



## Review Article

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## Types and Effectiveness of Digital Interventions for Mental Health Literacy and Help-Seeking Intention in Adolescents: A Systematic Review

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**Abstract**

**Background:** Adolescent mental health problems are increasing globally yet help-seeking remains low due to limited mental health literacy and persistent stigma. **Objective:** This systematic review synthesizes digital mental health literacy interventions and examines their effectiveness in improving help-seeking intentions, reducing stigma, and enhancing mental health literacy among adolescents. **Methods:** This systematic review followed the PRISMA 2020 guidelines. Studies published between 2021 and 2025 were identified through Scopus, PubMed, and ScienceDirect, appraised using the JBI tools, and synthesized using thematic and narrative analysis. **Results:** This systematic review followed the PRISMA 2020 guidelines. A search of Scopus, PubMed, and ScienceDirect (2021–2025) identified 2,135 records, of which 11 studies met the inclusion criteria and were synthesized using thematic and narrative analysis after quality appraisal with the JBI tools. **Conclusions:** Digital interventions effectively improve mental health literacy, reduce stigma, and enhance help-seeking intentions among adolescents, with interactive, theory-based, and culturally tailored approaches showing the greatest potential for implementation in Indonesia. Future research should incorporate longer follow-up periods, objective behavioral measures, and multilevel strategies involving families and schools to support the development of scalable digital mental health literacy programs for Indonesian youth.

**Keywords:** Adolescents; Digital mental health; Help-seeking intentions; Mental health literacy; Stigma.

### أنواع وفعالية التدخلات الرقمية في الثقافة النفسية ونية طلب المساعدة لدى المراهقين: مراجعة منهجية

## الخلاصة

**الخلفية:** تزداد مشاكل الصحة النفسية لدى المراهقين عالمياً، ومع ذلك لا تزال طلبات المساعدة منخفضة بسبب محدودية الثقافة النفسية والوصمة المستمرة. **الهدف:** تقوم هذه المراجعة المنهجية بدمج تدخلات الثقافة الرقمية للصحة النفسية وتفحص فعاليتها في تحسين نوايا طلب المساعدة، وتقليل الوصمة، وتعزيز الثقافة النفسية بين المراهقين. **الطرائق:** اتبعت هذه المراجعة المنهجية إرشادات PRISMA 2020. تم تحديد الدراسات المنشورة بين عامي 2021 و2025 عبر PubMed وScopus وScienceDirect، وتم تقييمها باستخدام أدوات JBI، وتم تركيبها باستخدام التحليل الموضوعي والسردية. **النتائج:** اتبعت هذه المراجعة المنهجية إرشادات PRISMA 2020. حدد البحث في (2021–2025) 2,135 مقالة، منها 11 دراسة استوفت معايير الإدراج وتم تركيبها باستخدام التحليل الموضوعي والسردية بعد تقييم الجودة باستخدام أدوات JBI. **الاستنتاجات:** تحسن التدخلات الرقمية الثقافة النفسية بشكل فعال، وتقلل من الوصمة، وتعزز نوايا طلب المساعدة بين المراهقين، مع النهج التفاعلية والنظرية والمصممة ثقافياً تظهر أكبر إمكانات للتنفيذ في إندونيسيا. يجب أن تتضمن الأبحاث المستقبلية فترات متابعة أطول، وتدابير سلوكية موضوعية، واستراتيجيات متعددة المستويات تشمل الأسر والمدارس لدعم تطوير برامج محو الأمية الرقمية للصحة النفسية للشباب الإندونيسيين القابلة للتوسع.

