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Evaluation of the effects of a digital mental health literacy programme on knowledge, attitudes, and help-seeking among students in West Bengal, India

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Abstract

Background

Digital mental health literacy (DMHL) programmes may help address barriers to timely help-seeking in low- and middle-income countries (LMICs), including stigma, limited access to services, and uncertainty about what constitutes a mental health problem. We co-developed and evaluated DESTRESS, a culturally adapted DMHL programme for college students in West Bengal, India.

Methods

DESTRESS was informed by four stakeholder workshops with students and teachers, published mental health literacy resources, and expert input from youth mental health clinicians. The six-week, self-guided programme comprised seven modules: introduction to mental illness; types of mental health problems; understanding stress; managing difficult emotions; interpersonal skills; help-seeking and treatment; and positive mental health. Students completed pre- and post-programme assessments using the Mental Health Knowledge Schedule (MAKS), Reported and Intended Behaviour Scale (RIBS), and General Help-Seeking Questionnaire (GHSQ). Paired sign tests examined immediate pre-post changes.

Results

Stakeholder workshops (n = 37) identified challenges including difficulty disclosing emotional concerns to parents and peers, academic and financial pressures, limited emotional safety, gendered safety concerns, and unrealistic appearance standards amplified by social media. In total, 253 students (113 male, 138 female, 2 not disclosed; aged 18–23 years) completed the intervention and both assessments. Following DESTRESS, stigma-related knowledge and intended behaviour improved significantly (both $p<.001$). Students reported increased likelihood of seeking formal help ($p<.001$), reduced likelihood of seeking help from a religious leader ($p<.001$), and reduced likelihood of not seeking any help ($p<.001$). Informal help-seeking did not change significantly.

Conclusions

This preliminary evaluation suggests that a co-developed, digital, culturally adapted mental health literacy programme can improve stigma-related knowledge, intended behaviour, and formal help-seeking intentions among college students in West Bengal. Because the programme is digitally delivered, DESTRESS has potential relevance for other higher-education settings in India and comparable LMIC contexts, pending controlled evaluation, longer follow-up, and testing in rural and lower-resource settings.

Background

Youth mental health has deteriorated globally over the past two decades, with social, economic, educational, and pandemic-related pressures converging during a developmental period in which most lifetime mental disorders first emerge [1]. Young people in low- and middle-income countries (LMICs) may be especially vulnerable because mental health need is often coupled with constrained services, high out-of-pocket costs, variable access to trained professionals, and persistent stigma [2, 4]. In India, recent surveys of students and young adults have reported high levels of anxiety, depression, and psychological distress, highlighting the urgent need for scalable, acceptable, and prevention-oriented approaches in educational settings [3].

Mental health literacy (MHL) refers to knowledge and beliefs that support recognition, management, prevention, and help-seeking for mental health problems. Low MHL can delay help-seeking, reinforce stigmatising attitudes, and increase reliance on informal or non-evidence-based pathways to care. Although school and college MHL programmes have been evaluated in several high-income settings, evidence from LMIC educational contexts remains comparatively limited [4, 5]. Recent studies from South India suggest that culturally adapted and co-designed MHL interventions can improve stigma-related knowledge and behaviour among students [6, 7]. However, most evaluated programmes have been face-to-face, which may limit reach and sustainability in settings where trained facilitators are scarce.

Digital mental health approaches offer a complementary route to scale. In LMICs, digital delivery can reduce geographical barriers, allow flexible access, support standardised content, and offer a degree of privacy for students who may be reluctant to discuss mental health openly [9]. Existing digital mental health interventions in India have largely focused on adolescents or young people with existing symptoms, such as computer-assisted cognitive behavioural therapy, problem-solving interventions, or blended interventions for those at risk of depression [10–12]. Digital programmes designed specifically to improve mental health literacy in college students remain underdeveloped and under-evaluated.

The present study therefore aimed to: (1) co-develop a culturally adapted online student MHL programme, DESTRESS, drawing on stakeholder consultation, published resources, and clinical expertise; and (2) evaluate immediate changes in students' stigma-related mental health knowledge, intended behaviour, and help-seeking intentions following completion of the programme.

Methods

We conducted a mixed-methods development and pre-post evaluation study of DESTRESS, a six-week digital mental health literacy programme for college students.

The study took place between March 2024 and January 2025 at AJC Bose College in Kolkata, West Bengal, India. The college has approximately 4,500 students across 17 undergraduate faculties and includes students from diverse socio-economic, caste, and religious backgrounds. West Bengal is

among the major Indian states contributing substantially to national higher-education enrolment [13]. Participants were recruited through convenience sampling using college emails, departmental communications, peer networks, and campus posters. Eligible participants were aged 18–25 years, enrolled at AJC Bose College, and had access to an internet-enabled computer or smartphone.

