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Scalability of digital psychological innovations for refugees: A comparative analysis in Egypt, Germany, and Sweden

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ABSTRACT

E-mental health interventions may offer innovative means to increase access to psychological support and improve the mental health of refugees. However, there is limited knowledge about how these innovations can be scaled up and integrated sustainably into routine services. This study examined the scalability of a digital psychological intervention called Step-by-Step (SbS) for refugees in Egypt, Germany, and Sweden. We conducted semi-structured interviews (n = 88) with Syrian refugees, and experts in SbS or refugee' mental health systems in the three countries. Data collection and analysis were guided by a system innovation perspective. Interviewees identified three contextual factors that influenced scalability of SbS in each country: increasing use of e-health, the COVID-19 pandemic, and political instability. Nine factors lay at the interface between the innovation and potential delivery systems, and these were categorised by culture (ways of thinking), structure (ways of organising), and practice (ways of doing). Factors related to culture included: perceived need and acceptability of the innovation. Acceptability was influenced by mental health stigma and awareness, digital trust, perceived novelty of self-help interventions, and attitudes towards non-specialist (e-helper) support. Factors related to structure included financing, regulations, accessibility, competencies of e-helpers, and quality control. Factors related to practice were barriers in the initial and continued engagement of end-users. Many actors with a potential stake in the integration of SbS across the three countries were identified, with nineteen stakeholders

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deemed most powerful. Several context-specific integration scenarios were developed, which need to be tested. We conclude that integrating novel e-mental health interventions for refugees into routine services will be a complex task due to the many interrelated factors and actors involved. Multi-stakeholder collaboration, including the involvement of end-users, will be essential.

1. Introduction

In mid 2022 an estimated 103 million people had been forcibly displaced worldwide, of which 37.4 million were outside their home country, mostly in neighbouring countries (69%) (UNHCR, 2023). The largest single group (6.8 million) were Syrians, with numbers likely to grow following the 2023 earthquake (UNHCR, 2023). Conflict-affected populations have a high burden of mental disorders (Charlson et al., 2019; Patanè et al., 2022) and those who are refugees often experience major barriers to accessing mental health and psychosocial support (MHPSS) services in host countries arising from stigma, language barriers, loss of trust, sociocultural obstacles, financial barriers, and limited understanding about how to access services (Byrow et al., 2020; Hendrickx et al., 2020; Satinsky et al., 2019; Woodward et al., 2023). There is a need for innovative solutions that can overcome these barriers.

The World Health Organization (WHO) recommends brief evidence-based psychological interventions delivered by non-specialists or based on self-help (e.g. cognitive behavioural therapy), given shortages of health workers (WHO, 2019). The Syrian REfuGees MeNTal HealTH Care Systems (STRENGTHS) programme assessed the effectiveness, cost-effectiveness, and scalability of several novel brief psychological treatments for Syrian refugees (Sijbrandij et al., 2017). This project ran from 2017 to 2022, aimed to strengthen refugee mental health systems, and was conducted in eight high- and middle-income countries across Europe and the Middle East (Sijbrandij et al., 2017). One was an e-mental health intervention, Step-by-Step (SbS) developed by the WHO and Freie Universität (FU) Berlin.

E-mental health can be defined as "the use of information and communication technology—in particular the many technologies related to the internet—when these technologies are used to support and improve mental health conditions and mental health care, including care for people with substance use and comorbid disorders" (p.1) (Riper et al., 2010). A recent rapid review of their use with immigrants and refugees reported positive non-clinical (i.e. perceived flexibility, time savings, and cultural sensitivity) and clinical outcomes (i.e. reduction in mental health symptoms) (Liem et al., 2021).

SbS is delivered over five-sessions and includes illustrated narratives and interactive exercises. It is based on Problem Management Plus (a brief psychological intervention developed by the WHO that is provided in person) albeit more focused on behavioural activation (Carswell et al., 2018). Besides behavioural activation, it teaches stress management techniques, provides positive self-talk exercises, and discusses handling of personal warning signals. The level of guidance from trained and supervised non-specialists (e-helpers) can vary: weekly guidance, contact-on-demand, or no guidance (Burchert et al., 2018; Carswell et al., 2018). The randomised controlled trials (RCTs) in the STRENGTHS project used contact-on-demand (Burchert et al., 2018).

The first version of SbS was developed, adapted culturally, and piloted among adult Syrian, Lebanese, and Palestinian communities in Lebanon (Abi Ramia et al., 2018). This version was optimised within STRENGTHS, for self-guided use on smartphones, employing a user-centred design (Burchert et al., 2018) prior to evaluation of its effectiveness amongst Syrian refugees in Egypt, Germany, and Sweden (Burchert et al., 2018; Sijbrandij et al., 2017). Outside of STRENGTHS, SbS is also being assessed increasingly for feasibility and effectiveness, including among Syrian refugees and the local population in Lebanon (Cuijpers et al., 2022a, 2022b; Harper Shehadeh et al., 2020; Heim et al., 2021), Chinese young adults (Sit et al., 2022), and overseas Filipino workers (Liem et al., 2020). Yet while there is appeal of digital psychological interventions like SbS as a means to reduce the mental health burden amongst refugees (Giacco and Priebe, 2018; Liem et al., 2021; WHO, 2019), there is so far limited knowledge about their scalability (El-Haj-Mohamad et al., 2023).

Implementing something perceived as new (i.e. an innovation) within a complex health system can be difficult but the challenges are especially great with mental health of refugees, given stigma, cultural barriers, digital access and illiteracy, confidentiality concerns (Liem et al., 2021). Scaling up is the process of institutionalising an innovation into the health system (Chibanda, 2018; Eaton et al., 2018; Simmons and Shiffman, 2007; Ventevogel et al., 2011; Yamey, 2011), which is important for its sustainability (Simmons and Shiffman, 2007). What works on a small scale in a protected research environment does not necessarily translate to a large scale in complex real-world systems that are resistant to change. Thus, MHPSS interventions for refugees proven effective on a small scale are rarely scaled up (Cohen and Yaeger, 2021; El-Haj-Mohamad et al., 2023; Troup et al., 2021).

There is a need to improve our understanding about the scalability of novel psychological interventions for refugees. Scalability assessments should complement trials of effectiveness (Zamboni et al., 2019). They increase understanding of the "suitability" or "potential" for scaling up an evidence-based intervention (A. Milat et al., 2020; A.J. Milat et al., 2013; WHO & ExpandNet, 2011), considered vital if they are to be widely used and sustainable over time (Kohl and Cooley, 2003; WHO & ExpandNet, 2010).

