Development and Cultural-Contextual Adaptation of a Low-Threshold Digital Psychosocial Service for Refugees Living in Switzerland: Sui App

Rilana Tanja Stoeckli, Thomas Berger, Monia Aebersold, Viktoria Zoellner, Farhad Haji, Muriel Hunziker, Beatriz Jesus Ferreira, Michel Hosmann, Sebastian Burchert, Jessica Wabiszczewicz, Christine Knaevelsrud, Eva Heim

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Abstract

Background: Upon arriving in host countries, forcibly displaced people face a multitude of psychological, cultural, as well as socio-structural challenges. The urgent need for psychological and psychosocial support remains substantially unmet, impacting practically all asylum seekers and refugees. Beyond the direct impact on individuals, this care gap also affects host countries' existing structures, necessitating holistic approaches in parallel to an expansion of specialised care. Digital services offer promise in addressing these challenges, given their potential for scalability and accessibility. The latter is particularly relevant for refugee groups as they often face geographical, structural, and linguistic barriers. However, the understanding and implementing cultural and contextual adaptation in interventions remain limited and require systematic processes and reporting.

Objective: This article presents the participatory development process of the culture- and context-sensitively adapted "Sui App". Sui is a digital low-threshold psychosocial support service tailored to recently arrived refugees in Switzerland, focusing on those from Arabic-speaking backgrounds. The app can be utilised independently or augmented with peer support through an in-app chat feature.

Methods: We employed a user-centred participatory approach across the project's preparation, development, and finalisation phases. Cultural and contextual considerations were documented using the RECAPT framework. We conducted a desk review, qualitative interviews, iterative advisory group meetings, and a beta test to finalise a version of the app for a subsequent evaluation in a randomised controlled trial (RCT).

Results: To enhance the psychological well-being of recently arrived asylum seekers and refugees in Switzerland, both socio-structural and psychological factors should be included. A digital service aimed at meeting their needs in everyday life should incorporate those factors. In the iterative development process, the app Sui evolved. The app contains practical information on nine relevant, everyday life topics and five psychological topics to promote overall well-being in a resource-oriented way. Additionally, users can be supported by trained peers through an in-app chat. Essential for the participatory process was the multi-levelled translation process through which a widely understandable translation could be provided, allowing the advisory groups to focus on the content. The written content is accompanied by illustrations of fictional protagonists, video testimonies from other refugees telling their stories, and various audio exercises.

Conclusions: Through engagement with stakeholders and adherence to the RECAPT framework, we carefully considered the cultural and contextual circumstances of Arabic-speaking refugees who have newly arrived in Switzerland. Our iterative development process, spanning a preparation, development, and finalisation phase, highlighted the importance of integrating socio-structural factors along with low-threshold psychological health promotion in a new digital support service. Despite

encountering challenges such as technical issues during beta testing, our findings underscore the potential of digital services in bridging care gaps for marginalised populations.

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Original Manuscript

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Keywords:
e-mental health; cultural adaptation; psychosocial support; digital mhpss; refugees; participatory research; peer support; Arabic

Introduction

Forced displacement, which happens primarily in low- and middle-income countries (LMICs), poses urgent humanitarian challenges worldwide. The number of individuals fleeing armed conflict, persecution, or environmental threats has increased to over 108 million people worldwide [1]. This mass movement imposes substantial challenges on the socio-structural dynamics on the side of host countries [2]. On the side of the affected individuals, the impact is apparent on several levels of their well-being.

Refugees and other forcibly displaced people may encounter psychological difficulties, including posttraumatic stress disorder (PTSD), anxiety, depression, psychosomatic disorders [3–8], and low quality of life [9,10]. Pre-migration traumatic events that influence mental health [11] are further compounded by life-threatening events occurring on the migration route [12]. Finally, in countries of destination, socio-structural impediments and cultural differences may deteriorate the potentially vulnerable mental health state in which refugees find themselves [13–16]. In literature, those post-migration living difficulties (PMLDs) were found to have an impact on mental health beyond the effect of pre-migration events [14,17–22] or at least increase mental health difficulties [23–25]. In the Adaptation and Development after Persecution and Trauma (ADAPT) model, Silove [16] postulates the five core pillars “Safety/Security”, “Bonds/Networks”, “Justice”, “Roles and Identities”, and “Existential Meaning” as a holistic approach to explain the interplay of past and ongoing challenges affecting psychosocial well-being of displaced people. Restoring those core pillars interdependently is explained to be crucial to promoting psychosocial recovery.

Care Gap

Disconcertingly, the critical need for psychological and socio-structural support is largely unmet, both in LMICs and in higher-income countries (HIC) [2,26,27], such as Switzerland [28,29]. The limited access to essential mental health and psychosocial support services (MHPSS) is often caused on two levels. On the structural level, there is, e.g., in Switzerland, a lack of mental health specialists working in the field of refugee mental health [29] and an immense overload weighing on social workers [30]. The latter results in fewer individuals being able to transition away from social welfare [31]. In addition, there is a lack of interpreters’ cost coverage [32], trained interpreters, childcare, and transportation (e.g., to therapy) possibilities [27]. On the individual’s level, fear of stigma, language barriers, financial worries, and lack of self-perception of the mental health state are mentioned as barriers to psychological care [33–35]. For these reasons, the broad population of refugees, all of whom are facing major life changes, do not receive adequate psychosocial support [28]. More low-threshold psychosocial interventions are required targeting the ADAPT model’s core pillars, PMLDs, and symptoms of mental distress to meet refugees’ psychological needs while taking into account their current life circumstances [16,25,36].

Scalable Approaches

The World Health Organization (WHO) has developed community-based and accessible interventions (PM+ and SH+) to reduce symptoms of depression, anxiety and PTSD [37], to alleviate PMLDs [38], to prevent mental disorders [39], and to improve mental well-being [40]. A transdiagnostic treatment approach to reach refugees at symptom level (the Common Elements Treatment Approach) was proven to be effective in two LMICs [41].

In Switzerland, while several low-threshold short interventions for distressed refugees have been documented, only a few have been tested through randomised controlled trials (RCTs) [42]. However, to our knowledge, no service has been evaluated that addresses the lack of social assistance within the context of psychosocial support. Given these persistent challenges in providing psychological and socio-structural support for refugees, exploring innovative solutions is imperative.

Emerging digital interventions have gained current and prospective research priority in humanitarian MHPSS settings [43]. Digital interventions have been shown to improve mental health difficulties such as depression, anxiety, post-traumatic symptoms, functioning, well-being, and quality of life

among minority communities with large effect sizes [44]. A meta-analysis focusing on LMICs reported moderate to large effects of digital interventions on depression and anxiety, and small impact on quality of life [45]. Digital mental health interventions offer the opportunity to overcome barriers such as limited structural or geographical access to specialists, language barriers, and fear of stigma [2,46]. This is particularly relevant for asylum seekers who, e.g., in Switzerland, often reside in centres with limited access to urban areas [47], but usually have access to a smartphone [48,49]. Moreover, studies on internet-based interventions treating various mental disorders report comparable effectiveness as face-to-face interventions [50,51] with a conceivable advantage in cost-effectiveness [52] and a large potential for scalability [53].