Ethics

Ethical approval

was obtained through the relevant institutional processes at AJC Bose College and the University of Warwick before study activities began. All procedures were conducted in accordance with the ethical standards of the relevant institutional committees and the Declaration of Helsinki. Participants received information about the study and provided informed consent before taking part in stakeholder workshops or completing evaluation measures on the DESTRESS platform.

Development of the DESTRESS DMHL programme

DESTRESS is a self-guided DMHL programme delivered through computer-narrated audio and graphics. Programme content was informed by published mental health and life-skills resources [14, 15], expert input from youth mental health clinicians, and stakeholder consultation with students and teachers. The programme was designed for digital delivery, allowing students to complete modules flexibly while receiving consistent core content.

Four stakeholder workshops were held in March 2024: female students (n = 9), male students (n = 9), mixed students (n = 8), and teachers (n = 11). Workshops lasted 1-1.5 hours and were facilitated by a field researcher. Each workshop was audio-recorded, and a local notetaker captured key points. A topic guide explored mental health experiences, challenges affecting student wellbeing, and suggestions for programme content. Rapid framework analysis was used to facilitate timely translation of findings into programme development [16]. Analysis involved developing a framework from the topic guide, creating a matrix with themes by stakeholder group, populating the matrix with summaries and illustrative quotations, and reviewing patterns across groups.

The final DESTRESS programme comprised seven modules: (1) Mind, Brain, Behaviour, and Introduction to Mental Illness; (2) Types of Mental Health Problems; (3) Understanding Stress; (4) Managing Difficult Emotions; (5) Interpersonal Skills; (6) Help-Seeking and Treatment; and (7) Positive Mental Health. Modules included psychoeducation, myth-challenging content, culturally relevant vignettes, CBT-informed strategies for managing difficult emotions, boundary-setting and communication skills, guidance on formal help-seeking, and positive mental health practices including sleep, nutrition, exercise, study and career skills. Each module lasted approximately 25–30 minutes and was presented in English with culturally relevant examples.

Evaluation method

Students completed assessments on the DESTRESS platform. After creating a profile using an existing email address, participants completed baseline demographic and outcome measures before accessing programme modules. The same outcome measures were completed immediately after programme completion. Each assessment took approximately 15 minutes.

Assessments

Demographic details

Participants reported age, year of study, and gender identity.

Mental health knowledge

The Mental Health Knowledge Schedule (MAKS) is a 12-item measure of stigma-related mental health knowledge [17]. Items are rated from 1 (strongly disagree) to 5 (strongly agree). The first six items assess knowledge about help-seeking, support, employment, treatment, and recovery; the remaining six assess recognition of mental health conditions. Items 6, 8, and 12 were reverse-coded. Total scores range from 12 to 60, with higher scores indicating greater knowledge.

Intended behaviour

The Reported and Intended Behaviour Scale (RIBS) assesses stigma-related behaviour and intended behaviour toward people with mental health problems [18]. Consistent with previous work in India [7], we analysed the intended behaviour subscale (items 5–8), with a possible score range of 4–20 and higher scores indicating more favourable intended behaviour.

Help-seeking: Help-seeking intentions were assessed using the General Help-Seeking Questionnaire (GHSQ) [19]. We used the item assessing likelihood of seeking help for personal or emotional problems. Responses are rated from 1 (extremely unlikely) to 7 (extremely likely). Four variables were computed: informal help-seeking (mean of intimate partner, friend, parent, and other relative), formal help-seeking (mean of mental health professional, doctor/GP, and phone helpline), help from a religious leader, and not seeking help.

Analysis

Analyses were conducted in SPSS version 29. Paired samples sign tests assessed whether pre- and post-programme scores differed significantly for MAKS, RIBS, and GHSQ variables. The paired sign test is a non-parametric test of median change and is appropriate when paired data are non-normally distributed or asymmetric [20]. Results are reported as numbers of negative differences, positive

differences, ties, z statistics, and p values. Statistical significance was set at p<.001 to reduce the likelihood of type I error across multiple outcomes.

Results

Four stakeholder workshops included 37 participants: female students (n = 9), male students (n = 9), mixed students (n = 8), and teachers (n = 11). A total of 253 students completed both pre- and post-programme assessments (113 male, 138 female, 2 gender not disclosed). Participants were aged 18–23 years, with a mean age of 20 years.

