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Systematic Review and Meta-Analysis of Digital Mental Health Literacy Interventions on Mental Health

GeckHong Yeo, Stephanie M Reich, Nicole Liaw, Elizabeth Yee Min Chia

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Systematic Review and Meta-Analysis of Digital Mental Health Literacy Interventions on Mental Health

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Abstract

Background: Accelerated by technological advancements and the recent global pandemic, there is burgeoning interests in digital mental health literacy interventions (DMHL) that can positively impact mental health at scale and translate into real-world benefits. Existing work, however, remain inconclusive about the effectiveness of DMHL interventions on mental health functioning.

Objective: This systematic review and meta-analysis investigated components and modes of DMHL interventions, moderating factors, and long term impacts on mental health literacy and mental health.

Methods: We used a random-effects model in conducting meta-analyses and meta-regressions on moderating effects of the effectiveness of DMHL interventions on mental health.

Results: Using random-effects modelling, which included 77 interventions with 80 effect sizes, we found a moderate effect of DMHL in enhancing distal outcome on mental health, with pooled effect size of SMD=0.35, P<0.001 [95% CI: -0.18 to 0.72], and large effect in increasing proximal outcome on mental health literacy, with pooled effect size of SMD=0.62, P<0.001 [95% CI: 0.55 to 0.69]. DMHL interventions were as effective as face-to-face ones and did not differ by platform type or dosage. DMHL PLUS interventions (DMHL psychoeducation coupled with other active treatment) produce large effects in bolstering mental health, are more effective than DMHL ONLY interventions (self-help DMHL psychoeducation) and comparable to non-DMHL ones (treatment as usual). Beyond fundamental effectiveness (pre-post intervention), strong inferences can be drawn about the effectiveness of DMHL interventions, which enhance mental health more than waitlist control condition. DMHL interventions demonstrated long-term positive effects on mental health that sustained over follow-up assessments, and were most effective in enhancing mental health of emerging adults and older adults.

Conclusions: Our findings advance theory and practice on DMHL and mental health. For theory building, our review and meta-analysis found that DMHL interventions are as effective as face-to-face ones. DMHL interventions confer optimal effect on mental health when DMHL psychoeducation is incorporated with informal, non-professional active treatment components, such as skill training and peer support, which demonstrate comparable effectiveness as treatment as usual with client-professional interactions and therapies. These findings are practically meaningful and underscore the feasibility and promise of digital modalities for improving mental health. DMHL interventions greatly increased literacy outcomes and moderately improved mental health functioning by reducing depression, anxiety, loneliness, and internalizing and externalizing symptoms and enhancing quality of life and resilience. These effects, which did not differ by platform type or dosage, were sustained over time. Such evidence can drive the adoption and implementation of DMHL interventions at scale, which represent a key foundation for practice-changing impact in the provision of mental health resource for individuals and the community. Clinical Trial: Prospero registration: NCT0 CRD42023363995. Registered 21 May 2023

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Systematic Review and Meta-Analysis of Digital Mental Health Literacy Interventions on Mental Health

Abstract

Background: Accelerated by technological advancements and the recent global pandemic, there is burgeoning interests in digital mental health literacy interventions (DMHL) that can positively impact mental health at scale and translate into real-world benefits. Existing work, however, remain inconclusive about the effectiveness of DMHL interventions on mental health functioning.

Objective: This systematic review and meta-analysis investigated components and modes of DMHL interventions, moderating factors, and long term impacts on mental health literacy and mental health.

Methods: We used a random-effects model in conducting meta-analyses and meta-regressions on moderating effects of the effectiveness of DMHL interventions on mental health.