The Lancet Commission on Global Mental Health has encouraged task-shifting interventions, including the involvement of non-specialists in service provision, and advocates adopting digital platforms to scale up support for broader populations of people affected by mental ill health [54]. Internet-based interventions tend to be more effective [55] and have greater adherence [56] when they include human guidance, as opposed to unguided interventions. Interestingly, the professional education of the guide does not seem to be a critical factor [57,58]. The WHO's Step-by-Step digital intervention for treating depression trained non-specialists to guide participants with weekly contact, and demonstrated moderate effects in an RCT [59]. Using the task-shifting approach presents the opportunity to train peers who speak the target group's first language and share similar migration experiences [60].

Cultural and Contextual Adaptation

Studies focusing on culturally adapting psychological interventions aim to increase the acceptability and improve health outcomes for underserved target groups [61,62]. Cultural adaptation studies have mostly used "top-down" approaches in which pre-existing psychological interventions were adapted [68]. In contrast, "bottom-up" processes incorporate cultural aspects from the outset when developing new interventions [68].

A challenge of cultural adaptation remains the definition of the term. Resnicow and colleagues [70] explain cultural adaptation in two dimensions. On the observable dimension, so-called surface adaptations are made in order to increase acceptance. This includes visuals, audio, language, and delivery formats. In the second dimension, the deep structure is adapted. This includes a deep understanding of the social, cultural, historical, environmental, and psychological constructs that influence the health behaviour of the target group. In the case of refugees, these constructs can be strongly influenced by various psychosocial pillars [16].

The term "culture", therefore, does not only comprise the individual's upbringing background (such as language, ethnicity, traditions, and country of birth). Culture is also dynamically shaped by recent experiences (e.g., traumatic events during migration, interaction with the host community) and the current surroundings (e.g., living in asylum centres, access to health care, availability of digital devices). Thus, we highlight the sensitivity to context as part of the cultural adaptation.

The benefits of cultural adaptation in psychological interventions are discussed in the literature. Some research has found superior effects of culturally adapted interventions compared to non-adapted interventions [63], whereas the extent of adaptation could play a role [64]. Other research suggests that the effects of psychological interventions do not depend on cultural adaptation [45,65,66]. In any case, it remains unclear what cultural adaptations of interventions have precisely entailed.

Various classification systems for reporting cultural adaptation to compare interventions have been developed for research [63–65,67]. Considering the inconsistent and varied classification methods, the "Reporting Cultural Adaptation in Psychological Trials" (RECAPT) was developed by a large consortium of researchers [68]. A growing body of studies adhering to standardised reporting criteria could enhance the replicability, comparability and transparency of adapted interventions in the field of cultural clinical psychology [69].

Objective

In this article, we report on the development process of the “Sui App”, a digital low-threshold psychosocial support service for individuals who have recently arrived in Switzerland. “Sui” stands for self-help, support, and information (in German: Selbsthilfe, Unterstützung, und Information) and is provided by the Swiss Red Cross (SRC). Initially, we targeted Arabic-speaking refugees and asylum seekers who have recently arrived in Switzerland. Our approach draws on participatory methodologies, which have been proven to be effective in tailoring health interventions for migrants [71]. Participation intends to establish sustainable partnerships and trust between research and the target community. Participatory research empowers the voices of potential end-users throughout the development and design process [72]. In software development, user-centred approaches are used as a form of participatory and are characterised by iterative loops collaborating with end-users [73]. We used this approach to deeply empathise with the needs and preferences of end-users and adapt the service accordingly.

We plan to adapt the Sui app later to accommodate additional languages spoken by refugee communities. To approach inclusivity across different refugee backgrounds, we emphasise the importance of including context in the development and lay focus on bottom-up processes.

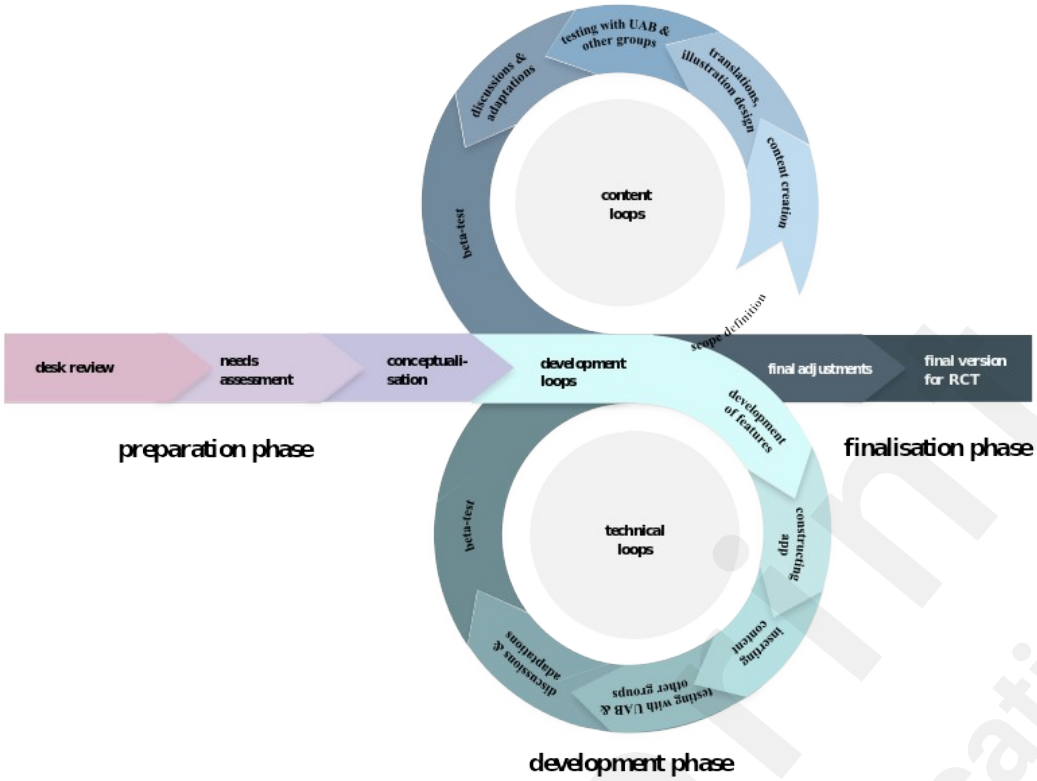
Methods

Overview

The Sui app was developed based on a user-centred, participatory, and mixed-methods approach to provide a scalable low-threshold MHPSS service for asylum seekers and refugees having recently arrived to live in Switzerland. Below, we describe the procedure of development and adaptation of the app Sui in three phases: *preparation*, *development*, and *finalisation* (see Figure 1). In the following, the term “refugees” is used inclusively to refer to both asylum seekers and individuals granted refugee status unless otherwise specified.

The documentation of cultural adaptation followed the RECAPT criteria by Heim et al. [68]. See supplementary materials for the details on Chapter A: Set-up, Chapter B: Formative Research, Chapter C: Intervention Adaptation, and Chapter D: Measuring Outcomes. In RECAPT, formative research is conducted in an iterative fashion before and during the process of adaptation. Formative research includes a literature review, as well as a broad stakeholder consultation at different stages. In addition, a documentation system is established from the beginning of the project to increase transparency and keep track of decisions made during the development process.

