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Couns Psychol Q. Author manuscript; available in PMC 2026 April 01.

Bridging the Mental Health Care Gap for International Students via Digital Interventions: Conceptual Foundations and a Five-Stage Model for Culturally Sensitive Design

Qiang Xie[1,2,*], **Yiqin Zhu**[3], **Tao Lin**[4], **Zizhuo (Grace) Yin**[5], **Simon B. Goldberg**[1,2]

[1]Department of Counseling Psychology, University of Wisconsin – Madison, Madison, WI, USA

[2]Center for Healthy Minds, University of Wisconsin – Madison, Madison, WI, USA

[3]Department of Psychological & Brain Sciences, Washington University in St. Louis, St. Louis, MO, USA

[4]Center for the Treatment and Study of Anxiety, University of Pennsylvania, Philadelphia, PA, USA

[5]Counseling & Psychological Services, Purdue University, West Lafayette, IN, USA

Abstract

International students tend to underutilize and benefit less from traditional mental health services compared to their domestic counterparts. This conceptual and theoretical paper aims to articulate the significance of digital mental health interventions (DMHIs) to expand mental health service access for international students, propose approaches for designing culturally sensitive DMHIs for international students, and inspire more rigorous research on these interventions. We explore the definition, types, and efficacy of DMHIs. We outline the unique promise of these interventions in reducing barriers to health service access encountered by international students. Most importantly, a five-stage model is proposed to guide the design and testing of equitable and culturally adapted DMHIs for international students. To illustrate these points, we discuss and critically evaluate existing studies of DMHIs for international students. Recent studies supported the potential benefits of DMHIs for improving international students' psychological distress and well-being. However, the evidence base remains limited in scope and rigor. Future studies can apply the proposed five-stage cultural adaptation framework to guide the development and evaluation of DMHIs for international students. Researchers may conduct well-powered randomized controlled trials, examine correlates of intervention use, co-develop DMHIs with international students, and integrate DMHIs within the larger system.

Keywords

international students; mental health; Internet; smartphone; health equity

[*]Corresponding author: Qiang Xie, Department of Counseling Psychology, University of Wisconsin-Madison, 335 Education Building, 1000 Bascom Mall, Madison, Wisconsin, 53706, United States, qiang.xie@wisc.edu.

Disclosure statement. The authors report there are no competing interests to declare.

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International students are a large, growing, and crucial component of the global higher education system. In this paper, we focus on international students at the post-secondary education level, as this group has been the primary focus of previous research on international students' mental health. In 2021, the total number of international students globally exceeded 6.4 million, marking a significant increase from 2 million in 2000 (Migration Data Portal, n.d.). International students contributed significantly to the economy of their host countries (Esaki-Smith, 2023). They also played a crucial role in advancing science and engineering research (National Foundation for American Policy, 2023).

However, international students are vulnerable to significant challenges in adjusting to studying at foreign institutions, many of which are unique compared to domestic students. Adapting to a new country and cultural environment can inherently bring challenges such as culture shock, acculturative stress, and social isolation (Girmay & Singh, 2019; Yan & Berliner, 2013). Moreover, international students are susceptible to neo-racism (i.e., prejudices and discriminations based on nationality and culture) and anti-immigrant sentiment (Lee & Rice, 2007). For many international students, language barrier can result in difficulties navigating daily lives and academic work (Yan & Berliner, 2013). Of note, experiences may vary across different international student groups. However, commonalities in challenges (e.g., acculturative stress, social isolation, and concerns related to non-immigration visa status) also exist within the international student community.

Given these challenges, mental health issues among international students are concerning. For example, research showed that about one in five international students in the US suffer from major depressive disorder, generalized anxiety disorder, eating disorder, and non-suicidal self-injury, respectively (Zhou et al., 2022). Overall, international students appear to experience similar and in some cases more severe mental health issues relative to domestic students (Veresova et al., 2024; Xiong et al., 2024; Zhou et al., 2022). It is important to recognize that the prevalence of mental health concerns varies significantly across different international student populations. Together, these findings suggest that international students experience substantial mental health needs that warrant targeted and accessible mental health support.

Although international students tend to experience similar (and potentially higher) rates and severity of mental health concerns compared to domestic students, they may be less likely to access traditional mental health resources, including counseling and medication (Clarke, 2023; Skromanis et al., 2018; Zhou et al., 2022). According to social ecological models, individuals are embedded within multiple, interacting systems, and factors across individual, interpersonal, community, organizational, and policy levels shape health behaviors and outcomes (Golden & Earp, 2012). From this perspective, disparities in mental health care access among international students reflect barriers operating across these levels. Practical barriers such as cost, language, difficulties in navigating an unfamiliar healthcare system, and lack of social support networks may contribute to their underutilization of formal and informal support (Tang et al., 2018). Additionally, international students are more likely to experience sociocultural barriers such as stigma and shame related to seeking counseling or medications compared to their domestic counterparts (Yoon & Jepsen, 2008; Zhou et al., 2022). International students may experience heightened concerns about the sensitivity

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of counseling services to their unique needs and therapists' cultural competence (Yoon & Jepsen, 2008). Systemic barriers such as long waitlists in counseling centers and a lack of multilingual and culturally sensitive mental health services may also impede international students from utilizing mental health services (Guilman, 2015). Collectively, this body of research indicates that access inequities arise from multilevel barriers, underscoring the need for intervention strategies that operate beyond traditional in-person service models.

Moreover, international students may experience health inequities regarding the benefits they receive from psychotherapy. International students tend to exhibit smaller improvements in psychological symptoms compared to domestic counterparts in psychotherapy (Keum et al., 2022). Keum et al. (2022) pointed out that insufficient training on therapists' international and cultural competence might contribute to this effectiveness gap. Indeed, international students endorse more negative experiences in psychotherapy compared to their domestic counterparts (Mitchell et al., 2007). These findings suggest that attention must be directed toward the modality and cultural responsiveness of interventions delivered to international students.

The combination of elevated mental health needs, multilevel barriers to help-seeking, and smaller benefit from traditional psychotherapy highlights a significant gap in equitable service delivery for international students. The advancement of digital technology provides a potentially promising avenue to bridge mental health inequities for international students (Xie, 2025). Digital mental health interventions (DMHIs) are psychological interventions delivered via digital platforms, such as smartphones, tablets, wearables, and computers (Pineda et al., 2023). Nowadays, many postsecondary students have grown up with digital technology and are very comfortable using technology. They also have positive attitudes toward and high intention to use digital technology for mental health purposes (Gbollie et al., 2023). Although Gbollie et al. focused on a general student population rather than international students specifically, their findings provided indirect evidence supporting the potential applicability of DMHIs to international students. Moreover, research suggested that smartphones played an important role in supporting international students' emotional well-being by enabling them to stay connected with family and friends, manage isolation, and access academic resources (Magnat & Guichon, 2023). These characteristics may make DMHIs an advantageous approach for enhancing the accessibility of mental health support to postsecondary students, including international students. It is important to emphasize that, from a social ecological perspective, DMHIs are not merely technological tools but interventions situated within broader interpersonal, institutional, and structural systems (Golden & Earp, 2012). Their impact on international students therefore depends not only on technological features but also on how they are integrated into existing mental health infrastructures.