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**INTRODUCTION**

Adolescent mental health is a global issue that is gaining increasing attention due to the increasing prevalence of depression, anxiety, self-harming behavior, and low rates of seeking professional help [1,2]. WHO reveals that 1 in 7 teenagers suffer from mental illnesses, but the majority never seek help [3]. In Indonesia, the 2018 Riskesdas data shows that 6.2% of adolescents experience emotional mental disorders, with a continuing increasing trend [4,5]. One of the main barriers to seeking help is low mental health literacy (MHL) and social stigma [6–8]. Teenagers often do not understand the symptoms, do not know how to seek help, or are afraid of being judged negatively by their environment [8–10]. Research

demonstrates that low MHL raises the risk of psychiatric issues, inappropriate treatment, and delayed early detection [11–13]. Advances in digital technology have created new opportunities for adolescent mental health interventions that are accessible, engaging, and flexible [1,14,15]. Digital methods—like online modules, mobile apps, educational videos, chat counseling, virtual reality programs, and family-focused online therapy—offer interactive ways to learn that fit well with how teenagers use technology. Emerging evidence suggests that these interventions can improve mental health awareness, reduce stigma, and enhance help-seeking intentions [25–27]. Despite the growing use of digital mental health interventions, evidence regarding their types and effectiveness remains fragmented,

particularly in developing countries such as Indonesia [28,29]. This systematic review aims to find digital mental health education programs for teenagers, check how well they work in improving mental health knowledge, reducing stigma, and encouraging people to seek help, and look for areas that need more research to help with implementation in Indonesia. The findings are expected to provide a scientific foundation for the development of theoretically grounded, effective, and culturally sensitive digital mental health literacy programs to support national efforts in improving adolescent mental well-being.

## METHODS

### Research design

The PRISMA 2020 guidelines were followed in conducting this systematic literature review (SLR) [30]. The review focuses on research assessing digital-based mental health literacy interventions to enhance teenagers' literacy, stigma, and aspirations to seek help.

### Search strategy

A literature search was conducted on three main databases [31-33]: Scopus, PubMed, and ScienceDirect, with the search year range set at 2018–2025 to capture the latest digital interventions and modern technological developments using keywords and Boolean operators, namely "digital" OR "eHealth" OR "mHealth" OR "mobile app" OR "web-based" OR "online" OR "internet-based" AND "mental health literacy" OR "mental health education" OR "mental health knowledge" AND "help-seeking" OR "help seeking" OR "help-seeking intention" OR "help-seeking behavior" AND "adolescent" OR "teen" OR "youth."

### Inclusion criteria

Adolescents aged 10–24 years. Intervention: Digital-based interventions, including web-based programs, mobile applications, virtual reality (VR), video/film interventions, chat-based counseling, and digital cognitive behavioral therapy (CBT). Outcomes: Mental health literacy, stigma, and help-seeking intention. Study design: Randomized controlled trials (RCTs), quasi-experimental studies, mixed-methods studies, and longitudinal interventional studies. Language and publication period: English-language articles published between 2021 and 2025 [34,35].

### Exclusion criteria

Exclusion criteria include non-interventional studies, such as cross-sectional studies that do not involve intervention. Interventions delivered through non-digital platforms. Studies involving non-adolescent populations. Study protocols without reported empirical results. Articles not available in full text.

### Study selection process

The literature search identified 2,135 records from electronic databases. Prior to screening, 200 duplicate records were removed, along with 856 records marked as ineligible by automation tools and 639 records removed for other reasons. A total of 440 records were screened, of which 158 were excluded at the title and abstract stage. Subsequently, 282 reports were sought for retrieval, and 233 reports could not be retrieved. Of the 49 reports assessed for eligibility, 38 were excluded due to lack of open access (n= 29) or absence of digital interventions (n= 9). Ultimately, 11 studies met the inclusion criteria and were included in the systematic review. The study selection process is illustrated in the PRISMA flow diagram, and methodological quality was assessed using the JBI Critical Appraisal Tools for experimental, randomized controlled trial, and quasi-experimental studies.

### Ethical considerations

The study protocol was approved by the Research Ethics committee of the Universitas Jendral Soedirman, Central Java, Indonesia (certificate ID: 0232/KEPK.ITEKESMA/IX/2025).

### Data analysis

The analysis was conducted narratively (to describe the findings of each intervention) and thematically (identifying patterns of effectiveness based on the theory used, type of digital technology, main outcomes (MHL, stigma, help-seeking), duration of the intervention, and cultural context) [36,37].

## RESULTS

Figure 1 is a PRISMA 2020 flow diagram showing the identification, screening, eligibility assessment, and inclusion of studies evaluating digital interventions for mental health literacy, stigma reduction, and help-seeking intentions among adolescents.