Figure 1. User-centred development process of the Sui App



Phase 1: Preparation Phase

The preparation phase aimed to evaluate the status quo and to identify the gaps in MHPSS care, specifically in Switzerland that could potentially be approached with a guided or non-guided digital self-help service. A desk review, a needs assessment, and a conceptualisation process were conducted in this phase.

Desk Review

First, a desk review of the literature [74] was conducted to gain an overview of the mental health and care situation of and for refugees in host countries and Switzerland in particular. This included gaining an understanding of barriers for refugees in accessing mental health services and evaluating opportunities and risks of digital mental health interventions in general. Specific questions that were addressed included the following:

1. What is the mental health situation of refugees?
2. What is the current mental healthcare situation?
3. What are the barriers for refugees to accessing mental health services?
4. What are the opportunities and risks of digital mental health interventions for the care of refugees?

To gather relevant literature, the ResearchGate database was searched for review articles and meta-analyses without the aspiration to be exhaustive and in awareness of bias risks. The articles that were found were revised, and the insights were described in an unpublished report in December 2019. Below, we provide a summary of the findings.

Needs Assessment

The research question guiding the needs assessment aimed to gain insights into the psychosocial circumstances of refugees living in Switzerland and explore the feasibility of a potential digital care tool. For this purpose, interviews were conducted with psychotherapists, social workers, marketing, and innovation professionals, as well as with residential care and healthcare professionals working in

asylum contexts (*asylum experts*, AE, *n*=22). Moreover, we included interviews with *intercultural interpreters* (ICI, *n*=2) who live and work in Switzerland. Additionally, we interviewed four people from the initial target group (*target group interviewees*, TGI), consisting of Syrian refugees living in Switzerland (*n*=4). A professional intercultural interpreter translated these interviews. This phase of interviews lasted from November 2019 until March 2020. In semi-structured interviews, MA, RS and MH asked questions according to an interview guideline and added upcoming ad-hoc questions. In preparation for the interview, participants were given a short explanation of the planned project on digital mental health for trauma-affected refugees from all backgrounds living in Switzerland.

The first author (RS), with an educational background in clinical psychology, analysed the data. The recorded interviews were processed according to the summarising content analysis described by Mayring [75], which is suitable for recognising central statements. It follows the subsequent steps: determination of units to be analysed (recorded and transcribed interviews), paraphrasing according to Z1-Z4 rules (reduction to essential and bundling of similar statements), the composition of reduced statements to a category system, re-evaluation of the category system with the reduced material, and finally interpretation of the final categories. To streamline and condense the content for this article, only categories with five or more codes from separate AE are reported with their according frequencies. However, since the interviewees' backgrounds were very heterogeneous, we considered all interview data for the conceptualisation phase (for the entire collection of categories from AE interviews, see supplementary materials Chapter B, criterion 6). The interviews with ICI and TGI were less structured, and the low number of interviews does not allow for the meaningful use of frequencies. The summarised codes are reported following the AE results.

Conceptualisation

A user advisory board (UAB) was formed to discuss the desk review and needs assessment results and to accompany the further development process. It consisted of eight participants and one intercultural interpreter (N=9) from Syria. The UAB participants were recruited with the help of the Swiss Red Cross (SRC), local aid organisations and personal contacts. The goal was to form a diverse group with younger and older people (age range = 19-55 years), different ethnic affiliations (4 Kurdish, 5 Arabic), educational backgrounds and balanced gender (4 female, 5 male). The intercultural interpreter also became part of the core team to be strongly involved in final decisions (see supplementary materials, Chapter A). In the preparation phase, four meetings were held with the UAB to brainstorm. The UAB participants signed an informed consent form agreeing to use their feedback in this paper. The Ethics Committee of the University of Bern in Switzerland approved the formative research with UAB members (2021-09-00003).

Additionally, in collaboration with a software consultancy agency, we deliberated on the desk review and needs assessment findings. With their help, we formulated the technical requirements and scoped out the project with agreed focus areas for the planned digital service. We used iterative design thinking strategies such as creating user personas, brainstorming, paper prototyping and testing digital mock-ups (see e.g., Interaction Design Foundation, 2024). Following this, we evaluated potential approaches to software development.

Phase 2 and 3: Development and Finalization

In the development phase, the content and design were created according to the concept constructed during the conceptualisation phase. In collaboration with Freie Universität Berlin, a pre-existing software platform, the Digital Research Creation Tool (DIRECT), was utilised and expanded by a sub-contracted software development agency according to the identified requirements. The technical environment, as well as the content, including the design along with the text, were developed in loops involving various stakeholders: the core team, the asylum-information expert group, the translation group, the UAB, the Swiss Refugee Council (SFH), social services from the SRC, mental health experts, a design agency, a copywriter agency, and selectively other people.

Development Loops

Based on the conceptualisation, the chapters' content was developed collaboratively. Each chapter was revised or partially written by respective experts (mental health experts, asylum-information experts, social services, and legal services). A professional interpreter translated the first version of each chapter, which was then revised by the translation group. This group was formed to cover understanding across various Arabic dialects. It consisted of one person each from Palestine, Tunisia, Egypt, Yemen, and Syria (2 female, 3 male). The core team's intercultural interpreter consolidated the feedback into a final translation. The finalised translation was then revised in UAB meetings.
The previously formed UAB (see above) was involved in six meetings for design and surface discussions (prototyping, voting) and 13 meetings for content revisions (feedback and inputs on each chapter). Moreover, the UAB received homework (e.g., reading texts or listening to audio exercises) to prepare for the meetings. In the initial meetings, discussions were held with the whole group. Still, over time, we divided the UAB into smaller groups so that discussions could be held in their native language (Kurdish or Arabic) and at different paces. Core statements of each group were reported and translated at the end of the meetings. Technical tests were conducted concurrently with content evaluations. The development loops were conducted between April 2021 and June 2022.

Beta Test

In a beta test, the Sui app was tested by nine participants (*N*=9). The participants were recruited with the help of a local social counselling organisation and had no prior involvement in developing the Sui app. Five women and four men from Syria, with an average age of 28.44 (*SD*=10.57), took part in the beta test. All participants completed an initial User Experience (UX) test in a face-to-face meeting, tested the app for four weeks, and then took part in another face-to-face semi-structured interview about the Sui app and optimal peer support at the end (for details on the UX test and interview guideline see supplementary materials D) Measuring Outcomes, criterion 10).
To evaluate how a contact person behind the app could be advantageous, a first concept for digital peer support was tested in the beta test with the aim of further developing it for the subsequent RCT. This rough concept was based on the experiences of previous scalable interventions for refugees, such as Step-by-Step [77], Doing What Matters in Times of Stress [78], PM+ [79], as well as other internet-based treatments for depression and loneliness [80,81]. The SRC trained two Arabic-speaking people with a migration background to provide a weekly message exchange with the app users. The training included getting familiar with the content of the Sui app, practising writing support messages with standardised text templates, and thereby using skills like active listening, paraphrasing, validating suffering, normalising psychological symptoms of stress, and suggesting adequate sub-chapters of the app. They were also introduced to monitoring usage behaviour (completed sub-chapters) and activity (usage time). Additionally, they had a supervision exchange with an Arabic-speaking psychotherapist. Findings from the beta test were used to understand the content and technical processes, develop a sensible structure for the motivational messages, understand the technological use in practice, evaluate the amount of support, and get an idea of what reactions would come from the participants.
Five of the nine beta test participants were randomly assigned to receive weekly peer support during the testing period. The test peers (one male, one female, *N*=2) were Arabic-speaking people who had migrated to Switzerland. The test peers were interviewed in a semi-structured interview at the end of the test period (see supplementary materials, Chapter D, criterion 10). The UX test, as well as the qualitative interviews, were conducted by two master's students and interpreted from Arabic to German simultaneously. The beta test was approved by the local ethics committee of the Faculty of Human Sciences of the University of Bern (2022-06-00001) and was conducted between June and August 2022.
Final decisions and adjustments were applied based on the findings from the beta test. The peers