However, the potential of DMHIs for international students has not been fully harnessed. Only a few empirical studies thus far have tested DMHIs for international students (e.g., Ahmad & Meriç, 2021; Balci et al., 2023; Clough et al., 2020; Kanekar et al., 2009; Spanhel et al., 2022). The current paper examines DMHIs as a potential means to bridge the mental health service access gap for international students. Given the limited research on DMHIs for international students, we seek to make a conceptual case for the significance

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of DMHIs to expand mental health service access for international students and to inspire more rigorous research on these interventions rather than conducting a systematic review or meta-analysis.

Specifically, we have the following aims: 1) introducing DMHIs, including their definition, types, and evidence base for efficacy, 2) discussing the potential of DMHIs to expand mental health services for international students, 3) proposing a five-stage model for developing culturally adapted DMHIs for international students, 4) reviewing and critically evaluating example studies on DMHIs for international students, and 5) proposing future research directions for advancing the methodological rigor of studies and the cultural sensitivity of DMHIs for international students.

DMHIs: An Overview

What Are DMHIs?

DMHIs are interventions delivered via digital platforms (e.g., smartphones, tablets, wearables, computers) to prevent, treat, and reduce relapse of mental health concerns. According to the taxonomy proposed by Pineda et al. (2023), DMHIs can be divided into four categories. Type 1 DMHIs are asynchronous or synchronous treatments administered by healthcare providers via videoconferencing platforms or telephone. Type 2 DMHIs are provider-administered treatments enhanced by digital adjuncts, such as email, text messages, and mental health apps. Type 3 DMHIs are self-help digital tools augmented by therapeutic guidance or technical support. Therapeutic guidance involves providing support in the use of behavioral change techniques that digital tools present. This guidance can be delivered by lay helpers or healthcare providers. Technical support, on the other hand, involves helping solve technical problems. The ultimate goal of therapeutic guidance and technical support is to enhance engagement with and effectiveness of digital tools. Type 4 DMHIs are completely automated, self-help interventions without any human support. Type 1 and type 2 DMHIs involve a therapeutic contract between healthcare providers and patients, in which providers hold responsibility for the treatments. In contrast, type 3 and type 4 DMHIs involve self-help interventions as the major component (Pineda et al., 2023).

For the purpose of this paper, we conceptualize DMHIs as digital treatments in which self-help interventions are the primary component (i.e., type 3 and type 4 DMHIs; Pineda et al., 2023). In this regard, type 1 and type 2 DMHIs fall beyond the scope of this paper. These treatment options may admittedly offer unique advantages. For instance, DMHIs embedded within psychotherapy can provide resources to patients and facilitate skill learning between therapy sessions, thus augmenting the effectiveness of psychotherapy (Lindhiem et al., 2015). Teletherapy can expand psychotherapy services to patients who experience commuting and scheduling challenges, achieving effectiveness comparable to in-person psychotherapy (Lin et al., 2022). Nonetheless, they both incorporate treatments delivered by healthcare providers as the primary component. Access to these interventions can still be significantly restricted by barriers that are prominent for international students, such as the limited availability of culturally sensitive healthcare providers, cost, help-seeking stigma, language barriers, and mistrust in the healthcare system (Guilman, 2015; Tang et al.,

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2018; Yoon & Jepsen, 2008; Zhou et al., 2022). Thus, we focus on type 3 and 4 DMHIs which may be most accessible for international students.

Are DMHIs Beneficial for Mental Health?

In this section, we discuss the evidence base of DMHIs for general and diverse populations. Although the studies reviewed here were not conducted with international student samples, they provided indirect evidence supporting the potential applicability of DMHIs to this population. Studies specifically examining DMHIs for international students are discussed in a subsequent section. Research demonstrated that DMHIs could potentially improve a wide range of mental health outcomes. A recently published meta-analysis including 176 randomized controlled trials (RCTs) demonstrated a small effect of mental health apps on anxiety ($g = 0.26$) and depression ($g = 0.28$) compared to control groups (Linardon et al., 2024). DMHIs have also been found to improve other mental health concerns such as insomnia, posttraumatic stress, and suicide risk (Deng et al., 2023; Kuester et al., 2016; Torok et al., 2020). Self-help DMHIs may be less effective compared to traditional psychotherapy delivered by mental health professionals (Kambeitz-Ilankovic et al., 2022). However, support from mental health professionals has been found to augment the efficacy of self-help DMHIs (Moshe et al., 2021). For certain treatments such as cognitive behavioral therapy, DMHIs incorporating clinician's support may achieve similar effects compared to traditional, face-to-face therapy (Carlbring et al., 2018). While evidence suggests that DMHIs may enhance mental health, it is important to recognize that the effect sizes remain modest, and existing literature has notable methodological limitations (e.g., lack of participant and personnel blinding, incomplete outcome data; Goldberg et al., 2022). As indicated in a recent systematic meta-review of 14 meta-analyses, few effect sizes of RCTs on mobile phone-based interventions have achieved the highest level of evidence threshold for mental health (Goldberg et al., 2022). Therefore, further rigorous research is necessary to continue examining the efficacy of DMHIs.

The potential efficacy of DMHIs has been documented among diverse populations, such as employees, adolescents and postsecondary students, and healthcare providers (Stratton et al., 2017; Wang et al., 2023; Zhang et al., 2024). Emerging research also suggested the potential of DMHIs to support marginalized populations' mental health. For example, Ellis et al. (2022) synthesized the feasibility, acceptability, and efficacy of culturally adapted DMHIs for racial or ethnic minorities. Most studies included in this meta-analytic review found these interventions to be acceptable and feasible. Moreover, 12 RCTs demonstrated a large effect ($g = 0.90$) of these interventions in improving clinical outcomes compared to waitlist and treatment-as-usual controls (Ellis et al., 2022).

Why DMHIs for International Students?

In this section, we explore the unique advantages of DMHIs in bridging the mental health inequities for international students. Specifically, we discuss the potential of DMHIs to reduce practical, sociocultural, and systemic barriers to seeking and benefiting from mental health services.