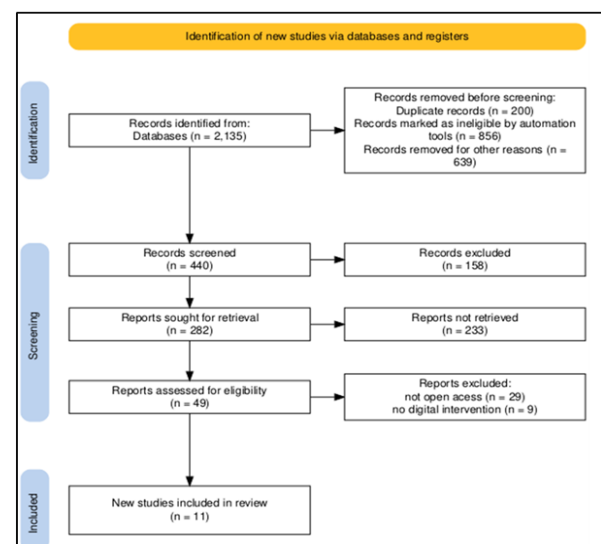


Figure 1: PRISMA analysis

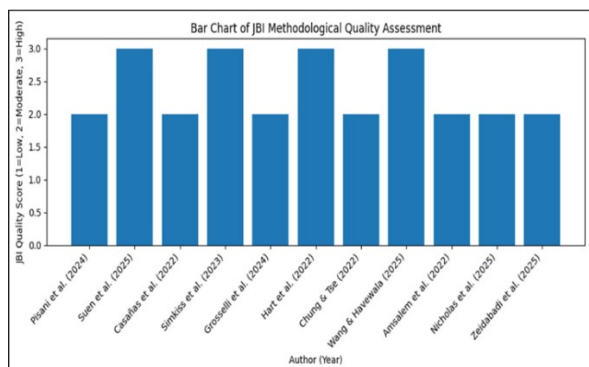
Table 1 shows the characteristics, study designs, digital intervention types, and key findings of the 11 studies included in the systematic review of digital

interventions for mental health literacy and help-seeking intentions among adolescents (2021–2025).

**Table 1:** Characteristics of Included Studies (n= 11)

Author (year)	Title	Design	Method	Sample	Digital Intervention	Key Findings
Pisani <i>et al.</i> [47]	Text Messaging to Extend School-Based Suicide Prevention	Pilot RCT	Pre–post with control	223 adolescents	Automated SMS-based intervention	No significant improvement in help-seeking; large effects were ruled out
Suen <i>et al.</i> [43]	Low-Intensity Online Intervention for Mental Distress	RCT	Parallel-group RCT	120 youth (12–30 years)	Low-intensity online modules	Significant reduction in stress; increased resilience
Casañas <i>et al.</i> [79]	EspaiJove.net School-Based Mental Health Intervention	Cluster RCT	School-based cluster RCT	1,032 adolescents	Digital-supported mental health education	No significant effects on mental health literacy, stigma, or help-seeking
Simkiss <i>et al.</i> [38]	Guide Cymru Mental Health Literacy Programme	Cluster RCT	Teacher-delivered modules	1,926 adolescents	Digital-supported mental health literacy curriculum	Significant improvements in mental health literacy, stigma reduction, and help-seeking
Grosselli <i>et al.</i> [40]	HEYLIFE Suicide Prevention Program	RCT	School-based RCT	745 adolescents	Digital-supported suicide prevention intervention	Positive medium-term effects on help-seeking behaviors
Hart <i>et al.</i> [39]	teen Mental Health First Aid (tMHFA)	Cluster crossover RCT	Classroom-based digital support	1,624 adolescents	Digitally enhanced tMHFA program	Help-seeking intentions and confidence improved and sustained up to 12 months
Chung & Tse [77]	Human Library Intervention on Mental Health Literacy	RCT	Multigroup pre–post design	45 young people	Digital-supported human library intervention	Mental health literacy increased and stigma significantly decreased
Wang & Havewala [49]	Culturally Adapted Youth Mental Health First Aid	RCT	Blocked randomized controlled trial	99 parents (proxy for adolescents)	Digitally adapted YMHA program	Mental health literacy and help-seeking attitudes improved and were sustained
Amsalem <i>et al.</i> [78]	Social Contact–Based Digital Intervention	RCT	Video-based randomized controlled trial	Adolescents and youth	Video-based digital contact intervention	Reduced stigma and improved help-seeking attitudes
Nicholas <i>et al.</i> [53]	Digital Peer-Supported Mental Health Platform	RCT	Parallel-group RCT	Help-seeking adolescents	Moderated digital peer-support platform	Increased help-seeking engagement and mental health literacy
Zeidabadi <i>et al.</i> [55]	Web-Based Mental Health Literacy Intervention	RCT	Pre–post with control group	High school students	Web-based mental health literacy education	Significant improvement in mental health literacy and reduced stigma