were trained with an improved concept version, and the app changes were mainly bug fixes and minor content revisions. The app was prepared to be used in the RCT testing the effectiveness of Sui as a peer-guided or unguided service against a waitlist control group. The finalisation phase lasted from July until October 2022.

Results

Phase 1: Preparation Phase

Desk Review

The desk review yielded five valuable key insights that contributed to shaping the further research questions. These were subsequently discussed in interviews with professionals working in the asylum context and refugees living in Switzerland.

First, mental health issues often seem to carry a social stigma, leading many refugees to avoid seeking help due to fears of social consequences or beliefs that their condition is untreatable. Addressing this stigma could potentially enhance the effectiveness of mental health interventions aimed at this population. Second, refugees exhibit diverse health literacies, understandings of illness, help-seeking behaviours, and treatment needs. This suggests that mental health interventions may be most effective when tailored to align with the beliefs, values, and needs of the recipients. Third, interventions for refugees may need to extend beyond solely addressing mental health symptoms to consider the broader context of their living conditions. It is conceivable that addressing only symptoms may not necessarily lead to an overall improvement in the quality of life for refugees. Fourth, the effectiveness of digital mental health interventions seems to hinge significantly on participants' adherence and compliance, which are influenced by perceived benefits. Thus, implementing various strategies to enhance adherence could have a positive impact on the effectiveness of interventions. Fifth, adopting a task-shifting approach shows promise for alleviating stress symptoms and improving refugees' psychosocial well-being.

Moving forward, it was important to explore further the implications of these findings for implementing a digital mental health service aimed at improving the care situation of refugees in Switzerland, considering realistic opportunities and risks associated with such projects.

Needs Assessment

The results from the needs assessment with AE are presented in two sections. First, the prevailing status characterising the psychological state of refugees in Switzerland is described. Table 1 lists the psychosocial problems of refugees living in Switzerland, as identified by AE. Secondly, the potential of a digital tool to address the existing issues is elaborated. Table 2 illustrates the primary aspects highlighted by AE regarding the potential of a digital psychosocial support service. Subsequently, the summarised results from interviews with ICI and TGI are reported.

Psychosocial Problems Reported by Asylum Experts

In the interviews, the most prominent psychosocial challenges mentioned to be occurring in refugees were sleep disturbances, the overall asylum situation (including the asylum decision, process, and rights), physical pain or tension, occupational integration, social inclusion, and housing. Physical pain was frequently reported to be serving as an expression of psychological burden in the target population.

Table 1. Results on the current psychosocial problem situation in refugees residing in Switzerland: Frequency of coding references (≥ 5) from the needs analysis found in semi-structured interviews with asylum experts working with refugees in psychological, medical, social, residential care (N = 22).

Categories	Number of AE[a] (%)
Main psychosocial problems	
Sleep disturbances	9 (41)
Asylum situation (decision, rights, family reunification, traveling)	9 (41)
Physical pain/tension as an expression of psychological burden	8 (36)
Occupational integration	8 (36)
Social inclusion	6 (27)
Housing	5 (23)
Obstacles to healing	
Asylum situation	13 (59)
Feelings of shame	7 (32)
Fear of being categorized as «crazy»	6 (27)
Resources	
Often strong resilience	11 (50)
Daily structure and activities	8 (36)
Social network	6 (27)
Feeling of being needed (identity)	6 (27)

[a]AE = asylum experts

Apart from being a psychosocial challenge, the asylum situation was mentioned as one main hindering factor for refugees to start a healing process or seek treatment since the focus is often on the structurally problematic situation. Other than that, feelings of shame and fear of being categorised or stigmatised as “crazy” were mentioned to be obstacles for people to express the need for help or seek treatment.

AE frequently mentioned that they perceive a resilience in many refugees that is difficult to describe but serves as a vital resource. Furthermore, more tangible resources mentioned were having a daily structure and activities, having a social network, and feeling of being needed, contributing to the improved well-being of refugees.

Potential of a Digital Tool Evaluated by Asylum Experts

Concerns of AE were that a digital tool could not build up a relationship or trust, which they perceive as essential in traditional psychotherapy. Another concern was that a tool could not detect emergencies or individual triggers and not react adequately. Similarly, they stressed that a digital tool cannot address individuality (e.g., individual questions) properly.

However, a digital service was seen to be useful in approaching the present care gap. The potential of the digital tool can lie in addressing the existing treatment gap, acting as a bridging, or filling additional service”, one AE said. It was also envisioned as a tool supporting ongoing therapy, allowing clients to repeat information or exercises. In any case, a contact person behind the tool was considered advantageous for the users. According to the AE, a primary goal of the tool should be mental stabilisation. Moreover, a digital tool was perceived as future-oriented, as most people own a smartphone. It was also recognised that the tool could benefit not only the target group but also professionals and relatives seeking information on psychosocial support for those affected. Nevertheless, it was emphasised that the digital tool cannot replace traditional face-to-face services.

Regarding the tool’s content, consistent suggestions were psychoeducation, particularly on symptoms related to PTSD. Typical psychotherapy exercises, especially body-focused exercises, were also deemed digitisable and effective. AE highlighted the importance of activating the individual’s existing resources (e.g., asking about personal strengths). Along with psychological content, many AE suggested including socio-structural information typically provided by social services. Those include information about housing (e.g., how to find an appropriate apartment), about the Swiss (mental) health system (e.g., rights, existing services, access) and occupational integration (e.g., how to find a job or start an education). Additionally, a connection to “real” social life (e.g., lists of

communities, social clubs, free activities) was considered indispensable. Besides providing information on everyday life, AE suggested integrating asylum-related legal information (e.g., differences in residency status and family reunification).

Technical considerations of the tool involved striking a balance between generic use and individual tailoring. Anonymity was said to be paramount to ensure safety and to mitigate the fear of stigmatisation towards psychological problems. Thanks to this anonymity, more people can be reached.

A consensus emerged on delivering content in a concise and straightforward manner, incorporating various formats, such as images, illustrations, example stories, short texts, and videos. It was advised that communication should adopt a resource-oriented approach: normalising, empowering, validating, taking seriously, being hopeful, patient, humorous, listening, being positive, and asking. It was also stressed that the use of often stigmatised terms (e.g., “patient” and “psychological disease”) should be avoided, even though they can vary across cultures.