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Of note, DMHIs should be positioned as one component within broader systems of care rather than as a panacea for addressing all the mental health needs of international students. The mental health inequities faced by many international students, like those of other marginalized populations, are deeply rooted in systemic issues such as language hegemony (i.e., the dominance of one language over others, leading to marginalization of minority languages and cultures), White supremacy, and racism (Roth-Gordon, 2023; Xie et al., 2025). Research has shown that creating a supportive and inclusive campus environment holds significant potential to enhance international students' mental health and well-being at scale (Sakız & Jencius, 2024b). Thus, addressing system-level factors in disseminating and providing mental health services must remain a top priority in pursuing health equity for international students. While DMHIs offer unique advantages in reducing various barriers, they should be seen as a complementary approach enhancing rather than replacing ongoing efforts (e.g., decolonizing mental health services for international students) to improve the current healthcare system. For example, other approaches, such as integrating counseling services with other campus services (e.g., health, academic, and student affairs) and incorporating mental health knowledge into university curricula, also have the potential to significantly enhance access to mental health resources for international students (Sakız & Jencius, 2024b).

DMHIs also introduce potential ethical risks, including concerns about data privacy and misuse. These risks may be especially salient for international students from sociopolitical contexts characterized by heightened surveillance. This underscores the importance of robust data protection and transparency in how user information is collected and used.

In addition to individual-level ethical risks, institutional incentives surrounding DMHIs warrant careful consideration. While accessibility and scalability is a strength of DMHIs, there is a risk that DMHIs may be adopted primarily as cost-saving substitutes for expanding in-person services rather than as complementary supports within a broader system of care. Such substitution could inadvertently exacerbate inequities if international students with more complex or acute needs are directed toward lower-intensity DMHIs without adequate access to in-person services. Therefore, DMHIs for international students should be implemented within a stepped-care or integrated model that expands access while preserving and strengthening traditional in-person mental health services. Clear communication about both the benefits and limitations of DMHIs (e.g., smaller effects relative to traditional therapy and that they are not intended to replace in-person mental health services) should also be provided during the implementation and dissemination of these interventions among international students.

Tackling Practical Barriers

DHMIs can greatly circumvent practical barriers related to time, transportation, cost, and service availability, thereby increasing the accessibility to mental health care for international students. Specifically, DHMIs can be easily accessed regardless of time and geographic location (Lehtimaki et al., 2021), making them suitable for international students who often have demanding academic schedules (Janota et al., 2022). Additionally, DHMIs are generally more affordable than traditional psychotherapy, and many are free or

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relatively low-cost to students (Lehtimaki et al., 2021). Therefore, international students can utilize DHMIs without worrying about potential financial costs or navigating an unfamiliar healthcare system, both of which are common barriers to accessing mental healthcare among international students (Tang et al., 2018; Xu, 2023).

Addressing Sociocultural Barriers

DMHIs can reduce the impact of perceived stigma associated with seeking mental health services. Recent qualitative work highlighted that in many cultures, mental health remains a taboo topic, and international students often delay seeking support until their problems become unmanageable (Sakız & Jencius, 2024a). This finding underscores the potential of DMHIs to serve as low-barrier, early-access tools that normalize help-seeking and provide psychoeducational scaffolding before crises escalate. Digital platforms allow international students to access the intervention anonymously at their own pace and comfort level, reducing the impact of help-seeking stigma on accessing mental health services. Moreover, DMHIs can serve as an initial step in the stepped-care mental health services, providing a scalable and efficient way to address the mental health needs of international students. As the first step, DMHIs can incorporate self-assessment tools to help international students identify their mental health needs and guide them to suitable self-help resources (Sin et al., 2020). Through psychoeducation and self-help strategies, DMHIs can enhance international students' understanding of mental health issues and encourage them to seek further professional help as needed. For students who require more intensive support, DMHIs can connect them to higher levels of care by offering appropriate resources such as referral information to local counseling services.

Reducing Systemic Barriers

DMHIs offer a promising solution to the gap between the growing demand for psychotherapy and the limited service availability at university counseling centers. As demand for psychotherapy has been increasing and sometimes exceeding service availability among university counseling centers in recent decades (Xiao et al., 2017), many international students face long waitlists when seeking help. Many university counseling centers have mandated policies to reduce treatment length and session frequency (Gorman et al., 2021). Thus, international students may not improve their mental health as effectively because they do not receive an adequate level of care and need to seek alternative help once they have used all allotted sessions. These gaps are compounded by insurance-related constraints, which limit the quantity and flexibility of services available to international students (Sakız & Jencius, 2024b). DMHIs can address this gap by providing immediate, timely support to international students. DMHIs can also ensure continuous mental health care during winter and summer breaks when university counseling centers often close.

DHMIs may also improve the quality of mental health services for international students by offering multilingual and culturally adapted intervention options (Ellis et al., 2022). Multilingual and culturally adapted intervention options may be more effective in improving mental health outcomes compared to non-adapted interventions (Hall et al., 2016). However, multilingual mental health services and culturally adapted interventions are lacking among university counseling centers (Guilman, 2015; Sakız & Jencius, 2024a). DMHIs are well-

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suited to incorporate multilingual features and cultural values and address the specific needs of international students. As mentioned earlier, culturally adapted DMHIs have demonstrated efficacy and feasibility in improving minority groups' mental health outcomes (Ellis et al., 2022).

Moreover, DMHIs can connect international students to a more diverse pool of interventions beyond those available at their institution. A variety of empirically supported interventions have become available on digital platforms, including cognitive behavioral therapy and mindfulness-based interventions (Lee et al., 2023; Taylor et al., 2021; Xie & Chen, 2025). Some of the interventions, such as internet-based cognitive behavioral therapy for loneliness (Käll et al., 2021), can be particularly beneficial to international students who may be vulnerable to social isolation. International students have the flexibility to explore various DMHIs and choose the ones that best meet their needs, which can be easier than switching therapists. Finally, research also points to the value of preventive strategies that support psychological well-being and strengths, rather than just reducing distress, in international student mental health strategies (Sakız & Jencius, 2024a). For instance, Prasath et al. (2022) advocate for fostering positive psychological capital and resilience among international students. This aligns with the potential of DMHIs to promote flourishing by integrating positive psychology content, such as gratitude and meaning-making, alongside more traditional therapeutic strategies.

How to Develop Culturally Sensitive DMHIs for International Students?

