SYSTEMATIC REVIEW

Mapping the Landscape of Psychological Interventions for Malaysian Adolescents: A Systematic Review

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ABSTRACT

Introduction: Adolescent mental health is a major public health concern in Malaysia. Despite progress in national mental health policies, comparatively limited attention has been given to evaluating the effectiveness of psychological interventions among Malaysian adolescents. This systematic review describes existing psychological interventions, evaluates their quality, and synthesizes their effects on adolescent well-being. **Methods:** A comprehensive search of Cochrane, Web of Science, Scopus, and PubMed databases was conducted, including studies on Malaysian adolescents aged 13 to 17 published between 2011 and 2025. Studies with pre- and post-intervention outcomes from validated instruments were selected. Two independent reviewers assessed the methodological and reporting quality using the Quality Appraisal for Diverse Studies (QuADS) tool. **Results:** Of 1,255 initial references, 14 studies were included. Most studies recruited adolescents with or at risk of psychological issues, with 1,069 total participants (mean sample size = 76; SD = 66.3) and a mean age of 17.15 (SD = 5.23). Interventions, were of variable configurations, ranging from 1 to 14 sessions, primarily used a Cognitive Behavioural Therapy (CBT) approach, utilized heterogenous designs, thus varies in study quality. Generally, the interventions positively affected adolescents by reducing depression and anxiety, and improving overall psychological well-being. **Conclusion:** Psychological interventions positively impact adolescents' mental health in Malaysia. The review helps to inform and improve existing mental health systems and practices for adolescents in Malaysia. Further research could determine the generalizability and long-term clinical relevance of the interventions in this population.
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Keywords: Psychological intervention, Mental health, Malaysia adolescents, Programme effectiveness, Depression, anxiety, Psychological functioning

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INTRODUCTION

Adolescence is a unique and challenging life phase, marked by drastic transformations in human development. This transitional period is not only a time of self-discovery but also poses significant challenges to mental health (1). Developing good mental health is crucial for healthy growth during these critical times. However, half of mental health problems start by the age of 14, with three-quarters of adults with a mental health disorder experiencing the onset of the problem before age 25 (1). Approximately, 15% of children and adolescents suffer from mental disorders, accounting for 13% of the global burden of disease for young people ages 10 to 19 (2). The situation is further compounded by high mortality rate among the young people. According to World Health Organization (WHO), suicide is one of the primary causes of mortality among teenagers between the ages of 15 to 19, and it claims the lives of more than 700,000 people annually, mostly in low and middle-income nations (3).

An alarming trend in adolescent mental health is also apparent in Malaysia. Mental disorders and self-harm account for 19% of the disease burden among Malaysian adolescents (4). The latest National Health Morbidity Survey (NHMS) 2022 revealed that one in four children reported feeling depressed, one in eight adolescents had suicidal thoughts, and one in ten attempted suicides (5). A local longitudinal study that examined psychological distress among adolescents at two time points reported a significant prevalence of psychological distress between the ages of 15 (15.9%) and 20 (34.6%) (6). A sudden increase in the prevalence of mental disorders during the mid-adolescent years is alarming. The growing

prevalence portrayed a pervasive mental health concern among Malaysian adolescents and justifies the special attention to adolescent mental health well-being.

The massive and widespread surge in social media use and the unprecedented impact of the COVID-19 pandemic exacerbate adolescent mental health issues that commonly include anxiety, depression, and suicidal behaviours (7). Yet, most adolescents with mental health conditions go underdiagnosed or do not receive evidenced-based care (8). Nevertheless, dealing with adolescent mental health problems are crucial as they may have long-term biopsychosocial consequences (9). Specifically, adolescent-onset anxiety disorders predicted poor adjustment at work, poor family relationships, less life satisfaction, substance dependency, and anxiety in adulthood (10). Adolescent remains is one of the groups to have poorest access to mental health care. Factors such as poor mental health literacy, society's stigma, and family's attitudes often had a negative influence on the help-seeking behaviours (11).