Collaboration with the target group in both development and dissemination was strongly advocated. Furthermore, AE advised focusing on individual psychological symptoms as an entry point to the tool. Providing information on everyday life challenges that typically occur after migration can serve as another entry point to the tool.

Table 2. Results on the potential of a digital psychosocial support service for refugees living in Switzerland: Frequency of coding references (≥ 5) from the needs analysis found in semi-structured interviews with asylum experts working with refugees in psychological, medical, social, residential care (N = 22).

Categories	Number of AE[a] (%)
Concerns and obstacles towards digital tool	
No relationship and trust building	7 (32)
Lacking sensitivity of digital tool towards emergencies and triggers	5 (23)
Lack of individuality	5 (23)
Potential use of a digital service	
Bridging tool (preparation, filling)	13 (59)
Support for ongoing therapy	9 (41)
Most people have a smartphone, digitalization is future-oriented	8 (36)
Contact person behind the tool would be advantageous	8 (36)
No replacement for existing face-to-face services	7 (32)
Tool as source for professionals and relatives of affected	6 (27)
Emergency plan (advice)	5 (23)
Stabilization as primary goal	5 (23)
Digitizable content	
Psychoeducation	16 (73)
Psychoeducation on PTSD symptoms	8 (36)
Information, explanations on socio-structural everyday aspects/integration:	14 (64)
• Housing	5 (23)
• (Mental) health system	5 (23)
• Occupational / educational integration	5 (23)
Standardized exercises	14 (64)
• Body-focused	12 (55)
Activation of existing resources	9 (41)
Connection to social life and activities	7 (32)
Asylum-related legal information	
Important technical aspects to consider	
Balance between tailored and generic use	9 (41)
Anonymity: as priority and possibility to reach people	9 (41)

Advice on the delivery formats	
Simple design and diverse formats:	15 (68)
• Images/illustrations	7 (32)
• Example stories	7 (32)
• Short texts	5 (23)
• Videos	5 (23)
Advice for psychological language within the tool	
Resource-oriented psychological language: Normalising, empowering, validating, taking serious, hopeful, patient, humorous, listening, positive, asking	10 (45)
Avoid stigmatized terms	7 (32)
Advice for better accessibility	
Participation of target group in development and dissemination	9 (41)
Access through symptomatology	8 (36)
Access through information of everyday (asylum) life	6 (27)

[a]AE = asylum experts

Findings of Intercultural Interpreter Interviews

The two ICIs reported similar psychological issues and PMLDs as the AE did. The reported problems included fear of being stigmatised as “crazy”, sleep disturbances, general mistrust, lacking awareness regarding treatment options, worries about family left back home, residency status, and occupational integration challenges. One ICI explained that mental disorders are perceived as intrinsic to life and require time to pass. The other ICI stated that refugee traumatisation should not be pathologised as a mental illness but rather viewed as adverse experiences that require strategies and possibly medication. Stigmatisations, linguistic barriers, and difficulties in occupational and cultural integration were identified as obstacles to healing, while rapid networking within refugee communities and individual initiatives were recognised as resources. A digital support service should incorporate socio-structural assistance, such as links and addresses to social support resources, success stories, information on family reunification and other asylum-related topics, and general challenges encountered when arriving in Switzerland. Psychological content, including “dealing with mental disorders”, breathing exercises and their efficacy, and self-help techniques for crises, was also highlighted. The primary recommendation emphasised the significance of ensuring anonymity.

Findings of Target Group Interviews

The main additional findings from the four interviews with TGI were that they all use smartphones regularly, mainly to maintain contact with relatives, translate daily tasks, and access several consumer apps. Concerning psychological issues, all TGI expressed that they will never be able to forget what they have survived and voiced concerns about the well-being of their family members left behind and have tried to reunite them in Switzerland. Some TGI spoke about physical complaints that have occurred since their migration, alongside psychological challenges, such as stress, guilt, and shame. The encountered PMLDs among TG were as diverse as described by the AE, encompassing difficulties with language acquisition, residency status, occupational integration, waiting times, experienced discrimination, and navigating Swiss legal frameworks. Despite these challenges, all TG were able to identify positive aspects of their lives in Switzerland, citing factors like overall health, natural surroundings, happy people, tranquillity, and being treated well. Reported resources included being grateful, having religious faith, fulfilling parental duties, ongoing efforts to reunite with family members, and receiving support from friends, family, or social counsellors. Regarding the idea of a new support app, their imagination was limited to the knowledge of existing consumer apps and leisure activities. Consequently, they were rather unclear about the potential benefits of such a digital service.

Conceptualisation

The results from the conceptualisation phase include decisions on technological aspects, the scope of the content and its delivery formats. Additionally, a rough concept of peer-to-peer support to be used in the app is presented.

Technology

The digital service was decided to be delivered in the form of a cross-platform app that behaves like a native app, can be downloaded on iOS and Android app devices, and is easily installable and updateable. At the time of making this decision, compared to progressive web apps, this format was seen as more accessible, robust, and better applicable on iOS devices for installation and receiving push notifications. Thanks to the compatible requirements, a mutually beneficial collaboration was agreed upon with the Department of Clinical Psychological Intervention at Freie Universität Berlin: Their "DIRECT" software can be used to create custom apps that can be adapted to the respective needs of the project and are specifically suitable for research in the field of mental health [82].

Table 3. Overview over the content of the Sui app

Information Chapters[a]	*Well-being Chapters*[a]	*General Chapters*[a]
Asylum Process	Stress	Emergency Information
Family Reunification	Sleep	Feedback
Finances	Resources	Introduction
Health Promotion	Chronic pain	Sui’s Neighborhood
Health System	Emotion regulation	
Housing	Audio Exercises	
Residence Status		
Social Living		
Work & Education		

[a]The Sui app is divided into two main content chapters “information” and “well-being” and contains an additional general chapter.

Scope of the Content

Regarding the content, the project team decided to combine socio-structural information with simple psychological well-being tools. The importance of focusing on socio-structural challenges in the asylum context was a key finding from the needs assessment (see above). Therefore, nine chapters to provide socio-structural information and five psychological chapters were identified. The development of those chapters is described below. Following the recommendations of the AEs, additional explanatory chapters were developed: national emergency contacts, introduction to the app, feedback on the app, and introduction of the storyline (for an overview see Table 3). All content is made available directly after account setup since the target group and their needs are heterogeneous.

Delivery Formats

Emerging from the needs assessment’s results, various delivery methods were decided to be used: simple texts, illustrations, stories, animations, explanation videos, video testimonials of refugees talking about personal experiences, audio exercises, list exercises, details of contact centres, and links to websites. We decided to create fictional characters to tell stories that our target group can identify with.

Peer Support

Due to significant concerns regarding security complexity, including the structured moderation of

messages, we decided to abstain from implementing a feature that allows direct communication (e.g., forum exchange) between users. Nonetheless, the recommendation for a designated contact person within the app was strong. Given the demonstrated efficacy of guided formats in previous internet-based mental health intervention studies, we chose to integrate a guided version of the app. Furthermore, drawing from insights from experience with prior peer-to-peer programs, we capitalised on the benefits of providing support through individuals sharing similar migration backgrounds with the target group (such as a shared language, cultural backgrounds, life experiences, and current challenges).