While DMHIs may enhance accessibility and scalability of mental health support for international students, the mere use of technology does not inherently ensure cultural sensitivity. Interventions delivered digitally may still reflect dominant cultural assumptions unless they are intentionally designed or adapted to incorporate international students' unique experiences and cultural values. In this section, we address this distinction by outlining a systematic process for culturally adapting DMHIs rather than simply digitizing existing interventions. We propose a framework for developing culturally adapted DMHIs for international students by utilizing a cultural adaptation framework for evidence-based interventions. Barrera et al. (2013) synthesized prior literature to outline five key stages of cultural adaptation and identified common elements that enhance intervention relevance for culturally diverse populations. We selected Barrera et al.'s cultural adaptation framework based on a review of existing models of cultural adaptation. Widely used in the cultural adaptation literature, this framework synthesizes prior approaches by identifying their common elements, thereby strengthening its theoretical grounding and offering an integrative approach to guiding adaptation efforts. Additionally, it provides a comprehensive structure for both *how* cultural adaptations can be conducted and *what* aspects of interventions can be adapted to enhance cultural sensitivity.

The first stage, *Information Gathering*, involves reviewing literature and conducting formative research (e.g., surveys, focus groups, interviews) to identify cultural characteristics and determine if an adaptation is needed. This stage helps clarify how cultural factors may influence both risk and resilience factors related to health outcomes, as well as the mechanisms of change targeted by the intervention. In the second stage, *Preliminary*

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Adaptation Design, information gathered is used to modify the original intervention while preserving its core components. Adjustments may include translating materials and tailoring content to meet the needs of specific cultural communities. The third stage, *Preliminary Adaptation Tests*, involves piloting the adapted intervention and gathering feedback from participants and staff to identify challenges related to implementation, cultural relevance, and user experience. In the fourth stage, *Adaptation Refinement*, the feedback from the pilot tests is used to revise and improve the initial adaptation. At this stage, thoughtful decision-making is essential and typically involves collaboration among key stakeholders, such as researchers, implementation staff, community advisory panel, and individuals from the cultural group. Finally, in the *Cultural Adaptation Trial* stage, the refined intervention undergoes full-scale testing to assess its impact on engagement and health outcomes. This stage may also include evaluating how sociocultural variables interact with the intervention to ensure that it is effective and culturally appropriate for different individuals across members of the same cultural group.

In addition to outlining *how* to conduct cultural adaptations, Barrera et al. (2013) also identified *what* aspects of an intervention can be adapted to increase its cultural sensitivity. Specifically, culturally adapted interventions can integrate both surface-level and deep-level elements. *Surface structure features* refer to the observable, presentation-oriented elements of an intervention that are adapted to match the characteristics of the target cultural group. These features are primarily about presentation and delivery, rather than content. These may include bilingual and bicultural materials, translations, and the use of culturally familiar imagery, formats, and delivery settings. In contrast, *deep structure features* embed cultural values, norms, and belief systems into the content and process of the intervention. This may encompass recognizing the role of family, incorporating spiritual or communal frameworks, adjusting materials to match the group's literacy level, and leveraging social support networks.

A Five-Stage Model for Developing Culturally Adapted DMHIs for International Students

Drawing on the five-stage process outlined by Barrera et al. (2013) and integrating both surface and deep structure adaptations, we propose a tailored framework for guiding the development and evaluation of culturally adapted DMHIs for international students that centers their cultural backgrounds and lived realities. This five-stage model can be empirically tested by examining whether interventions developed through this structured process demonstrate greater cultural relevance, engagement, and effectiveness compared to interventions that do not follow the systematic adaptation procedures.

Of note, although international students share certain common characteristics and stressors, they represent a highly heterogeneous population. Attitudes toward and engagement in DMHIs may vary significantly by culture, region of origin, race/ethnicity, language proficiency, gender identity, digital literacy, socioeconomic background, and prior exposure to mental health services. As outlined in the five-stage model below, these intersecting factors may shape preferences for intervention content, delivery format, privacy, and human support. Recognizing this within-group diversity is important for advancing equity, as

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treating international students as a monolithic group risks failing to address the distinct needs of specific subpopulations.

Stage 1: Information Gathering: At stage 1, systematic investigation can be conducted to determine whether and how cultural adaptation is needed for a specific DMHI. This may require understanding how cultural factors shape international students' technology use, privacy concerns, and attitudes toward digital mental health support. Key activities at this stage may include conducting formative research through focus groups, individual interviews, and surveys. In particular, intervention developers may explore international students' patterns of technology use, as well as preferred platforms (e.g., mobile apps vs. web-based interfaces) and formats (e.g., text vs. audio vs. video). Privacy and data security concerns may warrant particular attention, as international students may potentially experience concerns about information being shared with university administrators or immigration authorities.

Beyond surface-level features, it is important to examine how the digital delivery format itself interacts with cultural values related to human relationships and privacy, which may shape how international students engage with interventions. For instance, cultural values may influence acceptability of different DMHI types: international students from cultures emphasizing relational healing may prefer Type 3 over Type 4 DMHIs, while students from high-stigma contexts might find the anonymity of Type 4 preferable to Type 3 involving human contact. Considerations about intersectionality may also play a role in the Information Gathering stage, as international students' mental health experiences are influenced by intersecting factors such as race/ethnicity, gender, and socioeconomic background, which can affect their interest in DMHIs and the extent to which these interventions are responsive to their needs. Similarly, digital literacy and technology access should be considered, as varying levels of familiarity with digital platforms and differing access to reliable internet or devices can significantly influence engagement. Understanding these intersections could help ensure that DMHIs address barriers to accessing and benefiting from DMHIs faced by students from diverse backgrounds.

Moreover, it is essential to explore how the unique experiences and cultural values of international students shape their preferences for the goals and content of DMHIs. Understanding how international students conceptualize mental health and well-being is key to tailoring interventions to their needs. For example, some international students may be more interested in DMHIs that promote academic engagement or flourishing rather than focusing directly on mental health concerns, especially those from countries where mental health stigma is high. Additionally, as previously noted, international students often face challenges such as culture shock and social isolation (Girmay & Singh, 2019; Yan & Berliner, 2013), neo-racism and anti-immigrant sentiment (Lee & Rice, 2007), as well as language anxiety and challenges (Yan & Berliner, 2013). Understanding how international students perceive interventions that address these specific challenges can help ensure their unique needs are met. Moreover, many international students come from cultures with indigenous healing practices, which may offer valuable insights for adapting evidence-based interventions. Exploring how these traditional healing methods can be integrated

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into DMHIs could enhance both engagement and effectiveness, ensuring that interventions resonate with international students' cultural values.