Figure 2 represents a bar chart of the methodological quality assessment of included studies based on the JBI Critical Appraisal Tools. Most studies demonstrated moderate to high methodological quality.



**Figure 2:** Bar chart JBI.

**DISCUSSION**

This systematic review examined the types and effectiveness of digital interventions aimed at improving mental health literacy (MHL), reducing stigma, and strengthening help-seeking intentions

among adolescents and young people. Based on evidence from randomized and cluster-randomized controlled trials published from 2021 to 2025, the results show that digital mental health interventions are moderately but significantly effective, especially in improving mental health literacy and the intention to seek help. However, the magnitude and consistency of effects varied considerably depending on intervention type, delivery context, and theoretical underpinning.

**Digital Interventions and Improvements in Mental Health Literacy**

One of the most consistent findings across the included studies was the positive impact of digital interventions on mental health literacy among adolescents [17,38,39]. Large-scale, school-based programs that integrated digital components into structured educational settings demonstrated the most robust and sustained improvements [40–42]. For example, the Guide Cymru mental health literacy program reported small to moderate effect sizes across multiple domains of mental health literacy, including knowledge of mental disorders, symptom recognition, and

confidence in providing peer support [38,43,44]. Similarly, the teen Mental Health First Aid (tMHFA) intervention showed sustained improvements in adolescents' mental health knowledge and supportive intentions, with effects persisting for up to 12 months post-intervention [39]. These findings support the idea that embedding digital interventions within formal educational systems most effectively enhances mental health literacy. Structured curricula, repeated exposure, and facilitation by teachers or trained personnel appear to foster learning environments that support both the retention and practical application of mental health knowledge [38,39,45,46]. In contrast, brief or stand-alone interventions, such as automated text messaging programs, demonstrated limited effectiveness in improving literacy-related outcomes [47,48]. This pattern suggests that passive information delivery alone is insufficient to produce meaningful and sustained improvements in adolescents' understanding of mental health. Importantly, cultural adaptation emerged as a critical determinant of intervention effectiveness. The culturally adapted Youth Mental Health First Aid program for Asian American families demonstrated significant and sustained improvements in mental health literacy and confidence in help-seeking behaviors [49,50]. These findings highlight the importance of aligning digital mental health content with cultural values, language, and prevailing help-seeking norms, particularly in populations where stigma and misconceptions about mental illness remain deeply rooted [17,51,52]. Without this kind of cultural tailoring, even well-designed digital interventions may not have the best effect. Furthermore, the effectiveness of digital mental health literacy interventions appears to be strengthened when literacy gains are explicitly linked to opportunities for action and social reinforcement. Interventions that combined educational content with interactive discussions, peer engagement, or guided reflection were more likely to translate improved knowledge into supportive attitudes and early help-seeking tendencies [39,53–55]. This suggests that mental health literacy should be conceptualized not merely as knowledge acquisition but as a dynamic process integrating understanding, social norms, and perceived self-efficacy. So, future digital mental health literacy programs should not just focus on sharing information but also include activities that get teenagers talking, thinking, and practicing, which will help them keep what they learn and make it meaningful in their lives over time.