Phase 2 and 3: Development and Finalization

Development Loops

The reported results from the development loops only include a summary of the findings from the iterative development process. In the following, the results of this iterative adaptation process for design, language and each chapter of the Sui app are described. Refer to Chapter C (criteria 7, 8, and 9) in the supplementary materials for a comprehensive description of the Sui app's content, surface, and the associated adaptation and decision-making process.

Illustrations

The bird "Sui" was introduced as the mascot of the app. Its name and colour were accepted by all expert groups and the UAB, and it was preferred over a customisable avatar. The storyline around the app's content introduces twelve fictional protagonists living together in an apartment block in Switzerland. They are from diverse socio-demographic backgrounds and countries, not only Arabic-speaking, to expand the app to other target groups at a later date. Their representation was evaluated by the UAB and by representatives of each of the characters' ethnic groups. Each image was revised by the UAB, along with the corresponding content. Criticised features were adapted by the design agency and included, e.g., lighter and more diverse skin colours, the use of a hijab, hairstyles, generally happier faces, change of clothes, or change of names.

Language

Originally produced in German, the written content was proofread by a Swiss copywriter agency to ensure simplicity and adherence to "plain language" principles. This involved minimising complexity and shortening sentences, consistent with the recommendations from expert interviews (as reported above). We also found that the use of plain language facilitates subsequent translation and reading comprehension for people with low levels of education. Technical terms are explained in the glossary of the app and as a tooltip feature within the text. Arabic is an official language in more than 20 countries, including many different countries that face political conflict and economic crises that often lead to the displacement of people. We, therefore, wanted to use an understandable version devoid of specific regional dialects. The translation group opted a "Levantine Arabic+" that would be widely comprehensible across the Arabic-speaking population. We supplemented the initial Middle Eastern Levantine translation, done by a professional translator, with additional synonymous words suggested by the translation group. This approach aimed to achieve cross-national understanding. The UAB then made revisions and suggested minor changes. The intercultural translator integrated all feedback into a final version, focusing on an analogous translation and following the same principle as in the German version of offering the simplest possible language. This multi-level translation process was necessary to allow the UAB to understand every sentence and focus on the content rather than the language specifics. In addition, after UAB discussions, we agreed to add both a male and female Arabic version, as the second person pronoun ("you") in Arabic distinguishes between two genders. The preferred form of address is set during account creation in the app.

Audio Exercises

Audio Exercises, featured in all psychological chapters and consolidated in one overview section,

draw from several sources. However, most stem from the trauma-sensitive yoga founded by trauma therapist Dagmar Härle [83–85]. The UAB deemed all exercises appropriate but generally preferred short durations. They particularly favoured breathing exercises. Two voices, male and female, were chosen through a voting process involving the UAB and the translation group. Both female and male users hear both voices equally often. However, Arabic speakers will be addressed in either the female or male version of “you” based on preferences set during account creation.

Information Chapters

The nine chapters on socio-structural information were developed based on existing first information material in collaboration with respective professionals, such as SRC social services, the Swiss Refugee Council and an additional asylum expert group. The UAB revised each chapter. Because of the federal Swiss system, the depth of information was restricted to a national level since providing detailed information for each of the 26 cantons would have been impossible to implement simply. The chapters consist mainly of text-based step-by-step explanations but also include illustrations, video testimonies from refugees, and explanation videos.

The main results from the UAB meetings are elucidated: Housing covers everything important about the topic and includes valuable templates. However, they suggested incorporating more elements that convey hope for success into the content. For Work & Education, recommendations included adding more information on the education system, a job consultancy tool, a job platform and instructions for CVs and application letters. Regarding the three asylum topics, Asylum Process, Residence Status, and Family Reunification, they emphasised that highlighting accuracy due to prevalent misinformation is important. Social Living was deemed clear and important, with suggestions to list free activities, new events, and information about language courses. The Health System chapter should clarify which problems people can go where, how to access care and provide information on pregnancy and contraception equally for men and women. The chapter Finances was first considered too complex because several systems were not known in the UAB (e.g., three-pillar system, old-age and survivors' insurance). It was therefore expanded with information and was rated important, with suggestions for including money-saving ideas and differentiating between asylum social assistance and general social assistance. In the Health Promotion chapter, the UAB underscored the importance of avoiding any implications suggesting universal tobacco or alcohol consumption among refugees. Furthermore, they made recommendations on how healthy nutrition is possible despite a low budget.

Well-being Chapters

The five chapters on psychological well-being were developed based on existing materials described below and adapted by the first author (RS) according to the recommendations from the needs assessment. They were then reviewed by psychotherapists and researchers in the field of clinical psychology before the UAB gave feedback. The chapters consist of psychoeducation, written exercises, audio exercises, illustrations, and video testimonies from refugees.

The principal outcomes of the UAB revisions to each chapter are reported: Stress, partly inspired by the DWM self-help guide [86,87], was considered important, mainly to understand the sources, to distract from and maybe speak to someone about the experienced stress. Sleep, adapted from the content of a self-help book developed for traumatised refugees [88], includes sleep hygiene tips, body-focused exercises, and an introduction to sleep rituals. The UAB criticised using only smartphone-based exercises and recommended integrating exercises that can be carried out without a smartphone. The chapter Resources integrates planning activities, gratitude journaling, and strength activation, primarily inspired by the self-help book mentioned above [88]. It also features two sub-chapters on identifying values and staying present, derived from the DWM self-help guide (WHO, 2020). Although the UAB deemed this chapter “not very important”, they expressed overall appreciation for its content and expanded the list of activities. Emotion Regulation aims to manage intense emotions using the “problem-solving therapy” by Nezu et al. [89], which was tested in an e-mental health intervention for depression [90]. The shortened and adapted version of the Sui app

focuses only on the first two non-cognitive steps of “stopping” and “slowing down” before acting. It uses a traffic stoplight metaphor and presents three case examples of Sui’s neighbourhood residents, whose relatable everyday life situations were appreciated by the UAB. For Chronic Pain, based on two self-help books [91,92] the UAB advised changing the psychoeducational texts divided into a shorter and longer version and rated the exercises as recommendable.

Beta Test

The results from the beta test, including the UX tests as well as the interviews are summarised in the following.

App Satisfaction

Most of the participants used the app several times a week and said that they were motivated to use the app. The functionality and structure of the app were unanimously rated as logical and simple. However, all participants complained about slow loading times during the interview and UX test. This led to reported problems accessing content or links within the app and app crashes. Most participants rated the illustrations as beautiful, appropriate, and compatible with the content. The illustrated protagonists were rated to be realistic, and participants could visually relate to them. Most participants rated the Arabic language as clear and understandable.