Results: Using random-effects modelling, which included 144 interventions with 206 effect sizes, we found a moderate effect of DMHL in enhancing distal outcome on mental health, with pooled effect size of SMD=0.42, P<0.001 [95% CI: -0.10 to 0.73], and large effect in increasing proximal outcome on mental health literacy, with pooled effect size of SMD=0.65, P<0.001 [95% CI: 0.59 to 0.74]. Uptake of DMHL interventions was comparable to control, and uptake of DMHL interventions did not moderate the effects on both proximal mental health literacy outcomes and distal mental health outcomes. DMHL interventions were as effective as face-to-face ones and did not differ by platform type or dosage. DMHL PLUS interventions (DMHL psychoeducation coupled with other active treatment) produce large effects in bolstering mental health, are more effective than DMHL ONLY interventions (self-help DMHL psychoeducation) and comparable to non-DMHL ones (treatment as usual). Beyond fundamental effectiveness (pre-post intervention), strong inferences can be drawn about the effectiveness of DMHL interventions, which enhance mental health more than waitlist control condition. DMHL interventions demonstrated long-term positive effects on mental health that sustained over follow-up assessments, and were most effective in enhancing mental health of emerging adults and older adults.

Conclusions: Our findings advance theory and practice on DMHL and mental health. For theory building, our review and meta-analysis found that DMHL interventions are as effective as face-to-face ones. DMHL interventions confer optimal effect on mental health when DMHL psychoeducation is incorporated with informal, non-professional active treatment components, such as skill training and peer support, which demonstrate comparable effectiveness as treatment as usual with client-professional interactions and therapies. These findings are practically meaningful and underscore the feasibility and promise of digital modalities for improving mental health. DMHL interventions greatly increased literacy outcomes and moderately improved mental health functioning by reducing depression, anxiety, loneliness, and internalizing and externalizing symptoms and enhancing quality of life and resilience. These effects, which did not differ by platform type or dosage, were sustained over time. Additionally, most DMHL interventions are found in Western cultural contexts, especially in high-income countries (Global North), such as Australia, the US and UK, and there is limited research conducted in low-income countries in Asia, and a dearth of work in South American and African countries. Most of the DMHL interventions did not report information on racial or ethnic make-up of the samples, and those that did had samples that were predominantly White with limited racial or ethnic diversity. DMHL interventions that are designed for and evaluated on effectiveness with ethnic or racial minority are warranted. In light of contextual stressors associated with racial and ethnic marginalization and mental health disparities, future work on DMHL interventions that targets racial or ethnic minorities, particularly the design, adoption and evaluation of culturally adaptive DMHL on uptake and mental health functioning is needed. Such evidence can drive the adoption and implementation of DMHL interventions at scale,

which represent a key foundation for practice-changing impact in the provision of mental health resource for individuals and the community.

Prospero registration: NCT0 CRD42023363995. Registered 21 May 2023

Keywords: Review and meta-analysis; digital mental health literacy; digital mental health interventions; mental health functioning