This research examined the scalability of a digital psychological intervention (i.e., SbS) for refugees in Egypt, Germany, and Sweden. Specific objectives were to: (i) identify and compare factors influencing scalability among the three countries; (ii) identify potential stakeholders who can influence scaling up of SbS; and (iii) develop guidance to support embedding SbS successfully in existing systems.

2. Methods

2.1. Study design and settings

We employed a comparative multiple case study design. The case study approach is relevant when the aim is to develop an in-depth understanding of a social phenomenon within a real-world context, and when the boundaries between the phenomenon and its context are not clear (Yin, 2018). Embedding health innovations into existing systems is by nature a complex and context-dependent phenomenon and therefore the case study approach was an appropriate methodology to examine scalability. This study was part of the larger STRENGTHS project and focussed on the scalability of SbS in Egypt, Sweden, and Germany. Characteristics of the three settings, distilled from our earlier rapid appraisals of their MHPSS systems for Syrian refugees (Woodward et al., 2023) are briefly described in the next paragraph.

Germany hosts over four times the number of registered Syrian refugees in Egypt and Sweden, although Syrian refugees in Sweden make up a larger proportion of the total host population. Mental healthcare is fully integrated into primary healthcare in Sweden and Germany, and increasingly in Egypt. Sweden and Germany as high-income countries have more well-resourced state MHPSS systems compared to Egypt, a lower-middle-income country. Still, Syrian refugees in both high-income countries experience long waiting times for mental health care. Additionally, access for Syrian refugees in Sweden and Germany is challenged by limited availability of Arabic-speaking and culturally sensitive health providers in either primary or specialist care, resulting in long

travel distances to culturally sensitive treatment facilities. Moreover, adult asylum seekers (i.e. those awaiting the decision on their request for asylum) may generally only access urgent treatment in these countries. In Germany, there is also a lack of financial support for translator services in health care impeding access and quality of care for Syrian refugees. Across all three countries, stigma and limited mental health awareness in the Syrian community and out-of-pocket costs (for treatment, medication, and transportation) were reported barriers, particularly in the general health system. The parallel MHPSS system (e.g. non-governmental actors, civil society) plays an active role in providing MHPSS care for Syrian refugees across the three countries, especially in Egypt.

2.2. Conceptual framework

Case studies are not tied to a specific method, although they are typically guided by a theoretical framework and triangulate multiple sources of evidence (Yin, 2018). We adopted a system innovation perspective, which considers scaling up as the integration of an innovation into mainstream practices (Rotmans and Loorbach, 2010), to analyse the potential for such an integration (i.e. scalability) of new psychological interventions for refugees (Woodward et al., 2021). This involves a complex multi-level process (landscape, constellation, and niche), usually requiring system change (Geels, 2002). Dominant structures (organising) and cultures (thinking) of existing (sub)systems can be changed by actors adopting new practices (doing), but can simultaneously act as limitations (van Raak, 2010). Cycles of deepening (learning), broadening (replicating), and scaling up (embedding) are mechanisms for mainstreaming innovations, with scaling up deemed most challenging (van den Bosch and Rotmans, 2008). Definitions of key concepts are shown in Table 1, with Fig. 1 visualising how they are related, combining the multilevel perspective (Geels, 2002), the constellation perspective (de Haan, 2010, 41; van Raak, 2010, and mechanisms of broadening–deepening–scaling up (van den Bosch and Rotmans, 2008). This conceptual framework is described further elsewhere (Woodward et al., 2021).

This framework was extended following a stakeholder analysis that mapped actors (individuals or groups) who could influence the scale up of SbS and the magnitude and nature of their perceived power (see Supplementary File 1). We define a stakeholder as "any actor that can affect, or can be affected by, a decision or action" (Freeman, 1984; Leventon et al., 2016).

Table 1
Definitions of key concepts from the system innovation perspective on scaling up new psychological for refugees (Woodward et al., 2021).

Landscape level	The broader societal trends and contexts of social change, such as demographics and cultural changes or other developments like "economic growth, wars, emigration, broad political coalitions" (p.1260) (Geels, 2002). Landscape changes are usually slow but may also be sudden (in case of a crisis), and may put pressure on the system (Geels, 2002).
Constellation level	The dominant set of structure, culture, and practices of the existing system. These elements "both define and fulfil a function in a larger social system in a specific way" (p.52) (van Raak, 2010). Complex systems like the health system could be perceived as having various constellations; "each of which is concerned with a specific aspect of the health system's overall functioning" (p.48) (van Raak and de Haan, 2017).
Culture	The "set of values, perceptions, and interpretive frames – relating to or relevant for the system – that are shared by most of the involved actors" (p.55) (van Raak, 2010). It involves the "ways of thinking, mental models and perceptions" (p.127) (van der Ham et al., 2013)
Structure	The "physical, economic, legal, financial, organisational, and power structures that facilitate and/or constrain the behaviour of involved actors" (p.55) (van Raak, 2010). In other words, it refers to "how it works" (p.41) (de Haan, 2010) or "how people organise the things they do, either physically, institutionally, or financially" (p.127) (van der Ham et al., 2013).
Practice	"Actual actions (operations) undertaken within the constellations, which are relevant for the functioning of the constellation" (p.54) (van Raak, 2010). In short it is "what people actually do" (p.127) (van der Ham et al., 2013).
Actors	"Individuals or organised groups that act as a unity" and are seen as related but not part of the system (p.55) (van Raak, 2010).
Niche level	A protected space where actors experiment with innovations (Geels, 2002; Schot, 1998). Innovative experiments are generally "sheltered from mainstream competition" and may function as 'proto-markets' for the development of market experiments, and eventually system shifts (p.539) (Schot and Geels, 2008). Experimental settings are important locations for learning processes and for building the social networks to support innovations (Geels, 2002).
Deepening, broadening, scaling up	Deepening involves learning processes which take place in a relatively protected space at local level; Broadening entails linking and repeating experiments in different contexts; and Scaling up is the process in which innovative experiments become mainstream (Johansen & Van den Bosch, 2017; van der Ham et al., 2013).

2.3. Methods and process data collection

Semi-structured interviews were conducted with 88 individuals between April and December 2021 (see Table 2). Those invited included individuals familiar with SbS (e.g. SbS staff (i.e. researchers and e-helpers), implementing partners, and Syrian refugees participating in the STRENGTHS trials) to capture their experiences and challenges with the implementation of SbS during the RCTs, which were considered key predictors to future scale up. Additionally, we invited individuals not or less familiar with SbS but knowledgeable about the MHPSS system for refugees in Germany, Sweden, or Egypt (referred to as key informants) to examine their viewpoints on how to integrate SbS into existing systems. Additionally, we sought a sample that was balanced by gender and included a range of sectors and backgrounds (e.g. primary health care providers, psychologists, psychotherapists, policy makers, implementers of interventions for refugees). SbS staff/partners and Syrian participants were known to and invited by the research team. Key informants were recruited by convenience and snowball sampling among contacts of the research team.