Half of the participants highlighted the chapters “Social Living”, “Housing” and “Health System” to be helpful. Some participants rated “Sleep” to be good, particularly the exercises for falling asleep. However, some rated the included sleep hygiene tips to be superficial. Additionally, “Stress” and “Chronic Pain” were perceived as useful. Most participants appreciated the audio exercises, while a few had not used them. Some participants wished for more links, concrete realisation examples or more socio-structural chapters, e.g., on drugs, forced marriage or old-age and survivors’ insurance.

Satisfaction With Peer Support

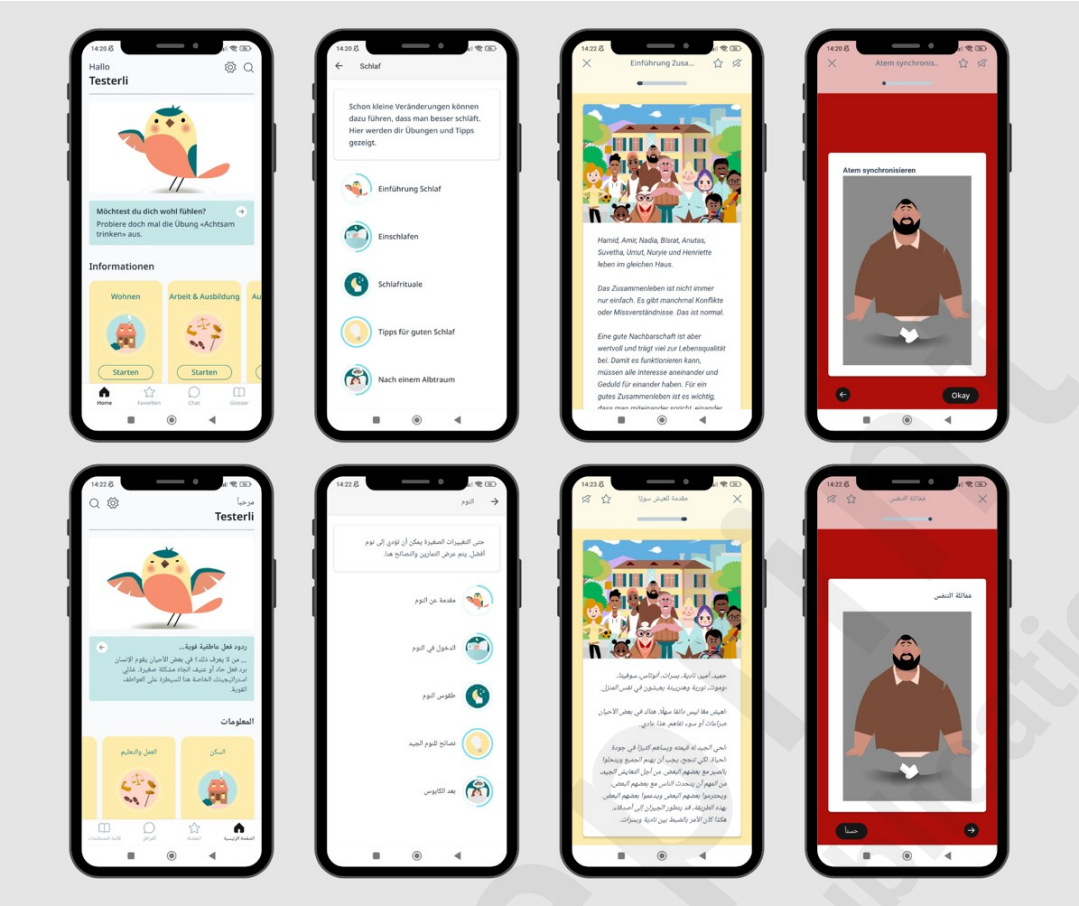
Concerning peer support, a fast response rate in the chat was desired (6-72 hours). The messages should be formulated professionally but also in an everyday language and adapted to the user. Support was also wished for technical issues. Some said that they would like to know some basic facts about the peer (e.g., age, country of origin, length of time in Switzerland) to be sure that they speak with a human and not with a computer. Having a peer companion was reported to enhance to motivation to use the app.

The test peers agreed that a one-week response time was too long and should be shortened. They reported that, particularly for technical inquiries, they would suggest a response time of 48 hours. They stated that they would have preferred to write the messages more individually, and text templates use should be reduced, to provide the feeling of being a real person instead of automatic answers. The prior training was valued by both peers and rated to be important as a preparation. Additionally, both agreed that continuous supervision and feedback on their work was important to seek help and reduce fears. Both highlighted that their messages motivated the users to use the app.

Final Adjustments

Final adjustments on technical features and content were applied according to these beta test results before releasing a version for the RCT. Loading times were improved, and the introductory chapter was expanded with explanations of features that were not self-explanatory (e.g., explanation of the chat, the categories “Information” and “Well-being”, and the “Audio Exercises” chapter). For the peer concept, the peers’ general response time was reduced to 48 hours and more intensive support for the peers regarding questions was introduced. The text templates were not reduced but rather complemented and rephrased to sound less “robotic”, as they were to remain standardised for comparability in the trial. The peers’ first messages will provide a more personal yet anonymous introduction, and peers will include their observations from the user behaviour monitoring in their messages. Figure 2 displays screenshots of the final product.

Figure 2. Screenshots of the final Sui app in German and Arabic



Discussion

Principal Results

Based on user-centred and participatory methodologies, we iteratively developed a digital psychosocial support service tailored for asylum seekers and refugees newly arrived in Switzerland. Engagement with various relevant stakeholder groups helped us to deeply understand the needs and preferences of our target group. We considered cultural and contextual nuances relevant to asylum-related everyday life and focused in particular on people from Arabic-speaking backgrounds to test a first version in Arabic language. For this purpose, we aligned with the RECAPT framework and documented the process accordingly [59]. An abbreviated version of the detailed decision process and description of the final product, the Sui app, can be found in the supplementary materials. The development and adaptation process included three phases (preparation, development, and finalisation).

During the preparation phase, it became clear that to reach the diverse refugee population, our service needs to incorporate both psychological and socio-structural factors. Additionally, the expected potential of a digital service helping to bridge care gaps for marginalised groups was favourably evaluated. To our knowledge, this is the first study that includes practical information on asylum-related everyday challenges in a digital mental health intervention.

For the second phase, i.e., the development of technology and content, an iterative process included co-working with professionals and advisory groups. While the engagement of various stakeholders provided valuable insights, it demanded significant organisational, financial, and temporal resources. During the beta test, an initial draft version of the app was evaluated. Participants generally found the content helpful and the design appealing, although technical malfunctions hindered deeper insights into user-app interactions. The final version was prepared for testing in an RCT, with continuous bug fixing and minor adjustments to content and structure on-the-fly.

Lessons Learned

Concerning language, we learned that an elaborate process involving various linguistic experts to achieve a correct but simple Arabic version was crucial for the UAB to focus on the content itself.

The UAB meetings became more productive with repetition until we had a well-regulated process in the final meetings, where all members could work at their own pace and were still heard. We therefore recommend scheduling regular meetings with consistent time intervals and standardised agendas, ensuring that participants become familiar with the process. This facilitates efficient meetings with realistic expectations.
Software development is often associated with unexpected technical challenges, for which we recommend allowing sufficient time for testing, and planning enough budget for customisation and maintenance, as well as a sensible reduction in the complexity of features and processes.

