation projects by mental health professionals during the care of psychiatric patients.

This research developed two versions of the webapp prototype “App psychosocial rehabilitation project”. The first was based on the prototyping requirements obtained

from an integrative literature review and focus group interview with mental health professionals. In turn, the second incorporated substantially the suggestions for modifications and improvement collected from the professional evaluators, both in the first round, with the availability of the first version, and in the second, with the final changes.

It is important to emphasize that, during the prototyping in the Marvel software of the webapp “App psychosocial rehabilitation project”, it was very challenging for the researchers to respond to the suggestions for changes and improvement requested by the evaluating mental health professionals. Also, the use of methodological, quantitative and qualitative approaches, as carried out in this research, was a favoring element to translate and intersect technological resources to the PRP.

Regarding CVI, the first version of the webapp prototype “App psychosocial rehabilitation project” reached an overall CVI of 0.98. For Objectives, Appearance, Structure, and Organization and Relevance, respectively, the CVIs were 1.00, 0.96, and 1.00. In the second version, the overall CVI was 0.96. For Objectives, Appearance, Structure and Organization, and Relevance, the CVIs were 0.96, 0.96, and 0.91, respectively.

Thus, this research enabled the webapp prototype “App psychosocial rehabilitation project”, which appears to be consistent with the objective, structure and organization, as necessary items for the construction of a Psychosocial Rehabilitation Project, demonstrating to be a relevant, valid and necessary prototype to guide the development of the webapp “App psychosocial rehabilitation project” by technology and information professionals in the future.

Finally, it is recommended that, in order to ensure the applicability of the webapp “App psychosocial rehabilitation project”, it is necessary that developers and researchers continue to align the development of this app with the theoretical and practical assumptions of psychosocial rehabilitation, which requires flexibility to make adaptations to the prototype developed in this article.

Seeking to enable an app consistent with the needs of mental health professionals, during the development of the webapp “App psychosocial rehabilitation project”, it will again be submitted to content and appearance validity by mental health professionals and to technical validity (usability heuristics) by technology professionals. Such procedures seek to redeem propelling problems of low usability.

In this sense, it is expected that in the future this app will be usual, useful and solve the difficulties of mental health professionals in the construction of psychosocial rehabilitation projects.

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REFERENCES

1. Pitta A. Reabilitação Psicossocial no Brasil. São Paulo. Hucitec, 2016; 1-204 h.
2. Saraceno B. Libertando identidades da reabilitação psicossocial à cidadania possível. Belo Horizonte. Te Corá, 2001. 1–178 h.
3. Godinho DM, Peixoto Junior CA. Clínica em movimento: a cidade como cenário do acompanhamento terapêutico. Fractal, Rev Psicol [Internet]. 2019 [citado 2024 Ene 06];31(3):320–7. Disponible en: https://www.scielo.br/j/fractal/a/YJDXGzqPqvwtqDvtcfDDBjv/. doi: https://doi.org/10.22409/1984-0292/v31i3/5644.
4. Silva AFL, Mendes AMP. Reabilitação psicossocial e cidadania: o trabalho e a geração de renda no contexto da oficina de panificação do caps Grão-Pará. Cad. Bras. Saúde Ment [Internet]. 2020 [citado 2024 Ene 06];12(33):55-74. Disponible en: https://periodicos.ufsc.br/index.php/cbsm/article/view/68878 doi: 10.5007/cbsm.v12i33.68878.
5. Simões de Almeida R, Marques A. User engagement in mobile apps for people with schizophrenia: A scoping review. Front Digit Health [Internet]. 2023 [cited 2024 Apr 06];4:1-26. Available from: https://pubmed.ncbi.nlm.nih.gov/36703941/ doi: https://doi.org/10.3389/fdgth.2022.1023592.
6. Antonio CR, Mangini FNR, Lunkes AS, Marinho LCP, Zubiaurre PM, Rigo J, et al. Projeto terapêutico singular: potencialidades e dificuldades na saúde mental. Linhas Críticas [Internet]. 2023 [citado 2024 Abr 06];29(e45423):1–14. Disponible en: http://educa.fcc.org.br/pdf/lc/v29/1981-0431-LC-29-e45423.pdf doi: https://doi.org/10.26512/lc29202345423.
7. Campos FAAC, Silva JCB, Almeida JM, Feitosa FB. Reabilitação Psicossocial: o Relato de um Caso na Amazônia. Saúde em Redes [Internet]. 2021[citado 2024 Abr 06];7(Supl. 2):1-18. Disponible en: http://revista.redeunida.org.br/ojs/index.php/rede-unida/article/view/3272.
8. Zubiaurre P M, Wasum FD, Tisott ZL, Barroso TMMD A, De Oliveira MAF, De Siqueira DF. O desenvolvimento do projeto terapêutico singular na saúde mental: revisão integrativa. Arq. Ciênc. Saúde Unipar [Internet]. 2023 [citado 2024 Abr 06];27(6):2788-804. Disponible en: https://ojs.revistasunipar.com.br/index.php/saude/article/view/10288 doi: https://doi.org/10.25110/arqsaude.v27i6.2023-041.
9. Currey D, Torous J. Digital Phenotyping Data to Predict Symptom Improvement and Mental Health App Personalization in College Students: Prospective Validation of a Predictive Model. J Med Internet Res [Internet]. 2023 [cited 2024 Apr 06];25:e39258. Available from: https://pubmed.ncbi.nlm.nih.gov/36757759/ doi: 10.2196/39258.
10. Salehi F, Kermani ZA, Khademian F, Aslani A. Critical Appraisal of Mental Health Applications. Stud Health Technol Inform [Internet]. 2019 [cited 2024 Ene 06];261:303-8. Available from: https://pubmed.ncbi.nlm.nih.gov/31156135/.
11. Martinez-Martin N, Greely HT, Cho MK. Ethical development of digital phenotyping tools for mental health applications: JMIR Mhealth Uhealth [Internet]. 2021 [cited