We conducted semi-structured interviews, using guides based on our conceptual framework. Each interview also included questions evaluating the process of implementing SbS as part of the RCTs (not reported here but undertaken at the same time to increase efficiency). Three different interview guides were developed for each stakeholder group: i) SbS staff, including SbS implementing partners; ii) Key informants, including MHPSS providers and policy makers; iii) SbS participants, i.e. Syrian refugees participating in the RCTs. All guides were piloted and discussed amongst interviewers, leading to minor adaptations. The interview guide for SbS participants focused on usability of SbS, while those for SbS staff and key informants focused on factors and actors influencing scalability and integration scenarios.

Interviews were conducted by trained interviewers in English, Arabic, or German, to accommodate language preferences of interviewees. All interviews were transcribed and, if needed, translated to English. Interviews lasted on average 1 hour. Half of the interviews were conducted online and those conducted face-to-face adhered to the prevailing Coronavirus Disease 2019 (COVID-19) regulations.

Ethical approval was granted by FU Berlin Research Ethics Board (161/2017), the Observational Research Ethics Committee of the London School of Hygiene and Tropical Medicine (14330-1), the Swedish

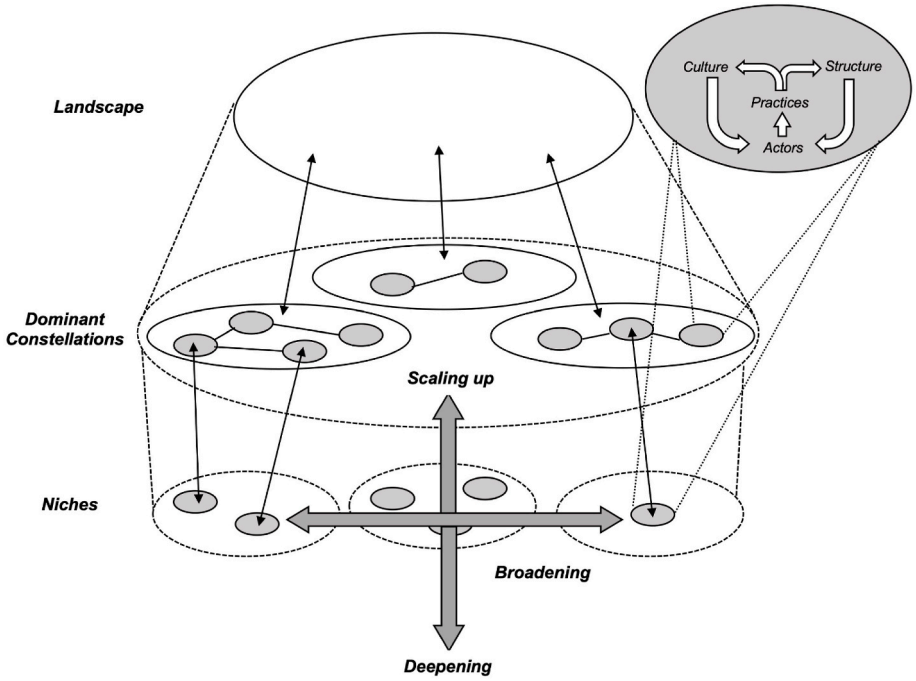

Fig. 1. Visualisation of key concepts from the system innovation perspective on scaling up new psychological for refugees (Woodward et al., 2021).

Table 2
Interviewees by sample and country included in the analysis.

Sample Country	SbS staff/partner	Key informant	SbS participant	Total
Egypt	1	5	40	**46**
Germany	6	9	10	**25**
Sweden	2	8	7	**17**
Total	**9**	**22**	**57**	**88**

Ethical Review Authority (2020-00261), and the American University in Cairo (2020-2021-009). Respondents gave informed written and verbal consent. Data was pseudonymized, with identifying information stored separately from transcripts and confidentiality ensured.

2.4. Data analysis

The focus of our attention was the MHPSS system for refugees and we analysed data separately within each of the three countries. The analysis used NVivo 12.6.1 and Atlas. TI 22.0.1 and data were initially coded inductively using descriptive coding, which "summarizes in a word or short phrase — most often in a noun — the basic topic of a passage of qualitative data" (p.88) (Saldaña, 2013). Codes were then compared across the three countries, discussed (ASB, AW) and, where appropriate, renamed, and reorganised. Codes were then organised within the categories in our conceptual framework (i.e. landscape, structure, culture, practice, actors, integration scenarios).

In our prospective stakeholder analysis, we first identified stakeholders and placed them under six headings in a joint stakeholder map, based on a stakeholder map of e-health integration in primary care in the Netherlands (Bally and Cesuroglu, 2019). Second, we developed a joint stakeholder power analysis table to examine their type of power (see Supplementary File 1).

Several recommendations (Green and Thorogood, 2009) were applied to ensure rigour in our analysis. First, constant comparison was used to identify similarities and differences. Second, several researchers triangulated findings (Carter et al., 2014). Third, more factual information such as descriptions of how the MHPSS systems for refugees are organised were cross-checked with our earlier health system assessments (Woodward et al., 2023). Fourth, relevant quotes were extracted to illustrate our interpretations.

3. Results

In this section, we first describe the factors influencing the potential scale up (i.e. scalability) of SbS in Egypt, Sweden, and Germany, according to our conceptual framework (Woodward et al., 2021), starting with landscape trends, followed by considerations related to culture, structure, practices, and actors. Fig. 2 summarizes and visualises the factors we identified from a whole-system comparative perspective, with a more detailed overview found in Supplementary File 2. Then we propose several scenarios for integrating SbS into existing services in each country. All of our findings are based on the perceptions of interviewees about the expected interactions between SbS and the existing MHPSS systems for refugees in each country.

3.1. Landscape trends

Three landscape trends were identified as influencing the scalability of SbS. These were increasing use of e-Health, the COVID-19 pandemic, and an unstable political climate.

3.1.1. Increasing use of e-health

This was described in all three countries but to varying extents. Germany was described as *"far behind in the digital field"* (Germany, Key informant5) but others reported increased acceptance of digitalisation in the German health system, with earlier stringent data protection rules that had limited use of apps and related technology being replaced by new laws facilitating use of e-health applications.