Stage 2: Preliminary Adaptation Design: In the second stage, insights gathered from formative research are systematically applied to modify the DMHIs in ways that enhance cultural relevance while maintaining fidelity to its core components. Based on Stage 1 findings about technology use patterns and format preferences, developers could select appropriate platforms (e.g., mobile app vs. web-based) and prioritize content modalities (e.g., creating video-based content if students prefer visual learning, or offering multiple format options to accommodate diverse preferences). To accommodate varying levels of digital literacy and technology access identified in Stage 1, developers in Stage 2 may simplify the user interface, minimize technical demands, and provide onboarding modules that guide users through the platform in culturally and linguistically accessible ways. It is also essential to explicitly address privacy and data security in the intervention's language, ensuring transparency around how data are stored and used. Inquiries during the Information Gathering stage can help illuminate what specific concerns (e.g., worries about information being shared with university or immigration authorities) international students hold, and how best to communicate safeguards in a culturally resonant way. Preferences around human contact versus anonymity may inform intervention design. When possible, offering flexible pathways, such as optional peer support (e.g., moderated discussion boards or "ask a peer" features), guided coaching, or fully self-guided formats, can help accommodate differing cultural values around relational healing and privacy.

Additionally, the framing of the intervention's goals may be adapted to align with cultural values and reduce stigma. For students from cultures where mental health concerns are heavily stigmatized, framing the intervention in terms of enhancing academic performance, emotional resilience, or flourishing may increase engagement more effectively than language centered on symptom reduction. The content of the intervention may be adapted to reflect international students' lived experiences, including challenges such as culture shock, neo-racism, language anxiety, and immigration-related stress. This may involve modifying examples, metaphors, and illustrations to ensure students see their realities reflected in the DMHI. In addition, intervention developers may consider integrating elements of indigenous or traditional healing practices from students' home cultures, when such adaptations are supported by findings from Stage 1. This could take the form of optional modules or embedded practices that resonate with cultural worldviews while complementing evidence-based strategies. Finally, adaptations may reflect an intersectional lens to ensure that the intervention addresses the needs of students with multiple marginalized identities, such as international students of color, LGBTQ+ students, and those from low-income backgrounds. This may involve including developing content that acknowledges intersecting forms of oppression and ensuring the tone and messaging throughout the intervention are inclusive and affirming.

Stage 3: Preliminary Adaptation Tests: In the third stage, the culturally adapted DMHI is piloted with a small sample of international students to assess its cultural relevance, usability, and implementation feasibility. This phase is not intended to establish

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efficacy, but rather to gain critical feedback on how well the adaptations made in Stage 2 function in real-world conditions and whether further refinements are needed before larger-scale evaluation. Pilot testing may use both quantitative (e.g., brief surveys, usage analytics) and qualitative methods (e.g., cognitive interviews, user debriefings, focus groups) to evaluate how international students from diverse backgrounds experience the adapted DMHI.

In particular, researchers should assess whether the delivery platform and content format align with students' preferences and technological contexts. This includes evaluating whether the platform is easy to navigate and whether video, text, or audio materials are accessible, engaging, and appropriately tailored to students' learning styles, digital literacy, and technology access. Privacy and confidentiality remain key considerations at this stage. Even if students did not report strong privacy concerns in earlier phases, it is critical to test whether the intervention's privacy assurances and data security messaging are understood, trusted, and aligned with students' cultural contexts. Similarly, when offering multiple engagement pathways (e.g., peer support vs. anonymous self-guided use), developers should evaluate whether students understand these options and feel empowered to choose based on their own comfort with human contact, autonomy, and relational norms.

It is also essential to examine user responses to the framing of the intervention's goals, including whether language around "flourishing," "resilience," or "academic success" is perceived as relevant and inviting, particularly among students from high-stigma backgrounds. Feedback should also be gathered on the perceived relevance of culturally specific content, such as metaphors, examples, and modules addressing experiences like culture shock, neo-racism, and language anxiety. Special attention should also be paid to whether the intervention feels inclusive and responsive to intersectional identities. Feedback from students who hold multiple marginalized identities can help assess whether the intervention's tone, examples, and structure are sufficiently affirming. Pilot data should inform whether any intervention components unintentionally reproduce dominant cultural assumptions or overlook key identity-based stressors. Input from staff, such as cultural consultants, peer facilitators, or university counselors, can also be useful in identifying additional barriers to implementation or cultural misalignments that may not be immediately visible to users.

Stage 4: Adaptation Refinement: In the fourth stage, feedback gathered during preliminary adaptation testing is systematically reviewed and used to refine the intervention. This process involves careful decision-making to determine which elements require modification, clarification, or further development. Decisions made at this stage could reflect collaborative input from multiple stakeholders, including researchers, implementation staff, cultural consultants, and international students themselves, potentially through structures such as community advisory panels.

Refinement efforts may address any usability issues identified during pilot testing by simplifying navigation, enhancing onboarding support, or optimizing content delivery for different internet bandwidth conditions. Revisions may include reworking or replacing content that was perceived as culturally irrelevant, adding additional examples or metaphors

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that better reflect the lived experiences of international students, or clarifying intervention goals in language that resonates more clearly across cultures. If certain adaptations were found to be underutilized or confusing, developers should evaluate whether the issue stems from design, framing, or deeper cultural misalignment, and adjust accordingly. This stage may also involve strengthening privacy-related messaging or refining options for users to navigate between anonymous use and pathways with human support, based on how these features were interpreted during pilot testing.

Adaptation refinement also presents an opportunity to ensure that the intervention avoids reinforcing dominant cultural assumptions or excluding students with intersecting marginalized identities. Feedback from students with lived experience of racism, xenophobia, homophobia, or other forms of structural oppression could be used to identify content or tone adjustments that may improve inclusivity and affirmation. Similarly, implementation staff and cultural advisors can help anticipate challenges related to broader deployment; for example, flagging content that may be misunderstood in certain campus contexts.

Stage 5: Cultural Adaptation Trial: In the final stage, the fully adapted intervention is evaluated through a larger-scale cultural adaptation trial to assess its effectiveness, engagement, and cultural appropriateness. This stage involves systematically testing the refined DMHI with a broader sample of international students, often using randomized controlled designs or pragmatic trial methods. The primary aim is to determine whether the adapted DMHI produces meaningful improvements in intended outcomes, while maintaining high levels of acceptability (e.g., minimal concerns about privacy and data security), usability, cultural relevance, and sustainability.

In addition to assessing overall efficacy, this stage should examine how sociocultural variables, such as country of origin, race, gender, socioeconomic status, language proficiency, acculturation level, digital literacy, and technology access, influence intervention use and outcomes. This allows researchers to determine for whom the intervention is most effective, and whether any adaptations may need further tailoring for specific subgroups within the broader international student population. Moderation analysis may be used to explore heterogeneity of treatment effects.