2024 Apr 06];9(7):e27343. Available from: https://pubmed.ncbi.nlm.nih.gov/34319252/ doi: 10.2196/27343.
12. Bezerra EA AC, Ferreira AA, Bezerra SAC, Portela L C, Bezerra Júnior SAC. Desenvolvimento de um protótipo móvel para auxiliar enfermeiros: diagnóstico de enfermagem em saúde mental. Rev. Contemp. [Internet]. 2023 [citado 2024 Jan 28];3(8):11228-46. Disponible en: https://ojs.revistacontemporanea.com/ojs/index.php/home/article/view/1119 doi: https://doi.org/10.56083/RCV3N8-071.
13. Birrell L, Furneaux-Bate A, Debenham J, Spallek S, Newton N, Chapman C. Development of a Peer Support Mobile App and Web-Based Lesson for Adolescent Mental Health (Mind Your Mate): User-Centered Design Approach. JMIR Form Res [Internet]. 2022 [cited 2024 Apr 06];6(5):e36068. Available from: https://pubmed.ncbi.nlm.nih.gov/35622401/ doi: 10.2196/36068.
14. Hoffman L, Benedetto E, Huang H, Grossman E, Kaluma D, Mann Z, et al. Augmenting mental health in primary care: A 1-Year Study of Deploying Smartphone Apps in a Multi-site Primary Care/Behavioral Health Integration Program. Front Psychiatry [Internet]. 2019 [cited 2024 Ene 06];10:94. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6404548/ doi: 10.3389/fpsyt.2019.00094.
15. Viana LS, Oliveira EN, Vasconcelos MIO, Fernandes CAR, Dutra MCX, Almeida PC. Desenvolvimento e validação de um jogo educativo sobre uso abusivo de drogas e o risco de suicídio. SMAD. Rev Eletrônica Saúde Mental Álcool Drog [Internet]. 2023 [citado 28 Jul 2024];19(2):16-25. Disponível em: https://www.revistas.usp.br/smad/article/view/188483 doi: https://doi.org/10.11606/issn.1806-6976.smad.2023.188483.
16. Rosenfeld EA, Lyman C, Roberts JE. Development of an mHealth App–Based Intervention for Depressive Rumination (RuminAid): Mixed Methods Focus Group Evaluation. JMIR Form Res [Internet]. 2022 [cited 2024 Ene 06];6(12): e 40045. Available from: https://pubmed.ncbi.nlm.nih.gov/36512400/ doi: 10.2196/40045.
17. Callan JA, Jacob JD, Siegle GJ, Dey A, Thase ME, Dabbs AD, et al. CBT MobileWork©: User-Centered Development and Testing of a Mobile Mental Health Application for Depression. Cognit Ther Res [Internet] 2021[cited 2024 Jan 06];45(2):287-302. Available from: https://link.springer.com/article/10.1007/s10608-020-10159-4 doi: https://doi.org/10.1007/s10608-020-10159-4.
18. Ponce EK, Cruz MF, Andrade-Arenas L. Machine Learning Applied to Prevention and Mental Health Care in Peru. IJACSA [Internet]. 2022[cited 2024 Jan 06];13(1):823-31. Available from: https://thesai.org/Publications/ViewPaper?Volume=13&Issue=1&Code=IJACSA&SerialNo=96 doi: http://dx.doi.org/10.14569/IJACSA.2022.0130196.
19. Jorge MSB, Costa LSP, Carvalho MRR, Mamede RSB, Morais JB, Paula ML. Mobile web application for use in the Extended Family Health and Primary Care Center: content and usability validation. Rev CEFAC [Internet]. 2020[cited 2024 Jan 06];22(3):1-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462020000300509&tlng=en doi: https://doi.org/10.1590/1982-0216/20202233519.
20. Paschoarelli LC, Silva JCP da. Importância do estudo metodológico para o desenvolvimento da área do design informacional. In: Menezes MS, Moura M editores.). Rumos da Pesquisa no Design Contemporâneo: relação tecnologia × humanidade. Barueri: Estação das Letras e Cores; 2013.