Several interviewees in Sweden described how use of the internet is common in the health system, although apps are less so:

> *"I don't think that you have that system for app-based interventions, but there is a […] national digital healthcare system and part of that is internet-based psychological interventions."* (Sweden, Key informant4)

Some key informants in Egypt described increased political interest and, in some cases, action on digital health in MHPSS, pointing to the

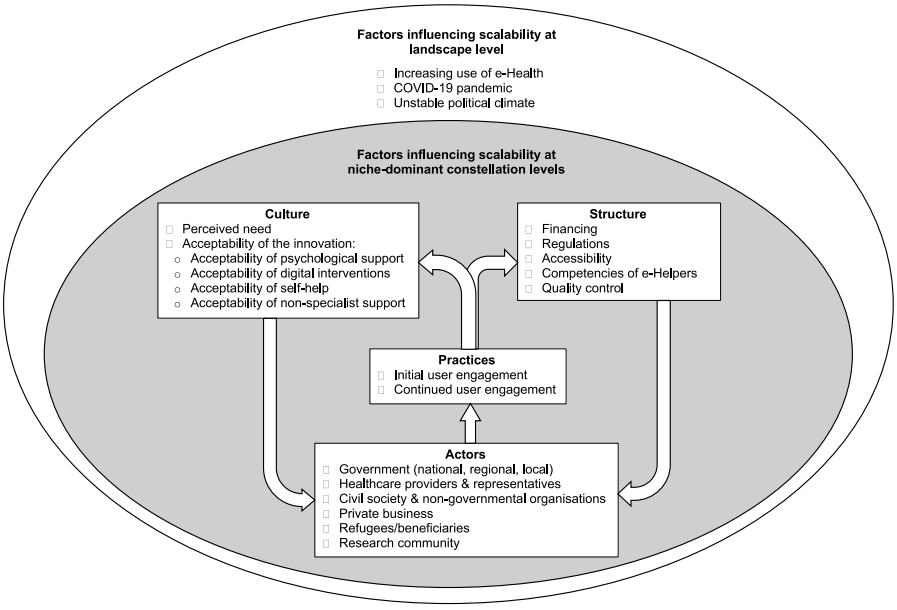

Fig. 2. Overview of factors influencing the scalability of SbS across countries.

current online platform for mental health services, developed by the government with support from the WHO as an example.

3.1.2. COVID-19 pandemic

The move to digitalisation appeared, in the view of interviewees, to have been accelerated by the COVID-19 pandemic, with Swedish interviewees reporting increased use of internet-based health services and German ones pointing to a proliferation of mobile health apps.

At the same time, many Syrian SbS participants in both Egypt and Germany described how the pandemic created or exacerbated mental health problems arising from unemployment and lockdowns. However, the pandemic drew attention to mental health, particularly in Egypt:

> *"[…] they [the government] were closing themselves on the specialised services, just providing specialised services for people with severe mental illness. But during the pandemic, they started to provide psychosocial support and they started to adapt a larger concept of mental health"* (Egypt, Key informant2)

3.1.3. Unstable political climate

While the pandemic increased awareness of the need for MHPSS support, it is uncertain whether this will translate into political support for psychological interventions for refugee communities. Several interviewees in Egypt reported increased governmental interest and support for MHPSS, which they attributed partly to the pandemic but also media attention following a spike in suicides and a natural disaster. This attention was, however, directed at the overall population rather than refugees specifically.

Several interviewees in Germany perceived low political support for implementing interventions for refugees and, while there was greater support in Sweden, some believed that this might change *"in the next election"* (Sweden, Key informant10), with polling at the time of the interviews forecasting a rise in support for the anti-immigration Swedish Democrats. This uncertainty was seen as a barrier to sustaining a scale up of psychological interventions for refugees such as SbS.

3.2. Culture

Culture involves shared ways of thinking, mental models, and perceptions. Perceived need and acceptability of the innovation were identified as the main scalability considerations in this category.

3.2.1. Perceived need

Most interviewees in each country perceived a need for SbS. In Germany they most commonly cited long waiting times in MHPSS, while in Sweden they mentioned language barriers and distance to specialist mental health facilities. In Egypt the predominant concern was the high level of stress among Syrian refugee communities. However, many also felt that *"people won't use it"* (Egypt, SbS participant10), although this could be because Syrian refugees experience *"barriers to seeking care"* (Sweden, Key informant2).

3.2.2. Acceptability of the innovation

Some of the barriers to seeking care that were described were practical in nature, like physical accessibility issues (structure) or time constraints (practices), but most concerned shared and ingrained beliefs or perceptions (culture) that can negatively affect the acceptability of an innovation like SbS and consequently its use (practices). The SbS delivery model is characterised by (i) psychological support through (ii) digital platforms being predominantly (iii) self-guided with (iv) on-demand non-specialist support. All four elements require some level of acceptance by potential users if they are to be willing to engage with it. Each is discussed below. By users we mean beneficiaries (e.g., refugees) as well as other individuals and organisations who may adopt and implement the innovation (e.g., health professionals, managers, and authorities).

Acceptability of psychological support – Stigma concerning mental health and the act of seeking MHPSS was perceived as an obstacle facing Syrian refugees in all three countries, to use not just digital innovations like SbS but also regular MHPSS services. This stigma was seen as self-standing in the way of Syrians acknowledging having a 'problem' or 'need' for mental health support:

> *"The very fact that you join such a programme is an indirect acknowledgment that you have a problem. People among us don't or can't acknowledge that they have mental issues. The first step to solving a problem is to acknowledge its existence. If you don't admit it, you become convinced that you don't need such an app. I know a lot of people around me who think that way."* (Germany, SbS participant6)

However, some SbS staff and Syrian refugees interviewed disagreed that stigma was so widespread, arguing that cultural views were slowly changing and now affected a minority. Several interviewees in Germany and Egypt noted how some Syrians were unconvinced or unaware they

could seek help for their psychological needs. Similarly, some interviewees in Sweden, including Syrian refugees, described a lack of familiarity with MHPSS amongst the Syrian community.

Several interviewees in Germany and Sweden emphasised the need for careful use of language in the promotion of psychological interventions, such as using 'stress' rather than medical terminology to help de-stigmatisation. In Egypt, interviewees saw raising awareness more generally about mental health through campaigns as a way to reduce stigma.