Evaluation in this stage may also extend beyond clinical outcomes to include implementation outcomes such as reach, engagement, retention, and satisfaction, with particular attention to any patterns of differential dropout or non-engagement among marginalized subgroups. Gathering qualitative feedback during or after the trial can provide insight into how international students interpret and experience the intervention, including whether the culturally adapted content feels authentic, affirming, and actionable in their daily lives.

Example Studies on DMHIs for International Students

In 1990, Buglione and colleagues presented one of the first efforts to test the efficacy of DMHIs for students in higher education. Their study showed that a computerized treatment

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package worked as efficaciously as traditional group therapy in reducing test anxiety for 36 test-anxious students seeking treatment within a university counseling center (Buglione et al., 1990). Although unique mental health challenges faced by international students have long been recognized, it was not until the late 2000s that researchers started to examine DMHIs specifically for this population.

In this section, we review several studies testing the efficacy of DMHIs in improving international students' mental health outcomes (see Table 1 for a summary of study characteristics). The types of outcomes include unique mental health challenges (e.g., acculturation) compared to domestic students, mental health literacy and help-seeking, and mental health concerns (e.g., anxiety, stress) shared by both international and domestic students. Rather than aiming to provide a systematic review of the literature, these studies were selected through a search process to offer a reasonably comprehensive overview of the evidence base and ensure that each major outcome domain was represented.

Approach to Identifying and Selecting Relevant Studies

The first and second authors conducted a search for studies on DMHIs for international students using Google Scholar during July and August 2024. We engaged in a search process on Google Scholar, using commonly used terms including "international students," "digital intervention," "online intervention," "digital mental health intervention," and "smartphone intervention," along with related variations, to identify relevant studies. Since this manuscript is not intended to be a systematic review, we did not systematically search multiple databases. Each author independently screened articles on Google Scholar. The first author then reviewed all included studies to ensure they indeed met the eligibility criteria. Screening was concluded when several consecutive pages of search results no longer yielded any new eligible studies and at least one study had been identified for each targeted outcome domain (i.e., international students' unique mental health challenges, mental health literacy and help-seeking, and common mental health concerns). Therefore, the final set of studies offered a reasonably comprehensive overview of the existing empirical literature on the efficacy of DMHIs for international students.

Empirical studies focusing on the efficacy of DMHIs for international students were deemed eligible for inclusion. Research protocols and studies not related to mental health interventions (e.g., online academic writing training) were excluded. Studies primarily focused on intervention development, acceptability, and usability testing rather than assessing intervention efficacy were not included. There were no restrictions on the home/host countries of the international students. Quantitative, qualitative, and mixed-methods studies were eligible. This screening process left a final set of 5 studies discussed below. It is important to note that as of January 15, 2026, a search in PubMed returned only one result (an RCT protocol) using the search terms: "international students" AND ("digital intervention*" OR "online intervention*" OR "digital mental health intervention*" OR "smartphone intervention*"). This further supported the limited research available and justifying our decision to adopt a conceptual approach rather than a systematic review.

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DMHIs on International Students' Unique Mental Health Concerns

In a pilot RCT, Kanekar and colleagues (2009) tested the impact of an Internet-based intervention on improving several mental health outcomes, including acculturation, which is linked to the unique experiences of international students. They recruited international students (n = 60) from India who were studying in the US and randomly assigned them to either an intervention or active control group. Participants in the intervention group were offered a 3-session intervention about perceived social support, hardiness (i.e., a personality trait that allows an individual to endure high levels of stress without becoming ill), and acculturation (i.e., social and psychological exchanges during continuous interactions between individuals and different cultures) through an online learning platform. The control group was exposed to a similar protocol, but the content only focused on general health awareness and wellness. No pre-post intervention differences were found in either group for social support, acculturation, or hardiness. Moreover, although both groups showed reductions in psychological distress, no group differences emerged.

DMHIs on International Students' Mental Health Literacy and Help-Seeking

Clough et al. (2020) conducted a pilot RCT to evaluate the effectiveness of a single-session online educational intervention to increase mental health literacy and help-seeking intentions. International students (n = 45) of unspecified nationalities studying in Australia were randomly assigned to either receive information on the topic of depression (intervention group) or unrelated information about influenza prevention and hygiene (control group). Both groups completed batteries of measurements before and one week after receiving the information. Results indicated that this brief intervention, compared to the control group, significantly improved help-seeking attitudes, particularly reduced help-seeking stigma, but did not significantly influence mental health literacy or help-seeking intentions.

In a pilot RCT, Spanhel et al. (2022) evaluated the efficacy of a 3-module Internet-based intervention for improving mental health literacy and sleep. The study randomly assigned international students (n = 81) of 36 nationalities studying in Germany to either a culturally non-adapted intervention group or a waitlist control. Participants in the intervention group received a three-module sleep intervention focused on sleep hygiene and cognitive techniques to reduce rumination, while the waitlist control group received the intervention after the study period. Results suggested that the sleep intervention did not significantly improve mental health literacy compared to the control group. However, study results showed a significant reduction in sleep concerns in the intervention compared to the control at the 12-week follow-up. Participants also reported high satisfaction with the intervention and perceived it as highly culturally appropriate.

DMHIs on International Students' Mental Health Concerns Shared by Domestic Students

Balci et al. (2023) conducted a pilot RCT to evaluate the efficacy of an online mindfulness intervention adapted for international students of 25 nationalities studying in Germany, Austria, and Switzerland. Their cultural adaptations include changes in 10 content components (e.g., changes in names and backgrounds of characters) and four methodological components (e.g., guidance provided by an English-speaking psychologist).

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Additionally, the study incorporated three procedural components (e.g., partnering with international student offices on campus to distribute study-relevant information) related to the implementation of the study. Participants (n = 40) were randomly assigned to either the 7-module intervention or waitlist control. Participants in the intervention group received access to StudiCareM-E, a seven-module mindfulness intervention. Each module introduced a different type of meditation exercise, such as body scan and mindful yoga. Participants were asked to complete one module a week. When seven modules were completed, participants received booster sessions one, two, four, and 12 weeks after the completion. The intervention was well-received, with high adherence and satisfaction rates among participants who completed the intervention. No significant negative effects were reported. Results suggested that StudiCareM-E significantly improved mindfulness, anxiety, and well-being at the 8-week follow-up compared to the control.

Ahmad & Meriç (2021) investigated the effects of a brief online psychoeducational stress management program on the ability of international nursing students to cope with and adapt to stress. International nursing students (n = 60) predominantly from Nigeria studying in Northern Cyprus were randomly assigned to either a 7-session intervention or a waitlist control. The intervention group participated in five weekly, one-hour online sessions focusing on stress management strategies and coping skills. The study showed that the stress levels and coping skills were improved for the intervention group, while no significant change in outcomes was observed in the control group.