Mental health is not as a mere absence of illness, instead, it is broadly defined as a state of well-being in which individuals develop their abilities, face the stress of daily life, perform productive and fruitful work, and contribute to the betterment of their community (120. In line with the WHO's vision, Malaysia has dedication in advancing mental health services, with proper training for psychiatrist starting in 1973, followed by the introduction of National Mental Health Policy in 1997 and The Malaysian Mental Health Act 2001 (13). This Act finally came into effect with the enforcement of the Mental Health Regulations 2010 and the establishment of Psychiatric and Mental Health Services Operational Policy 2011 and the National Mental Health Promotion Advisory Council 2021. More importantly, a collaborative effort between Ministry of Education and the Ministry of Health has resulted in the initiation of The Health Mind Program (Program Minda Sihat) in 2011 - a nationwide programme to screen school-going students for mental health problems and to empower them to manage emotional disturbances and enhance mental wellness (13). To date, the Health Mind Program has been consistently and widely implemented in primary and secondary government schools across Malaysia since its inception.

Mental health care in Malaysia has advanced with accessible services and improved policies and guidelines, including those for adolescents. Of paramount important mental health guidelines was the National Mental Health Strategic Plan (NSMHP) 2020-2025 that aimed to address adolescents' mental health through early screening and intervention, psychological first aid training, and continuous mental health education for teachers. The audacious initiative of the National Centre of Excellence for Mental Health (NCEMH) in 2022 was meant to restructure government, private and non-profit responses to mental health issues nationwide through a bio-psychosocial and spiritual approach. More recently the amendment of the Penal Code, Criminal Procedure Core, and Mental Health Act in 2023 has marked significant legal reforms emphasizing mental health care, crisis intervention, and decriminalization of suicide attempts (14). In the same year 2023, the Institute for Youth Research Malaysia (IYRES) with UNICEF Malaysia introduced The Malaysian Youth Mental Health Index 2023 (MyMHI'23) considered as a pioneering tool regionally and globally, designed to monitor youth mental health regularly and drive evidence-based policies and programmes.

Although national mental health policies, service initiatives, and programmes targeting adolescent mental health have improved over the decades, systematic reviews of psychological interventions for this population remain scarce. A systematic review of psychological interventions for Malaysian adolescent mental health is essential to synthesize existing evidence, identify effective strategies, and further inform policy and practice. It helps consolidate knowledge on intervention types, measured outcomes, and effectiveness, addressing the current gap in comprehensive evaluation. It could also guide resource allocation, promote evidence-based programs, and establish standardized outcome measures to monitor progress. Thus, this review aims to describe and map the psychological interventions conducted on Malaysian adolescents, assess the study quality, synthesize mental health outcomes, so that evidence gaps could be identified and ways to improve adolescent mental health services could be recommended.

METHODOLOGY

The systematic review was conducted following the standard for Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) (Figure 1) guideline and the protocol is registered in PROSPERO (CRD42024559780). Whilst no specific human ethics approval required for this review, this work is part of the main research project that has obtained human ethics approval from the USM Human Ethics Committee (Ethical Code: USM/JEPeM/20120709).

The search strategy

The search was conducted using four electronic databases namely to locate articles namely Cochrane, Web of Science Scopus, and Pubmed, followed by a manual search to identify relevant studies in Malaysian context. The articles were searched using the following keywords: "Malaysia", "adolescent", "teen", "secondary school student" "mental health interventions", "psychotherapy", "psychological program", "prevention", "well-being". The synonyms or derivatives of the keywords were combined to complete the searches. The publications containing the search criteria in the title, keywords, and