Acceptability of digital interventions – Several interviewees considered that the relative anonymity of digital psychological interventions compared to face-to-face interactions might *"lower the threshold"* for those who *"wouldn't seek help otherwise"* (Sweden, SbS staff1). This does, however, depend on achieving digital trust. For example, several SbS participants described data security and privacy as reasons why Syrians may not want to use the app, *"users might not be sure about data protection"* (Germany, SbS participant7). In Sweden, one SbS partner with close ties to the community saw mistrust as an even greater barrier to using the app than stigma. Specifically, parents were concerned that it was somehow linked to the government and that by admitting they were struggling they risked having their children taken away. This was supported by two participants in Sweden's RCT, who reported not seeing doctors for their mental health problems because of this same concern. In Egypt, concerns expressed by SbS participants centred around the fear that their private information entered into the app would be shared elsewhere.

Acceptability of self-help – The concept of 'self-help' may not be well-understood by Syrians, as described by several interviewees in each country. One interviewee in Egypt contended that self-help programmes were new to the country:

> *"After the pandemic telemedicine started to appear in Egypt but self-help programmes, it is not common in Egypt. This is something new and actually I believe it will have a great potential in Egypt because there is a need in Egypt for such an app."* (Egypt, Key informant2)

Acceptability of non-specialist support – We found that not all mental health specialists (e.g. licensed psychologists, psychotherapists, psychiatrists) in Germany and Sweden would welcome non-specialist e-Helpers. This is despite how, in Germany at least, lay counsellors are common in the non-governmental sector, although less so in Sweden. In Egypt, the concept of non-specialist e-Helpers seemed acceptable to actors in the mental health field: several key informants reported current use of non-specialists in this role. Only a few SbS participants preferred e-Helpers to be specialists:

> *"I think it's good that they are Syrians. What I find less suitable is that they are not specialists. I am sure that it would be better if they were specialists."* (Sweden, SbS participant2)

Some key informants thought that Syrian refugees may be reluctant to receive support from a fellow Syrian because of distrust, but this was not echoed by SbS participants. This may be because non-specialist support in the trials was predominantly technical and on-demand, meaning contact between e-Helper and participant was minimal and did not involve discussing personal or sensitive issues (as it would be the case with face-to-face non-specialist support).

3.3. Structure

Structure concerns how actors organise the things they do, physically, institutionally, or financially. Ways of organising that were perceived as important for the scalability of SbS can be categorised as: financing, legal and policy structures, accessibility, competencies of e-Helpers, and quality control.

3.3.1. Financing

Despite the low cost of app-based mental health interventions (compared to face-to-face specialist support), financing was frequently described as a potential obstacle to scaling up in all three countries. SbS staff noted the high fixed costs for maintenance, support, and staff:

> *"We simply have very high costs to keep the staff, to advertise, to have the IT, to do network visits and to be present on some level, and if you don't have that, then it's difficult for them [for such interventions] to function or they simply won't be used anymore."* (Germany, SbS staff4)

This requires a sustainable funding source. The German social health insurance scheme was seen as an option but difficult by several interviewees as it required negotiation with the sickness funds and compliance with relevant legislature, such as on medical devices (see 3.3.2). Sweden has a universal public health system, with citizens, refugee children, and adult refugees with residency permits eligible to use publicly funded services in public or private facilities, with regional councils and municipalities responsible for financing and delivering health and social services. Some interviewees from Sweden thought SbS could be funded by these local social or health care budgets, however, others explicitly viewed public funding to be unlikely, *"I don't think the healthcare sector is ready to pay for this [SbS]"* (Sweden, Key informant4), instead favouring private digital companies, philanthropic organisations, non-governmental organisations (NGOs), and churches. Similarly, in Egypt, the government was perceived an improbable funding source as universal health insurance remains incomplete. Instead, international donors were cited by several interviewees as short-term solutions.

Should SbS be expanded to cover groups other than Syrian refugees it will require funds for adaptation. Some interviewees suggested starting with other Arabic-speaking refugees. This would keep adaptation costs low but allow the intervention to extend to a larger target population, potentially making it more marketable.

Several interviews in Sweden and Germany stressed the importance of presenting funders with a well-developed business case, with evidence of cost-effectiveness.

3.3.2. Regulations

Sweden was seen as having the best-established regulatory framework supporting implementation of e-health interventions, although several interviewees mentioned new laws on e-mental health that were recently implemented in Germany that would facilitate their provision and funding within the social insurance system.

Four legal issues emerged that influence scalability of SbS, and were more often mentioned in Sweden and Germany, likely because these countries are more highly regulated than Egypt. The first is the legal status of refugees, which determines their legal and financial access to the health system. The second is legislation enabling non-specialist e-Helpers to provide psychological support, or be reimbursed for it, something that was unclear in Germany and Sweden, where interviewees called for clear rules on responsibility and oversight (see 3.3.5 on "quality control"). The third is the EU General Data Protection Regulation (GDPR). SbS staff confirmed that it was compliant with the Regulation, which would facilitate scale up. The fourth is EU legislation on medical devices, something that SbS staff noted had yet to be addressed:

> *"It [SbS] could be seen as a medical product, or medical device, and medical devices are heavily regulated in the EU. So that is something that we still are also kind of working on addressing, to receiving the certificates to certify this as a medical device which would be one of the essential requirements for making this available widely in the public health care system."* (Germany, SbS staff1)

3.3.3. Accessibility

Accessibility concerns relate to how Syrian refugees physically access digital psychological interventions. The digital structure of the app was perceived by several interviewees as an easy way to access MHPSS from home, with some interviewees in both Sweden and Germany

praising the audio features, which helped users with limited literacy.

However, an interviewee in Sweden was concerned about how illiterate users could access information about SbS *before* downloading the app. Further accessibility issues were raised by many interviewees from Sweden and Germany, with technological illiteracy, physical access to devices, and limited internet access raised as concerns. In Egypt, concerns about physical access to smartphones or computers and internet connectivity were the primary concerns. While some SbS participants in Egypt reported that the flexibility regarding when and how often they used the app was helpful – particularly if they had unstable internet connections – SbS staff reported that during trials, a number of people refused to take part due to inadequate digital access:

> *"We have like two groups of people. The ones … 'yes okay, send me the link. I am interested' and the group: 'no, I don't have time. I don't have 3G (Note: data speed of the internet). I have an old phone …'"* (Egypt, SbS staff1)

3.3.4. Competencies of e-helpers

Three competencies for e-Helpers were needed for effective implementation, according to interview accounts. First and most important was speaking the same language, which facilitated communication between helper and participant, often a problem with host country health systems:

> *"For some [Syrian refugees], not being able to find a therapist that spoke Arabic was the number one barrier to them for not seeking it [care]."* (Germany, Key informant2)

This was less of an issue in Egypt, given that Egyptians and Syrians both speak Arabic, albeit with different dialects.