Critical Appraisal of the Existing Evidence Base

Although these studies represent important efforts to test DMHIs for international students, the overall evidence base remains limited in scope and rigor. Studies on DMHIs for international students were characterized by small sample sizes, ranging from 40 to 81. Most of these studies were confined to the pilot and feasibility testing stages (Balci et al., 2023; Clough et al., 2020; Kanekar et al., 2009; Spanhel et al., 2022). This constrains statistical power and increases the likelihood of Type II errors. Measurement limitations were common; outcomes were typically assessed without long-term follow-up, leaving it unclear whether intervention effects were sustained over time. The control conditions of these studies were waitlist controls or low-intensity comparators (i.e., interventions delivering general wellness information or contents unrelated to mental health and well-being), which may inflate effect sizes and limit conclusions about specificity. External validity is also restricted by the narrow geographic contexts. Indeed, the host countries of samples were predominantly developed nations such as Australia and other countries in Europe and North America (Balci et al., 2023; Clough et al., 2020; Kanekar et al., 2009; Spanhel et al., 2022). The extent to which the conclusions can be generalized to international students studying in non-Western countries, or within institutions operating under different cultural norms and mental health service infrastructures, is limited.

Regarding the intervention characteristics, psychoeducation on mental health emerged as a major component across the DMHIs for international students, while one study incorporated mindfulness-based interventions (Balci et al., 2023). This reliance on psychoeducation likely reflects its ease of digitization, scalability, and low implementation burden, as

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psychoeducational content can be readily delivered through static modules without requiring individualized tailoring or real-time human support. Once developed, such content can be disseminated to large numbers of users with minimal additional cost, staffing, or clinical infrastructure. However, psychoeducation primarily targets mental health knowledge and awareness and can be insufficient for addressing more complex emotional, relational, and identity-related challenges commonly experienced by international students, such as acculturative stress. The reliance on psychoeducation across most studies limits the generalizability of findings to other potentially effective intervention modalities (e.g., cognitive behavioral therapy) and raises questions about whether the intervention content adequately captures the complex mental health needs of international students.

Most interventions were type 4 DMHIs (i.e., fully automated DMHIs without human support), except for the intervention in Balci et al. (2023), which included support from a psychologist. The overrepresentation of Type 4 DMHIs limits our understanding of how different levels of human support influence intervention engagement and outcomes.

The majority of DMHIs were adapted or tailored to meet the needs and characteristics of international students (Balci et al., 2023; Clough et al., 2020; Kanekar et al., 2009). However, none of these studies systematically evaluated the added value of cultural adaptation, making it difficult to isolate the effects of cultural adaptation. Moreover, none of these studies systematically applied a comprehensive cultural adaptation framework, such as the proposed five-stage model, to guide the design and evaluation of their DMHIs. The absence of such a framework may risk overlooking critical elements such as students' varying levels of digital access and literacy, culturally shaped privacy concerns, and other sociocultural factors that influence engagement, effectiveness, and equitable implementation.

Across the studies, DMHIs overall demonstrated efficacy in improving international students' positive outcomes such as mindfulness, coping skills, and well-being, as well as mental health concerns, including anxiety, stress, and sleep concerns (Ahmad & Meriç, 2021; Balci et al., 2023; Spanhel et al., 2022; see exception, Kanekar et al., 2009). DMHIs for international students also exhibited high user adherence and satisfaction (Balci et al., 2023; Spanhel et al., 2022). However, their effects on help-seeking outcomes, mental health literacy, and acculturation were mixed or limited (Clough et al., 2020; Kanekar et al., 2009; Spanhel et al., 2022).

Future Research Directions

Future research can apply the proposed five-stage cultural adaptation framework to guide the development and evaluation of DMHIs for international students. Building on the methodological and conceptual limitations identified in prior studies, we outline future research directions (see Table 2) that prioritize areas most in need of empirical attention, instead of restating each component of the framework. These directions are not intended to be exhaustive. Rather, they highlight urgent, underexplored, or methodologically critical questions that can advance both the rigor of DMHI research and the cultural sensitivity of interventions for international students.

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One methodologically critical question is whether culturally adapted DMHIs are effective in addressing the mental health needs of international students. As discussed earlier, most studies on DMHIs for international students were characterized by small sample sizes and the pilot and feasibility testing stage. To build a stronger evidence base, future research should move beyond feasibility studies and conduct well-powered RCTs with long-term follow-up to test intervention efficacy. These recommendations align with Stage 5 (Cultural Adaptation Trial) of our five-stage model, which emphasizes rigorous testing of culturally adapted interventions. Additionally, prior studies relied on weak control conditions, such as waitlist groups, general wellness information, or contents unrelated to mental health and well-being. To address this, future RCTs should include control groups of varying strengths, such as beginning with waitlist controls and progressing to active comparators (Goldberg et al., 2023). A dismantling or additive design (i.e., comparing culturally adapted versus non-adapted DMHIs) can help isolate the unique contribution of cultural adaptation, consistent with Stage 5 (Goldberg et al., 2023).

Future RCTs should assess whether DMHIs can improve mental health concerns unique to international students, such as acculturative stress and language anxiety, in addition to common issues like anxiety, perceived stress, and depression. Moreover, future research should evaluate whether DMHIs can indeed reduce practical, sociocultural, and systemic barriers to accessing mental health care for international students. To our knowledge, this is an area that has been rarely examined in previous studies. Qualitative methods possess unique advantages in exploring understudied topics by developing a deep, contextual understanding of participants' experiences, perspectives, and social environment (Elo & Kyngäs, 2008; Morrow & Smith, 2000). These methods can be particularly meaningful in exploring international students' perspectives on DMHIs' potential for expanding mental health care access.

The second question concerns how to enhance the cultural relevance, acceptability, sustainability, engagement, and effectiveness of DMHIs for international students. To address this question, it is important to understand the current landscape of international students' DMHI use and the barriers and facilitators that shape their engagement. This aligns closely with Stage 1 of our model, which emphasizes systematic information gathering to inform culturally responsive intervention design. To date, this remains an underexplored area. Future research may investigate international students' patterns of use (e.g., prevalence of use, frequency, duration, types of interventions used) and barriers and facilitators associated with engagement in DMHIs. An example of such research would be a population-based, cross-sectional study that incorporates surveys on these variables, utilizing samples that reflect the diverse nationalities present among international students in a specific host country or university. Understanding patterns of DMHI use can guide strategic allocation of resources toward interventions with high utilization and efficacy while identifying underused but promising tools that may benefit from targeted outreach. Additionally, uncovering the key factors that hinder or facilitate engagement can inform Stage 2 (Preliminary Adaptation Design) by guiding system-level (e.g., universities, international student organizations) and intervention-level modifications that enhance relevance, accessibility, and uptake.