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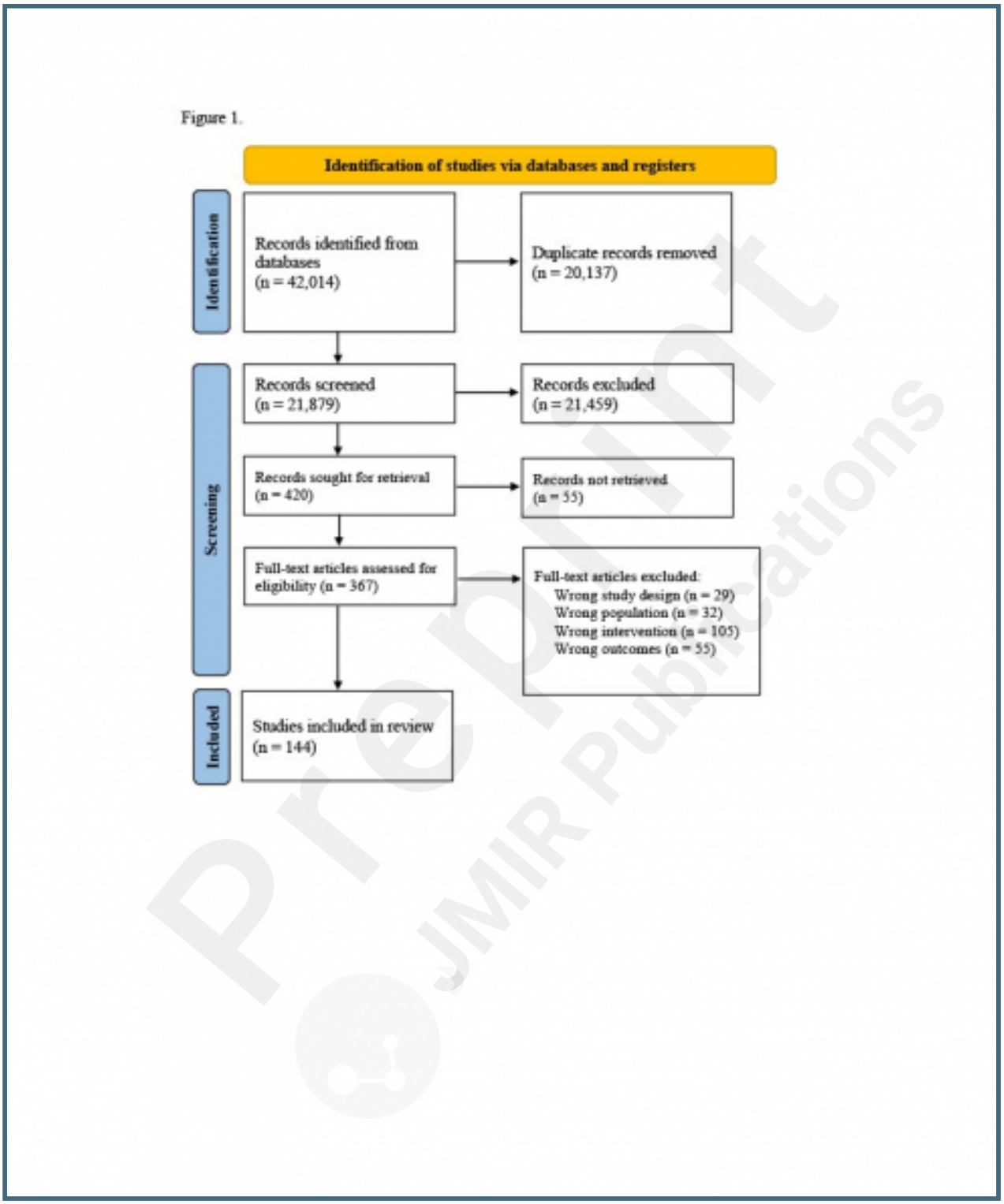
Supplementary Files

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Figures

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Flowchart of the study selection process.



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Multimedia Appendixes

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Full search strings.
URL: http://asset.jmir.pub/assets/4477486d04c7536b5674853563764a9d.docx

Study characteristics on DMHL interventions and traditional, face-to-face mental health literacy interventions.
URL: http://asset.jmir.pub/assets/05a394dfe9eb33828b557a013388231e.docx

Summary and sample statistics of DMHL interventions.
URL: http://asset.jmir.pub/assets/8623f338546ad4d49642b54503615116.docx

Funnel plot of the effect sizes of DMHL and traditional, face-to-face mental health literacy interventions with mental health.
URL: http://asset.jmir.pub/assets/f6efc54319277fd8c80283bedd8c0881.docx

Forest Plot of data investigating DMHL and traditional, face-to-face mental health literacy interventions with mental health.
URL: http://asset.jmir.pub/assets/a837d52c6c321d1f722932064012111c.docx

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Prisma 2020 checklist.
URL: http://asset.jmir.pub/assets/fe6b3d2afa2646fbaf8c0ded926f83c2.pdf

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