### Help-Seeking Intentions and Behavioral Change

Improvements in help-seeking intentions were among the most robust and consistent outcomes identified in this review. Digital programs that included education along with interactive features, like peer support or guided discussions, were especially effective. For example, moderated online social therapy platforms and schema-informed digital interventions improved mental health knowledge and increased adolescents' willingness to seek professional or informal help [53,55]. Several school-based suicide prevention

programs have demonstrated the ability to sustain help-seeking intentions beyond the immediate post-intervention period [59–61]. The *HEYLIFE* program, for instance, showed positive medium-term effects on help-seeking behaviors, even though immediate changes in stigma were inconsistent [40]. These findings are consistent with theoretical models of help-seeking behavior, which posit that knowledge acquisition and perceived self-efficacy precede attitudinal change and subsequent behavioral action. However, the review also revealed a persistent gap between intention and actual behavior. Although numerous interventions effectively enhanced adolescents expressed readiness to seek assistance, a limited number of studies evidenced corresponding rises in confirmed service utilization. This gap may reflect structural barriers such as limited access to mental health services [62–64], gatekeeping, or fear of disclosure, particularly in low-resource settings. These findings suggest that system-level strategies, which facilitate access to services and reduce practical barriers to care, should complement digital interventions [65–67]. Beyond individual-level outcomes, the effectiveness of digital interventions in promoting help-seeking intentions appears to be strongly influenced by contextual and environmental factors, particularly the availability of supportive social and institutional structures [68–70]. Interventions implemented within schools or community settings that actively involved teachers, counselors, or peers were more likely to translate improved intentions into actual help-seeking behaviors, as these settings provide clear referral pathways and trusted points of contact [71–73]. Conversely, digital interventions delivered in isolation, without linkage to existing mental health services, often resulted in increased awareness and intention without corresponding behavioral follow-through. This finding points to the value of integrating digital mental health interventions into broader care ecosystems, where digital platforms function not as standalone solutions but as gateways to accessible, youth-friendly mental health services [74–76]. In low- and middle-income contexts, such as Indonesia, strengthening these linkages may be critical to ensuring that gains in help-seeking intention are translated into meaningful and sustained service utilization.

### Stigma Reduction: Mixed and Context-Dependent Outcomes

Compared with mental health literacy and help-seeking intentions, the effects of digital interventions on stigma were more variable and context-dependent. Interventions incorporating social contact or narrative-based approaches, such as digital human library models or contact-based videos, were more likely to produce meaningful reductions in stigma and social distance [77,78]. These results are consistent with contact theory, which asserts that exposure to personal narratives and lived experiences can contest stereotypes and mitigate prejudice. In contrast, some suicide-focused digital interventions were associated with short-term increases in stigma-related responses,

particularly fear and avoidance. Casañas *et al.* [79] reported that certain stigma domains worsened immediately following intervention exposure, although these effects tended to diminish over time. This phenomenon may reflect heightened emotional arousal or anxiety following exposure to sensitive content, underscoring the need for careful framing and adequate support mechanisms when delivering stigma-focused digital interventions to adolescents [11,80]. Overall, these findings suggest that stigma is a complex and multifaceted construct that may require longer intervention durations, repeated exposure, and opportunities for reflection to achieve sustained change [42,61,81]. Consequently, evaluations confined to short-term follow-up may undervalue the enduring advantages of stigma-reduction interventions. Furthermore, the variability in stigma-related outcomes across research indicates the value of intervention intensity, delivery modality, and developmental appropriateness. Digital stigma-reduction interventions that incorporated guided reflection, facilitated discussion, or repeated engagement were more likely to produce sustained reductions in stigmatizing attitudes than one-off or purely informational approaches [60,82]. Adolescents may necessitate time and organized opportunities to process emotionally charged material, especially when interventions pertain to suicide or severe mental illness [83–85]. Without such scaffolding, exposure to stigma-related material may initially amplify fear or discomfort rather than reduce prejudice. These findings suggest that effective stigma reduction through digital platforms depends not only on content but also on how, when, and in what context that content is delivered, reinforcing the need for carefully designed, developmentally sensitive, and longitudinally evaluated interventions.