Second was having a refugee background. Some e-Helpers and SbS participants described their shared background as especially helpful. Staff members saw this as helping to ensure culturally sensitive responses through the chat function, although they recognised it may have a downside for the helper:

> *"They [refugee workers] have a lot of empathy for this experience, but they are also personally affected by it quite a bit."* (Germany, SbS staff1)

Third was having a mental health background. This was particularly highlighted as an important e-Helper competency by MHPSS providers in Germany. E-Helpers in the RCTs had an undergraduate degree in psychology, perceived as useful by SbS staff. As mentioned under "acceptability of non-specialist support" (3.2.2) only a few SbS participants preferred e-Helpers to be mental health specialists (i.e. postgraduate degree).

3.3.5. Quality control

Related to the previous point on competencies, adequate training and supervision of e-Helpers was described as important by many interviewees in each country to ensure quality and safety. Some German and Swedish interviewees argued for continuous monitoring and evaluation to ensure effectiveness and fidelity. Suggestions included pre- and post-assessments, questionnaires, and tracking the number of drop-outs. Furthermore, a rapid and effective referral system was regarded as important by several interviewees in all countries:

> *"Definitely set up your back end: so have your supervision for the e-Helpers and your accountability in terms of your duty of care. But if [the intervention] actually caused harm or distress, where could I [participant] go to access support?"* (Sweden, Key informant5)

3.4. Practices

The structuring elements of 'culture' and 'structure' are shaped by the practices of actors and also limit what actors can do. Barriers arising in initial and continued user engagement were important influences on the scalability of SbS.

3.4.1. Initial user engagement

While researchers found it easy to recruit Syrian refugees to their trials in Egypt, this was difficult for Sweden and Germany. This difference could be explained by the fact that recruitment in Egypt was mainly through an NGO that had already established trust among Syrian refugees, while in Sweden and Germany social media was the main initial recruitment method. Similarly, many interviewees anticipated challenges in initial engagement of end-users (i.e., Syrian refugees) during scale up. This lack of engagement likely reflects a mismatch between the culture and structure of the innovation and the life world of its end-user (e.g. mental health stigma, trust issues). Suggestions from some interviewees to engage new end-users included using a trusted *"champion"* to refer a potential user of SbS, and sharing positive experiences of existing SbS users:

> *"Someone posted your programme on Facebook and said that it helps and unburdens one emotionally. That's why I liked the idea and said, 'let's give it a try.' I felt a little more at ease."* (Sweden, SbS participant2)

3.4.2. Continued user engagement

Once Syrian refugees are using SbS, the challenge of retaining them arose in all countries. This is consistent with the high drop-out rate experienced during the trials. Several key informants in Sweden and Germany, as well as trial participants in all three countries cited lack of time to complete the recommended exercises or go through the weekly sessions. In Egypt, the time requirements of the app were reported by several trial participants as a barrier to initial (*and* ongoing) engagement. In particular, they reported that other necessities such as work, exams, and taking care of children were often prioritised. Positively, the structure of the app enables it to be used at times convenient to the user, which was considered helpful by several interviewees.

Some key informants, especially in Germany, worried that because beneficiaries might not see immediate effects from the app, they would lose motivation and stop using it before it delivered benefits. They advocated ensuring that content was as brief as possible and communicating that health benefits may take some time to manifest.

3.5. Actors

Fig. 3 shows a list of possible stakeholders identified in our study. There was significant overlap in stakeholder groups among the three countries. Nineteen stakeholders were deemed most powerful. Some were perceived by interviewees as powerful in scaling up SbS in every setting (e.g. government, WHO, universities, MHPSS workers), while others were more country specific: for example, private health companies and businesses likely play a larger role in Sweden, sickness funds in Germany, and international NGOs in Egypt. Further details on the joint stakeholder power analysis can be found in Supplementary File 1.

3.6. Integration scenarios

It was not possible to develop a single scenario for integration that could be applied across all countries. This was due to differences in how individual refugees might access SbS in each country, who the likely stakeholders will be, as well as different advantages and disadvantages of each integration route in each setting. Context-specific integration scenarios are described below.

3.6.1. Sweden

In Sweden SbS could be integrated into primary healthcare or offered through civil society organisations, both with support from the private sector. Digital health has been incorporated into some parts of primary healthcare, which is often publicly funded but run by private digital health companies. There is high political will to supporting digitisation

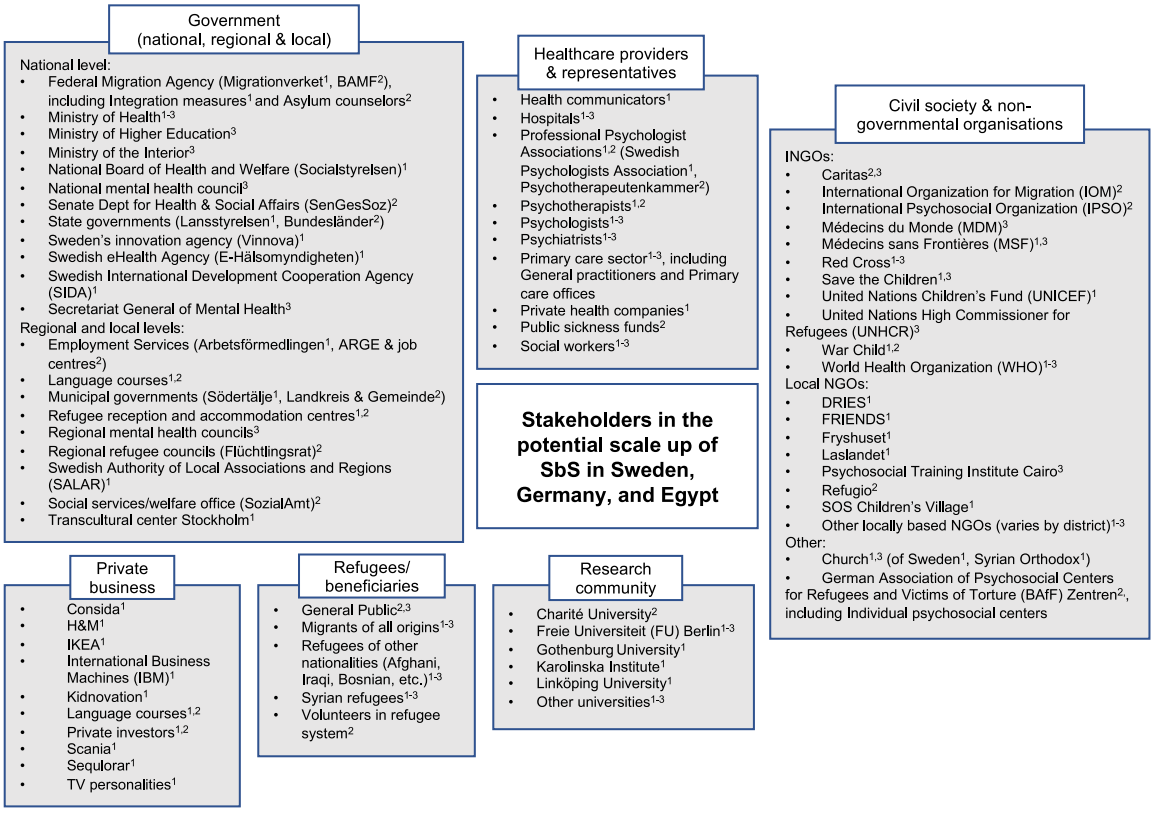

Fig. 3. Joint stakeholder map; 1 = Sweden, 2 = Germany, 3 = Egypt.