Stakeholder workshops identified five broad areas of challenge: family issues, peer difficulties, lack of safety, societal expectations, and overuse of digital media (Table 1). Across groups, students described difficulty sharing mental health concerns with parents, often because emotional problems were dismissed or compared with others' difficulties. Academic and financial pressure were repeatedly described as central sources of distress. Female students highlighted physical and emotional safety concerns, including lack of privacy at home and pressure to manage harassment. Students also discussed body shaming, unrealistic physical standards, and social media comparisons. Teachers described social stressors, parent-student distance, performance anxiety, and concerns about digital overuse.

Stakeholder suggestions were mapped directly onto DESTRESS modules (Table 2). Students and teachers requested content on signs and symptoms, stigma reduction, stress management, coping skills, difficult emotions, communication, consent and boundaries, help-seeking, mentor relationships, confidence, and positive lifestyle practices. These priorities shaped the seven-module curriculum.

Table 1

Mental health challenges faced by students: themes from stakeholder workshops

Theme	Sub-themes	Illustrative findings
Family issues	Difficulty disclosing mental health concerns; parental academic and financial pressure	Students described parents dismissing emotional concerns, comparing problems with others, and prioritising achievement and employment over personal interests.
Peer difficulties	Fear of disclosure; confidentiality breaches	Students reported that sharing vulnerabilities could lead to rumours, ridicule, and loss of trust.
Lack of safety	Physical safety; emotional safety; lack of privacy	Female students described vigilance around harassment and lack of safe private space at home; students described emotional suppression.
Societal expectations	Body shaming; social media comparison; gendered expectations	Students described unrealistic standards amplified by social media and relatives, with pressure to appear perfect and conform to social norms.
Digital media overuse	Loneliness; superficial online connections; digital addiction concerns	Students and teachers noted that online spaces could increase loneliness and that online learning could not replace in-person support.

Table 2

Stakeholder curriculum suggestions and corresponding DESTRESS modules

Stakeholder priorities	Corresponding DESTRESS module content
Mental health signs and symptoms; reducing stigma; normalising emotional difficulties; digital addiction	Module 1: Mind, Brain, Behaviour, and Introduction to Mental Illness; Module 2: Types of Mental Health Problems
Pressure, stress, coping skills, yoga/meditation, managing performance demands	Module 3: Understanding Stress
Negative thoughts, overthinking, body shaming, self-acceptance, self-control, break-ups and failure	Module 4: Managing Difficult Emotions
Communication skills, consent, rights and ethics, trust in friendships, empathy, listening, boundaries	Module 5: Interpersonal Skills
Where to seek help; mentor-mentee support; supporting others	Module 6: Help-Seeking and Treatment
Career skills, confidence, optimism, self-care, hobbies, healthy habits, nutrition, sleep, exercise	Module 7: Positive Mental Health

Table 3
Comparison of pre- and post-programme mental health knowledge, behaviour, and help-seeking

Outcome	Pre Mean (SD); Median	Post Mean (SD); Median	Negative difference	Positive difference	Ties	z	p
MAKS (n = 253)	37.28 (6.21); 36.00	53.28 (2.16); 53.00	5	246	2	15.15	< .001
RIBS (n = 253)	12.13 (2.98); 12.00	15.15 (7.92); 16.00	23	218	12	12.50	< .001
GHSQ informal help-seeking	4.60 (0.85); 4.75	4.72 (0.36); 4.75	99	119	34	1.29	.20
GHSQ formal help-seeking	4.52 (0.89); 4.67	5.36 (0.45); 5.33	36	191	26	10.22	< .001
GHSQ would not seek help	4.66 (1.48); 5.00	2.19 (0.79); 2.00	222	19	12	-13.01	< .001
GHSQ religious leader	4.56 (1.56); 5.00	2.49 (0.77); 3.00	215	19	20	-12.84	< .001

Note. Negative difference represents participants with decreased scores after the programme; positive difference represents participants with increased scores; ties represent unchanged scores. MAKS = Mental Health Knowledge Schedule; RIBS = Reported and Intended Behaviour Scale; GHSQ = General Help-Seeking Questionnaire. Informal help-seeking was computed as the mean of intimate partner, parent, friend, and other relative. Formal help-seeking was computed as the mean of mental health professional, doctor/GP, and helpline.

After completing DESTRESS, most students showed higher MAKS scores (246/253 positive differences) and higher RIBS scores (218/253 positive differences) (Table 3). Improvements in stigma-related knowledge and intended behaviour were statistically significant (both p<.001). Formal help-seeking intentions increased significantly (p<.001). Intentions to seek help from a religious leader decreased significantly (p<.001), as did intentions not to seek help from anyone (p<.001). Informal help-seeking intentions did not change significantly (p=.20).