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Another way to promote the cultural sensitivity, sustainability, engagement, and effectiveness of these interventions is to involve international students throughout the design and study of DMHIs (Jin & Acharya, 2022; Radu et al., 2023). Future research may adopt community-based participatory approaches to integrate international students' needs and preferences (Wallerstein & Duran, 2010). Such approaches were rarely used in previous studies on international students, including the ones discussed in this paper. Community-based participatory approaches are a research methodology involving community members in all aspects of the research process (Wallerstein & Duran, 2010). These approaches ensure that the research is culturally relevant, community-specific, and designed to foster social actions that address the actual needs and priorities of the community (Wallerstein & Duran, 2010). In partnership with the international student community, researchers may consider designing and implementing DMHIs that address the unique needs and concerns of international students. Moreover, it will be essential to integrate the voices and experiences of diverse international student groups in developing and evaluating DMHIs. As discussed earlier, research on DMHIs for international students studying in non-Western countries is limited; it is important to develop and evaluate interventions for this subgroup to promote global equity in care for international students.

Beyond individual-level design, system-level integration is critical for ensuring the feasibility and sustainability of DMHIs for international students. As outlined in our five-stage model, particularly Stages 3 and 4, input from relevant stakeholders plays a key role in supporting implementation efforts. Echoing this perspective, integrating these interventions within the larger system (e.g., universities, international student organizations, and healthcare systems) may increase the reach and impact of these interventions. To facilitate such integration, future research may explore the perspectives on DMHIs for international students from various stakeholders, such as clinic directors, clinicians, and leaders in universities and international student organizations (Damschroder et al., 2022). For example, mixed-methods implementation studies guided by the Consolidated Framework for Implementation Research (CFIR) could assess perceived barriers and facilitators to adopting DMHIs within existing services, such as concerns about workflow disruption, data privacy, cultural appropriateness, and alignment with institutional missions (Damschroder et al., 2022).

Existing research, such as Clough et al., 2020, has begun to seek input from university counseling centers in designing DMHIs for international students. However, Clough et al. (2020) only gathered feedback from the head of the counseling center on the content of a type-4 DMHI, rather than co-developing the intervention from the outset or integrating it into the counseling center's services. Future research may consider co-developing DMHIs for international students with the relevant organizations. When co-developing DMHIs with the larger system, it is essential to design those integrating varying levels of human support. This can include stand-alone DMHIs (i.e., type 4 DMHIs), as well as type 3 DMHIs integrating technical or therapeutic support from lay helpers or professional mental health providers (Pineda et al., 2023). As mentioned earlier, the overrepresentation of Type 4 DMHIs for international students in previous studies limits our understanding of how different levels of human support influence intervention engagement and outcomes. Interventions with varying levels of human support may offer different degrees of

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accessibility and effectiveness (Leung et al., 2022; Moshe et al., 2021), thereby addressing the diverse needs and preferences of international students.

Conclusion

DMHIs hold a unique promise in addressing mental health challenges for international students by reducing practical, sociocultural, and systemic barriers to healthcare access. In this paper, we propose a five-stage model for developing culturally adapted DMHIs and outline future research directions to fully realize the potential of DMHIs for international students.

While this paper adopts a conceptual and theoretical approach, it is important to acknowledge several methodological limitations. The review of empirical studies on DMHIs for international students was not conducted systematically. Although we utilized commonly used search terms and applied clear inclusion/exclusion criteria, the literature search was limited to Google Scholar and did not involve systematic database screening. As such, the included studies should be viewed as illustrative rather than exhaustive. In addition, the emphasis of particular outcome domains and types of studies reflect the authors' conceptual framing and may be influenced by interpretive bias. Finally, the proposed theoretical framework represents one possible lens through which to develop culturally sensitive DMHIs for international students and does not capture all theoretical models or contextual nuances relevant to international students across diverse global settings. These limitations underscore the need for future theoretical and empirical work, systematic reviews, and meta-analyses to build upon and critically examine the ideas outlined in this paper.

Funding.

SBG was supported by the National Center for Complementary & Integrative Health grants K23AT010879 and R24AT012845 and the Hope for Depression Research Foundation Defeating Depression Award. The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of any funding parties.

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Table 1.

Characteristics of Selected Studies on DMHIs for International Students

Study	Sample size	Mean age	Percentage of female (%)	Host country of sample	Most represented home country/ region of sample	Study design	Experimental group	Control group
Clough et al. (2020)	45	25.8	62.20	Australia	n/a	RCT	Online psychoeducation on depression	Receiving information about influenza prevention and hygiene
Balci et al. (2023)	40	26.2	77.50	Germany, Austria, Switzerland	Turkey	RCT	Adapted online mindfulness intervention	Waitlist control
Kanekar et al. (2009)	60	24.7	12.80	United States	India	RCT	Online instruction about social support, hardiness, and acculturation	Equivalent protocol focusing on general wellness
Spanhel et al. (2022)	81	26.8	49.40	Germany	India	RCT	Internet-based intervention consisting of modules on psychoeducation, cognitive exercise, sleep hygiene rules, and links	Waitlist control
Ahmad and Meriç (2021)	60	20	68.30	Northern Cyprus	Nigeria	RCT	Online stress management educational program	Waitlist control

Note. DMHIs = digital mental health interventions. Most represented home country/region of sample = countries or regions with the highest number of participants in the sample. n/a = the information was not available. RCT = randomized controlled trial.

Couns Psychol Q. Author manuscript; available in PMC 2026 April 01.

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Table 2.

Summary of Future Research Directions

Research questions	Suggested research approaches
1. How can we establish the evidence base of DMHIs for international students?	1a. Conducting well-powered RCTs to test the efficacy of DMHIs against control groups of varying strengths 1b. Evaluating whether DMHIs can improve mental health challenges unique to international students 1c. Examining whether DMHIs can indeed reduce practical, sociocultural, and systemic barriers to accessing mental health care for international students
2. How can we increase the engagement, accessibility, acceptability, sustainability, and effectiveness of DMHIs for international students?	2a. Investigating international students' patterns of use and barriers and facilitators associated with engagement in DMHIs 2b. Involving diverse international student groups in the design and study of DMHIs 2c. Developing and implementing DMHIs that address the unique needs and concerns of international students 2d. Integrating DMHIs for international students within the larger system

Note. DMHIs = digital mental health interventions. RCTs = randomized controlled trials.