of social services and health care, although its uncertain whether this includes app-based interventions for refugees. The primary healthcare scenario is preferred over the civil society one as it has the potential to reach a larger number of people. In this scenario, Syrian refugees can access SbS through self-referral or by a referral from their general practitioner. Universities may play a role in quality control of SbS, and churches and integration initiatives (e.g. language schools, migration agencies) in raising awareness about mental health and SbS among Syrian refugee communities. Regional councils, municipalities, and governmental agencies could provide technical and financial support for implementing SbS.

3.6.2. Germany

Two similar integration scenarios were identified for Germany. If funding, legal, or political obstacles make the formal health system route unfeasible in practice, the not-for-profit MHPSS system route could be pursued. In this scenario, Syrian refugees (including those awaiting resolution of their asylum status and those with a residency permit) could access SbS while waiting for specialist help. They could be referred by NGOs, civil society organisations, or integration initiatives. Advantages of the not-for-profit route are that those involved have easier access to Syrian refugees than those in the formal health sector and may find it easier to build trust. This is important to overcome acceptability, trust, and stigma-related barriers. Additionally, there is an existing culture of non-specialist care. The main anticipated challenge is securing sustainable funding.

3.6.3. Egypt

Scaling up SbS in Egypt will likely require a collaborative effort between government and INGOs. At national level there is political will to make e-mental health services more widely available, albeit insufficiently funded (which is where international donors may come in). In this scenario, Syrian refugees would seek care directly through a service run by an international NGO, through primary care (run by the ministries and NGOs), or through their local NGO. From there, they could be referred directly to SbS or onto secondary or tertiary care, and eventually be referred to SbS from these levels. As mental health care is not yet fully integrated into primary health care, it was anticipated that psychiatrists and psychologists would be more powerful than primary health workers in making SbS part of existing referral pathways in Egypt. Social media and awareness campaigns on mental health were considered important in addressing mental health stigma and awareness barriers amongst Syrian refugees in Egypt.

4. Discussion

This paper examined scalability of a novel digital mental health intervention for Syrian refugees in two high-income countries (Germany and Sweden) and a lower middle-income country (Egypt). Our multi-country study provided an improved understanding of the factors influencing the potential integration of SbS in routine services, including commonalities and differences across countries and subsystems within countries.

We identified financing and regulations as important structural factors influencing the potential for sustainably integrating SbS within general health and MHPSS systems. These are commonly found to be critical to scaling up health innovations of various types (Ben Charif et al., 2017; Javadi et al., 2017; A. J. Milat et al., 2015; Wakida et al., 2018). Compliance with regulations, and evidence of effectiveness and cost-effectiveness were important when seeking funding for scaling up, particularly in the general health systems in Sweden and Germany.

Next to financing, acceptability was anticipated as a major influencing factor given its ubiquity in scaling up programmes (Zamboni et al., 2019) but especially given its potential to act as a barrier to the integration of mental health services into primary healthcare (Esponda et al., 2020; Wakida et al., 2018). The SbS delivery model as examined in

the STRENGTHS' RCTs is characterised by (i) psychological support through (ii) digital platforms being predominantly (iii) self-guided with (iv) on-demand technical support from non-specialist e-Helpers. We found that all four elements can create barriers (and to a more limited extent enablers) to users, and consequently to scaling up. The first three were predominantly reported by end-users (Syrian refugees) and the last one (non-specialist support) by mental health specialists in general health systems in Germany and Sweden. All four elements are discussed below.

The first two elements of acceptability (i.e. psychological support through digital platforms) are commonly reported in the literature. For example, previous research highlighted the importance of stakeholder trust in the effectiveness and safety of digital health innovations (Schlieter et al., 2022). Stigma associated with mental illness and seeking MHPSS support is a well-known barrier to scaling up (Esponda et al., 2020; Javadi et al., 2017; Liem et al., 2021; Petersen et al., 2019). Positively, those interviewed for our study perceived digital formats like SbS as potentially destigmatising as they preserved anonymity more than face-to-face interventions. This is in line with findings from the Sanadak trial – a Self-Help app for Syrian refugees with posttraumatic stress – in which authors appreciated how the app reduced stigma and helped bridge gaps that existed within a stepped and collaborative care approach (Rohr et al., 2021). Yet despite the destigmatising potential of *digital* psychological interventions, interventions that are framed as psychological interventions can deter potential users from accepting and, consequently, accessing such innovations. As recommended by other authors (Hassan et al., 2015), the SbS intervention avoids the use of psychotherapeutic jargon, is culturally adapted in consultation with end-users, and uses 'cultural brokers' (i.e. Syrian e-Helpers) as links to the Syrian community (Burchert et al., 2018). Furthermore, the narrative content of the SbS intervention focuses on normalising symptoms and enhancing mental health literacy as participants follow stories of relatable characters who similarly express stigma-related concerns (Burchert et al., 2018). These sociocultural adaptations and considerations may help overcome some of the reported barriers refugees experience in accessing MHPSS services in host countries like stigma, language barriers, loss of trust, and sociocultural obstacles (Byrow et al., 2020; Hendrickx et al., 2020; Satinsky et al., 2019; Woodward et al., 2023).

Self-help, the third element of acceptability found important to scalability of SbS, is less often reported in existing research. We found that Syrian refugees are generally unfamiliar with the notion of psychological support through self-help, which is also relatively new in the Egyptian health system. This can be explained by cultural differences and preferences between Arabic and Western countries (Heim and Kohrt, 2019) and suggests that further cultural adaptation may be necessary.