21. Miralles I, Granell C. Considerations for designing context-aware mobile apps for mental health interventions. Int J Environ Res Public Health [Internet]. 2019 [cited 2024 Jul 06];16(7):1-21. Available from: https://www.mdpi.com/1660-4601/16/7/1197 doi: https://doi.org/10.3390/ijerph16071197.
22. Campos, FAAC; Ventura, CAA; Reis, IO; Sánchez-García, JC. Requisitos para o desenvolvimento do app projeto de reabilitação psicossocial: estudo de revisão integrativa de literatura. [En prensa 2024].
23. Campos, FAAC; Ventura, CAA; Sánchez-García, JC. Requisitos para a protatipação do webapp "app projeto de reabilitação psicossocial": estudo de grupo focal. [En prensa 2024].
24. Bittencourt MN, Flexa RS, Santos ISR, Ferreira LD, Nemer CRB, Pena JL da C. Validation of content and appearance of an educational manual to promote children's mental health. Rev Rene [Internet]. 2020 [cited 2024 Jan. 28];21:e43694. Available from: http://periodicos.ufc.br/rene/article/view/43694 doi: https://doi.org/10.15253/2175-6783.20202143694.
25. Guimarães CMS, Fonseca LMM, Monteiro JCS. Development and validation of a prototype application on breastfeeding for health professionals. Rev esc enferm USP [Internet]. 2021[cited 2024 Jul. 28];55:e20200329. Available from: https://www.scielo.br/j/reeusp/a/Syz9sfNt7Zdzgn6Dn9Qb3jj/# doi: https://doi.org/10.1590/1980-220X-REEUSP-2020-0329.
26. Campos FAAC, Rodríguez TDM, Feitosa FB. Avaliação de conteúdo do Protocolo de Diagnóstico da Depressão em Adulto (PDDA), versão alfa®. J Health NPEPS. [Internet]. 2022 [citado 2024 Ene. 28];7(2):e5942. Disponível em: https://doi.org/10.30681/252610105942.
27. Alexandre NMC, Coluci MZO. Validade de conteúdo nos processos de construção e adaptação de instrumentos de medidas. Ciênc saúde coletiva [Internet]. 2011 [citado 2024 Ene 28];16(7):3061-8. Disponible en: https://www.scielo.br/j/csc/a/5vBh8PmW5g4Nqxz3r999vrn/# doi: https://doi.org/10.1590/S1413-81232011000800006.
28. Costa BC. Aconchego: construção e validação de aplicativo para apoio à saúde Mental [dissertação]. Universidade Federal do Ceará; 2023.
29. Cunha LPC, Reis PLC, Casarin RG, Caritá E, Silva SS. Desenvolvimento de aplicativo móvel como estratégia de educação para o matriciamento em saúde mental. Rev Eletrônica Debates Educ Cient Tecnol. [Internet]. 2023 [citado 2024 Ene. 28];13(1):165-85. Disponible en: https://doi.org/10.36524/dect.v13i1.2460.
30. Morton E, Barnes S, Michalak EE. Participatory digital health research: a new paradigm for mHealth tool development. Gen Hosp Psychiatry. [Internet]. 2020 [cited 2024 Jul. 28];66:67–9. Available from: https://doi.org/10.1016/j.genhosppsych.2020.07.005.
31. Chow PI. Developing Mental or Behavioral Health Mobile Apps for Pilot Studies by Leveraging Survey Platforms: A Do-it-Yourself Process. JMIR MHealth and Uhealth. [Internet]. 2020 [cited 2024 Jul. 28];8(4):1–24. Available from: https://doi.org/10.2196/15561.
32. Quintana M, Anderberg P, Berglund JS, Frögren J, Cano N, Cellek S, et al. Feasibility-usability study of a tablet app adapted specifically for persons with cognitive impairment-smart4md (Support monitoring and reminder technology for mild dementia). Int J Environ Res Public Health. [Internet]. 2020 [cited 2024 Jul. 28];17(6816): 1–21. Available from: https://doi.org/10.3390/ijerph17186816.
33. Nordgreen T, Rabbi F, Torresen J, Skar YS, Guribye F, Inal Y, Flobakk E, Wake JD, et al. Challenges and possible solutions in cross-disciplinary and cross-sectorial research teams within the domain of e-mental health. J Enabling Technol.