### Methodological Considerations and Quality of Evidence

The methodological quality of the included studies ranged from moderate to high, as assessed using the Joanna Briggs Institute Critical Appraisal Tools [86]. Most studies employed randomized or cluster-randomized designs and used validated outcome measures, strengthening the internal validity of the findings. Nevertheless, several methodological limitations were consistently observed [87,88]. Blinding participants and personnel was rarely feasible due to the nature of digital educational interventions, and outcome measures were predominantly self-reported, increasing the risk of response bias. Follow-up periods were frequently confined to six months or less, hindering the evaluation of the long-term sustainability of intervention effects [89]. Even with these limitations, the fact that the results are similar across different groups and settings supports the idea that digital mental health interventions are a good and scalable way to improve the mental health of teens.

### Consequences for Indonesia and Other Low- and Middle-Income Nations

The findings of this review have important implications for Indonesia and other low- and middle-income countries, where access to mental health services is often constrained and stigma remains a major barrier to care [90]. Digital interventions offer a cost-effective and scalable solution to address persistent gaps in mental health literacy and early help-seeking, particularly when integrated into schools and community-based programs that already serve as primary points of contact for adolescents [48,91–94]. In contexts where specialist mental health resources are scarce and unevenly distributed, such integration holds particular relevance. However, the evidence clearly indicates that intervention effectiveness is highly dependent on design characteristics. Theory-driven programs, culturally sensitive, and embedded within existing educational or social systems demonstrate the greatest potential for sustainable impact [95–97]. In Indonesia, where family and community structures play a central role in adolescent development and decision-making, multilevel digital interventions that actively engage parents, teachers, and peers may be particularly effective in reinforcing mental health knowledge and facilitating supportive help-seeking environments [4,28]. Furthermore, the successful implementation of digital mental health interventions in Indonesia requires careful consideration of digital equity, infrastructure readiness, and health system integration. Although smartphone and internet use among Indonesian adolescents has increased substantially, regional, socioeconomic, and urban–rural disparities persist, potentially limiting the reach and effectiveness of digital-only approaches [4,98,99]. Importantly, digital interventions are most impactful when they are linked to clear referral pathways and existing mental health services, such as school counseling units, primary health care facilities, and community mental health programs [72,100,101]. Without such linkages, improvements in mental health literacy and help-seeking intentions may fail to translate into actual service utilization. So, future digital mental health programs should match up with national plans for adolescent health and be backed by policies that encourage teamwork between education, health, and social services, making sure they last and benefit everyone fairly.

### Future Research Directions

Future research should focus on addressing the limitations identified in this review. We need longer follow-up periods to assess the durability of intervention effects, especially in stigma reduction. Greater emphasis should be placed on objective behavioral outcomes, such as verified service utilization, rather than relying solely on self-reported intentions. Finally, rigorous evaluations of culturally adapted digital interventions in Southeast Asian contexts are needed to inform the development of

locally relevant and scalable mental health promotion strategies.

### Study Limitations

Several limitations of this systematic review should be acknowledged. First, although most included studies employed randomized or cluster-randomized designs, the nature of digital educational interventions often made blinding participants, personnel, and outcome assessors unfeasible. These methods may have increased the risk of performance and detection bias. Second, outcomes were predominantly self-reported, particularly for mental health literacy, stigma, and help-seeking intentions, which may be subject to social desirability and recall bias. Third, follow-up periods were generally short, limiting the ability to assess the long-term sustainability of intervention effects, especially for stigma reduction and actual help-seeking behaviors. Fourth, substantial heterogeneity in intervention types, intensity, theoretical frameworks, and outcome measures precluded quantitative meta-analysis and limited direct comparison of effect sizes across studies. Fifth, while the review focused on adolescents, some studies included broader age ranges or proxy populations (e.g., parents), which may reduce the specificity of conclusions for adolescent-only populations. Finally, despite the relevance of the topic to low- and middle-income countries, most studies were conducted in high-income settings, limiting the generalizability of findings to contexts such as Indonesia, where cultural, structural, and health-system factors differ.

### Conclusion

In summary, this systematic review demonstrates that digital interventions can effectively improve mental health literacy and help-seeking intentions among adolescents, although their impact on stigma remains variable. The results support the inclusion of culturally sensitive, theory-driven digital mental health programs in adolescent health promotion initiatives, especially in contexts with restricted access to conventional mental health services. By addressing both individual knowledge and broader social and structural barriers, digital interventions hold significant promises for advancing adolescent mental well-being.

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