Discussion

This study provides preliminary evidence that a co-developed digital mental health literacy programme can improve stigma-related knowledge, intended behaviour, and formal help-seeking intentions among college students in West Bengal, India. To our knowledge, DESTRESS is among the first digitally delivered, culturally adapted MHL programmes to be developed with stakeholder input and evaluated

among college students in India. The findings extend the emerging evidence base for youth mental health literacy in LMIC educational settings by showing that gains previously reported in face-to-face programmes may also be achievable through digital delivery.

The stakeholder workshops underscored the importance of cultural and contextual adaptation. Students did not describe mental health as an isolated individual issue; rather, distress was embedded in family expectations, economic pressure, gendered safety concerns, peer mistrust, social comparison, and uncertainty about where to seek help. Incorporating these themes into the curriculum likely enhanced relevance and acceptability. The modular design also enabled the programme to address both knowledge and practical skills, including recognising mental health problems, challenging stigma, managing stress and difficult emotions, communicating in relationships, and identifying appropriate sources of support.

The pattern of help-seeking findings is particularly important. Before the programme, students reported broadly similar likelihoods of seeking help from formal and religious sources. After the programme, formal help-seeking intentions increased, while intentions to seek help from a religious leader or not seek help decreased. This does not imply that culturally meaningful sources of support should be dismissed; in many LMIC contexts, religious and community supports are part of students' social worlds. However, for potentially serious or persistent mental health problems, improved knowledge about formal care pathways may reduce delays in accessing evidence-based assessment and treatment [22–24].

Digital delivery strengthens the potential public health relevance of DESTRESS. A self-guided programme can be delivered consistently, scaled across institutions, and accessed privately by students who may be reluctant to disclose concerns. These features are especially relevant to LMIC contexts where specialist mental health workforces are limited and where stigma may inhibit early help-seeking. The present study was conducted in one urban college, but the digital format means the programme could be adapted and tested across other colleges, languages, regions, and LMIC settings with similar barriers to youth mental health care.

Strengths and limitations

Key strengths include the co-development process, inclusion of both student and teacher perspectives, use of validated outcome measures previously used in India, and the focus on a universal, scalable intervention rather than a programme restricted to students already identified as symptomatic. The study also addresses an important evidence gap: digital mental health literacy for college students in an LMIC setting.

Several limitations should be considered. First, the pre-post design lacked a control group, so improvements cannot be attributed definitively to the programme. Repeated testing, social desirability, and demand characteristics may have contributed to observed change. Second, outcomes were measured immediately after completion, and the durability of effects is unknown. Third, all outcomes

were self-reported intentions rather than observed behaviour or service-use data. Fourth, participants were recruited from a single urban college and required internet access, limiting generalisability to rural students, students outside higher education, and those with limited digital access. Fifth, the study did not assess engagement analytics, module-specific completion patterns, or impacts on wellbeing, distress, academic functioning, or actual help-seeking.

Future research should use controlled or cluster-randomised designs with longer follow-up, test implementation across multiple institutions and rural settings, examine engagement and dose-response effects, and assess whether improved literacy translates into earlier and more appropriate help-seeking. Adaptation into Indian languages and evaluation of low-bandwidth delivery formats would be important for equitable scale-up. Cost-effectiveness and implementation studies would also help determine whether DESTRESS can be embedded within college mental health promotion systems.

Conclusions

DESTRESS appears to be a promising digital, culturally adapted mental health literacy programme for college students in West Bengal. Immediate improvements in stigma-related knowledge, intended behaviour, and formal help-seeking intentions suggest that DMHL programmes may contribute to scalable mental health promotion in India and other LMICs. Controlled trials, longer-term follow-up, and wider implementation studies are now needed to establish effectiveness, sustainability, and generalisability.

Abbreviations

LMIC
Low- and Middle-Income Countries
MHL
Mental Health Literacy
DMHL
Digital Mental Health Literacy
MAKS
Mental Health Knowledge Schedule
RIBS
Reported and Intended Behaviour Scale
GHSQ
General Help-Seeking Questionnaire

Declarations

Ethics approval and consent to participate: Ethical approval was obtained through the relevant institutional processes at AJC Bose College and the University of Warwick. All participants provided

informed consent.

Consent for publication: Not applicable.

Availability of data and materials: The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request, subject to institutional approvals.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: All authors contributed to study conception, programme development, data interpretation, and manuscript preparation. SG and CW conducted the analysis and were major contributors in writing the manuscript. SJ, DM, SN, NBA, and SS contributed to the literature review and manuscript writing. SPS conceived and supervised the study, provided overall conceptual guidance, and acted as the senior author. All authors read and approved the final manuscript.

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