Limitations

Various limitations of this study have to be considered. First, the focus of the participatory approach was placed on the development of the service, whereby the science-specific parts were not involved. These would have included the understanding of study information, the self-assessments, or the recruitment materials.
In the preparation phase, only four representatives of the target group were interviewed. As a result, we only had a limited subjective view of refugees at the beginning. During the development phase, some of the chapters were discussed multiple times with the UAB, whereas other chapters were only revised once due to time limitations.
Another limitation was that in initial UAB meetings, discussions were translated simultaneously, which led to a fragmented flow of conversation and, thereby, frustration among the participants. This process was changed as soon as concrete drafts of the content chapters were available. From then on, discussions were held in smaller groups, in Arabic or Kurdish, and each group presented the main discussion points and remarks in summary. The documentation of the discussions was, therefore, limited to these summaries in the end.
Additionally, the beta test faced technical malfunctions, including long loading times and non-functional push notifications, such as those intended to indicate new messages from the test peer. Given a tight time plan, these difficulties could not be resolved in advance, significantly affecting the beta test results, as participants struggled to engage with the app's content.
These limitations could have led to a bias in several interpretations and decisions made during the development process.

Conclusions

Being forced to move to a new country comes with challenges on various levels that affect almost every individual. The lack of support is not only limited to psychological treatment but also socio-structural help. Using digital and task-shifting approaches can be promising in addressing this care gap by providing low-threshold support with trained peers to more people affected.
This study documented the elaborated adaptation and development process of the Sui app. Detailed and transparent documentation can facilitate accurate comparison regarding the extent and specifics of contextually and culturally adapted interventions.
In a subsequent 3-armed RCT the effectiveness of the Sui app will be tested with Arabic-speaking migrants who have recently arrived in Switzerland. Two active study groups (app standalone, app with peer support) are compared to a waitlist control group.

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The project around the Sui app is multidisciplinary and has included multiple stakeholders who have essentially contributed to the development of the app and the subsequent RCT.
The authors variably contributed to this study, conducting the desk review (MA), creating or editing content for the app (RS, TB, VZ, MA, FH, EH), participating in discussion and decision-making processes (RS, TB, MA, VZ, FH, MH, EH), and executing the beta test and analysis (MH, BJF). We

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Conflicts of Interest

None declared.

Abbreviations

ADAPT: Adaptation and Development after Persecution and Trauma
AE: Asylum Experts
HIC: Higher Income Country
ICI: Intercultural Interpreters
LMIC: Low- and Middle-Income Country
MHPSS: Mental Health and Psychosocial Support Services
PMLD: Post-Migration Living Difficulty
PTSD: Posttraumatic Stress Disorder
RCT: Randomized Controlled Trial
RECAPT: Reporting Cultural Adaptation in Psychological Trials
SFH: Swiss Refugee Council
SRC: Swiss Red Cross
TGI: Target Group Interviewees
UAB: User Advisory Board
UX: User Experience
WHO: World Health Organization

Multimedia Appendix 1

Supplementary material.

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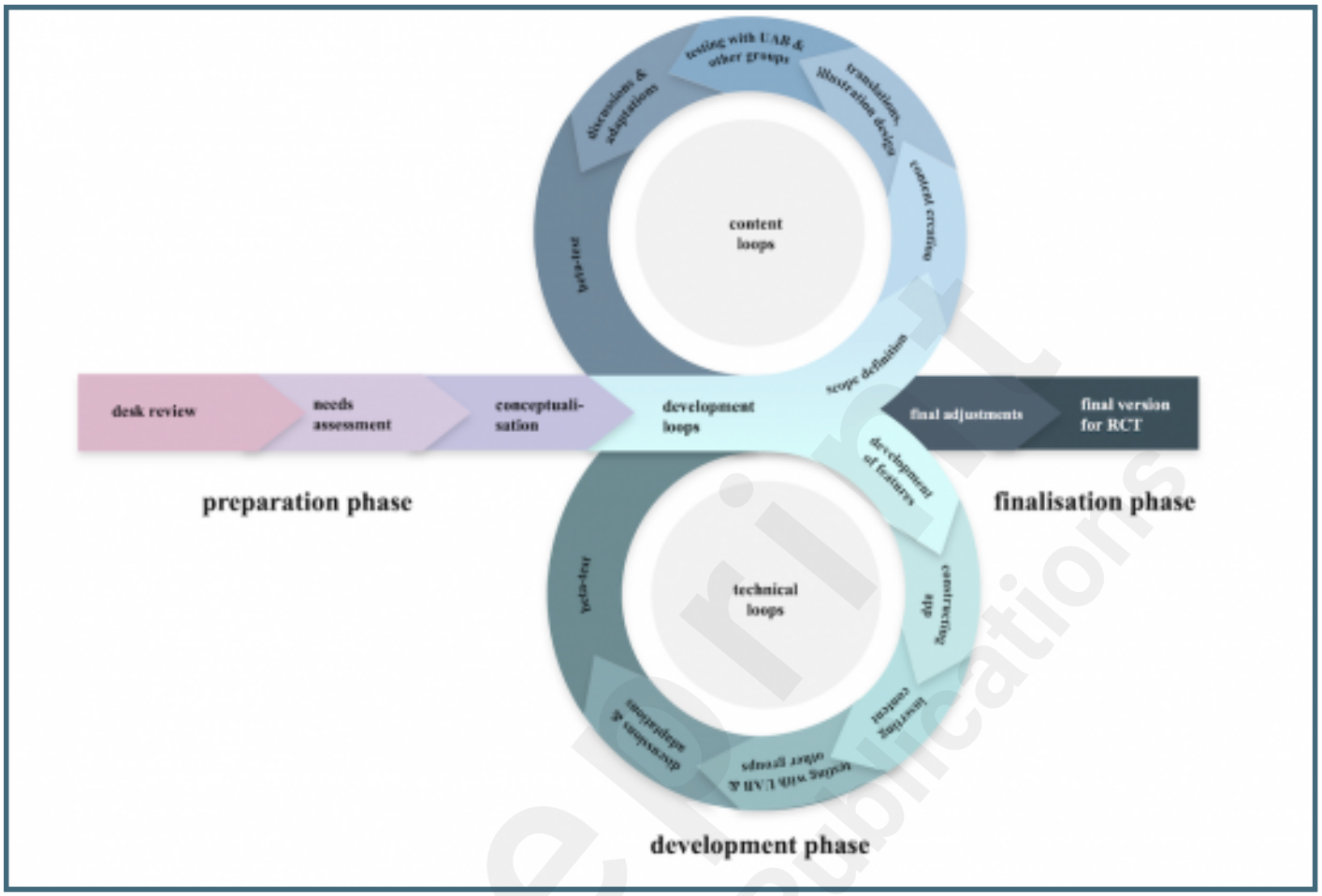
Supplementary Files

Figures

User-centred development process of the Sui app.



Screenshots of the final Sui app in German and Arabic.

Multimedia Appendixes

Template for documenting cultural adaptations of psychological interventions.
URL: http://asset.jmir.pub/assets/248d0b3ff90721aebe7ef6d36b3af5ef.docx