The fourth element of acceptability is on-demand non-specialist support. Non-specialist support may not be welcomed by some mental health specialists in the formal health systems in Germany and Sweden. Having e-Helpers with an undergraduate mental health background and ensuring quality control measures are in place may facilitate this. Additionally, creating win-win situations may help in gaining acceptance from these powerful players (e.g., it may reduce their workloads and waiting lists), although the prevailing financial incentives will be important. Alternatively, scaling up SbS could focus on collaboration with the not-for-profit sector, where non-specialist support is a more widely accepted.

This perceived novelty of self-help combined with on-demand support may explain the concerns expressed by interviewees in our study regarding user engagement. Continued use of the app was perceived to be challenging due to competing time pressures on app-users. Low completion rates are a well-known issue in e-health interventions (Fernandez et al., 2015), including smartphone delivered mental health care interventions for refugees (El-Haj-Mohamad et al., 2023), which limits their potential effectiveness. It will be important to see how the 'contact-on-demand' model – examined in the STRENGTHS trials and which consisted predominantly of technological support by e-Helpers – compares with other guidance models, such as 'minimal guidance' (up to 15 min weekly). The latter was found effective amongst Syrian refugees in Lebanon (Cuijpers et al., 2022a) and Lebanese citizens (Cuijpers et al., 2022b).

Aside from financing, regulations and acceptability, our findings indicate physical accessibility and equal access as areas of concern for scaling up novel digital interventions. Refugees lacking technological literacy, limited access to electronic devices, and unreliable internet access risked being excluded. Our study suggests this may be particularly problematic in Egypt where digital infrastructure is less well developed. A qualitative study among Syrian refugees in Lebanon found technological and health literacy to be a challenge to the uptake of health technologies (Talhouk et al., 2020). While some access barriers were accounted for in the design of SbS (e.g. audio features for illiterate users; web-based *and* app-based mode of delivery; off line mode) (Burchert et al., 2018), the ability to reach and treat refugees through digital channels is largely dependent on the environment external to the innovation. This highlights the importance of broader initiatives aimed at making digital transformation inclusive for refugees and creating enabling environments for this vulnerable population (UNHCR, 2022).

Landscape trends identified in our study showed how Sweden is a frontrunner on e-health. There is political commitment to digitalisation in social services and healthcare (Government of Sweden & Swedish Association of Local Authorities and Regions, 2021). Germany and Egypt are catching up with acceptance of e-health, which has been accelerated by COVID-19 and recent changes in legal and financial structures enabling the use and integration of e-health for its citizens. A global assessment reported a shift from in-person to remote consultations (i.e. telemedicine/teletherapy) (70%) as responses to the COVID-19 disruptions within mental health services (WHO, 2020). Additionally previous research among primary care providers has shown an increased readiness to adopt e-health solutions during the COVID-19 pandemic (Abi Ramia et al., 2018). Such a shift in thinking may lead to lasting changes in practices (i.e. continued increased utilisation of complementary e-health interventions). The pandemic also exposed and exacerbated persistent problems in health systems globally, such as inequities to access care for refugees (Lupieri, 2021). These landscape tensions are a "window-of-opportunity" for innovation as they put pressure on existing systems (Rotmans and Loorbach, 2010) and may motivate stakeholders' to change their practices (Schlieter et al., 2022).

Stakeholders play a prominent role in changing existing structures and cultures by adopting novel practices. Stakeholder groups identified and considered most powerful in our study are similar to a stakeholder analysis on the scaling up of mental healthcare in five low- and middle-income countries (Makan et al., 2015), which suggests that findings may be transferable to other contexts. Stakeholders deemed most powerful in our cross-country comparison were national and local governmental actors, those involved in research and development of SbS (i.e. WHO, FU Berlin), various NGOs, MHPSS providers, and actors involved in refugee integration and social work. Private health businesses and companies more likely play a role in Sweden. It is important to mention that stakeholder power is dynamic, subjective, and access to potential sources of power does not equate to their actual use (Balane et al., 2020; Mitchell et al., 1997).

Based on the many stakeholders identified in our analysis we can conclude that multi-stakeholder collaboration and transdisciplinarity is needed to address the complex task of scaling up e-mental health innovations. It is important to be aware that: the roles of researchers and implementers can overlap in scaling up health innovations (Bennett et al., 2017); collaboration between researchers and implementers is essential for bringing about system change (Fazey et al., 2018); and a shared and sustained urgency for change is needed among stakeholders (Essink, 2012). Positively, interviewees in our scalability study expressed a need to scale up SbS for Syrian refugees because of persistent

health system problems that limited access to quality MHPSS (e.g. waiting lists, language barriers). Negatively, issues, both experienced and anticipated, with user engagement suggest a lack of urgency or willingness among end-users. Close involvement of end-users seems therefore essential to ensure health innovations address their needs and in ways they find acceptable.

4.1. Limitations and future research

This study has several limitations. First, convenience sampling was used. While we managed to interview a large and diverse sample, some groups were underrepresented and should be considered for inclusion in future research on this topic, such as Syrian refugees not participating in a trial (and therefore not seeking MHPSS support). Additionally, future research would benefit from inviting potential interviewees, particularly those with a refugee background, in person; we mainly used email, which creates a bias towards those with digital access and proficiency. Also stakeholders engaged in private digital mental health care were underrepresented. Second, there were differences in sample sizes between the three countries. In Egypt more Syrian participants agreed to be interviewed, likely because recruitment was facilitated through a trusted NGO. Third, due to time and resource limitations a full-fledged stakeholder power analysis was not possible. Future research could build upon our initial analysis and would ideally more actively involves app-users (i.e. Syrian refugees were not explicitly asked about stakeholders in our interviews to limit duration of interviews). Fourth, our study examined *potential* factors and actors (and their power) influencing scaling up but does not present an evaluation on *actual* scaling-up. Therefore, scenarios developed and presented in this study need to be tested, evaluated, refined, and reported on in forthcoming implementation research. Fifth, our results (particularly the integration scenarios) may not be transferable to all refugee host countries. Additional scalability research is recommended when scaling up SbS in another country.

4.2. Conclusions

E-mental health interventions seem a promising solution to address the high mental health burden amongst refugees. However, integrating such interventions into routine services in host countries appears to be complex, even in times of global digital transformation. Generating sustainable financing, gaining acceptability among stakeholders, and ensuring equal access for refugee communities are likely the greatest challenges to scaling up innovations like SbS. Multi-stakeholder collaboration, including the involvement of refugees, will be essential for scaling up health innovations and overcoming systemic barriers. Features of the innovation may impede initial and continuous engagement of e-health users and require further investigation. Integration scenarios presented in our study are context-specific and need to be tested through implementation research.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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