[Internet]. 2021[cited 2024 Jul. 28];15(4):241-51. Available from: https://doi.org/10.1108/JET-03-2021-0013.
34. Lemon C, Huckvale K, Carswell K, Torous J. A Narrative Review of Methods for Applying User Experience in the Design and Assessment of Mental Health Smartphone Interventions. Int J Technol Assess Health Care [Internet]. 2020 [cited 2024 Jan 06];36(1):64-70. Available from: https://pubmed.ncbi.nlm.nih.gov/31973787/ doi: https://doi.org/10.1017/S0266462319003507.
35. Huckvale K, Nicholas J, Torous J, Larsen ME. Smartphone apps for the treatment of mental health conditions: status and considerations. Curr Opin Psychol. [Internet]. 2020 [cited 2024 Jan 06]; 36:65-70. Available from: https://doi.org/10.1016/j.copsyc.2020.04.008.
36. Ramos G, Ponting C, Labao JP, Sobowale K. Considerations of diversity, equity, and inclusion in mental health apps: a scoping review of evaluation frameworks. Behav Ther. [Internet]. 2021 [cited 2024 Ene 06];147(103990):1-15. Available from: https://doi.org/10.1016/j.brat.2021.103990.
37. Wu A, Scult MA, Barnes ED, Betancourt JA, Falk A, Gunning FM. Smartphone apps for depression and anxiety: a systematic review and meta-analysis of techniques to increase engagement. Npj Digit Med. [Internet]. 2021 [cited 2024 Jan 06];4(1):1-9. Available from: https://doi.org/10.1038/s41746-021-00386-8.
38. Gigante VCG, Oliveira RC, Ferreira DS, Teixeira E, Monteiro WF, Martins ALO, et al. Construção e validação de tecnologia educacional sobre consumo de álcool entre universitários. Cogitare Enferm [Internet]. 2021 [citado 2024 Jan 28]; 26: e71208. Disponible en: https://revistas.ufpr.br/cogitare/article/view/71208 doi: https://doi.org/10.5380/ce.v26i0.71208.
39. Farias QLT. Tecnologia educativa digital para promoção da saúde mental de adolescentes: estudo de validação por especialistas. [tesina] [internet]. Sobral: Universidade Federal do Ceará; 2021. 99 p. [acesso em 2024 mar 10]. Disponible en: https://repositorio.ufc.br/handle/riufc/57636.
40. Timakum T, Xie Q, Song M. Analysis of E-mental health research: mapping the relationship between information technology and mental healthcare. BMC Psychiatry. [Internet]. 2022 [cited 2024 Jan 06];22(1):1-17. Available from: https://doi.org/10.1186/s12888-022-03713-9.

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