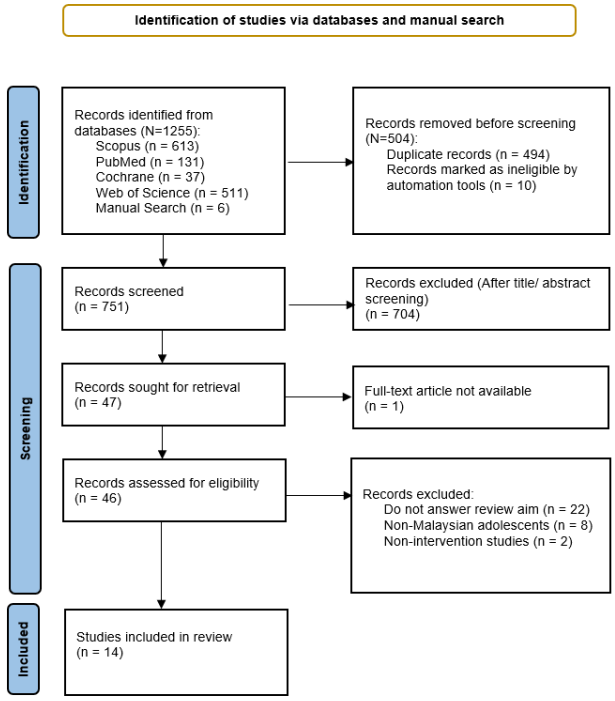

Figure 1: PRISMA diagram of a review of mental health interventions among Malaysian adolescents

abstract were included.

The search of the literature targeted on studies published starting 2011 – a year that marked important initiatives to improve the mental health of Malaysian adolescents including the establishment of the National Mental Health Promotion Advisory Council, the revision of the National Mental Health Policy, and the initiation of Healthy Mind Programme, until 2025.

Publications included were peer-reviewed articles in English or Bahasa Malaysia, while abstracts, editorials, letters, and duplicate publications without novel data were excluded. The systematic review employed the PICO (Population, Intervention, Comparison, Outcome) framework (Table I) to provide a clear and focused structure for formulating precise research questions and defining inclusion and exclusion criteria. This approach enhances the transparency, replicability, and comprehensiveness of the literature search, thereby minimizing bias and improving the reliability of the review findings.

The population included Malaysian adolescents aged 13 to 17 years, both males and females, who participated in psychological intervention programmes. Adults and those not involved in such programs were excluded to maintain the focus on adolescent mental health within the national context. This targeted approach ensured the relevance of findings to the specified demographic and cultural setting.

Regarding interventions, the review considered any type of psychological intervention aimed at reducing emotional or behavioural symptoms or improving psychological functioning. Studies that only conducted interventions were included, while non-psychological and individual one-to-one interventions were excluded to emphasise group-based or programmes approaches that could have broader applicability. We did not establish much restrictions in relation to, e.g., intervention configuration (i.e., remote/online, number of sessions, duration etc), delivery settings and delivery agents. When available, such information was extracted from studies and considered in our synthesis of evidence. The

Table I: PICO Table Describing Inclusion and Exclusion Criteria of the Reviewed Studies

Study Component	Inclusion	Exclusion
Population	• Malaysian • Aged 13 to 17 • Male and female	• Not participated in the programme • Adult
Intervention	• Any types of psychological intervention programme to reduce any types of emotional or behavioural symptoms or to improve psychological functioning	• Non-psychological intervention • Individual, one-to-one intervention
Comparison/ Condition	• Before and after intervention scores • Difference in scores between intervention and control groups after the intervention	• One-point-of-time outcome assessment only
Outcomes	• Assessed using any validated instrument, including screening tools, scales of symptoms or diagnostic assessment tools. • Reduction in mental health symptoms • Improvement of psychological functioning	• Non-psychological related outcomes • Subjective or qualitative outcome reports
Publication	• Articles/ studies published from 2011 to 2025 in English or Bahasa Melayu, in peer-reviewed journals derived from the dedicated databases.	• Abstract, editorials, letters • Duplicate publications of the same study that do not report on different outcomes
Study Design	• Randomised control trial (RCT) • Single-group experimental design • Quasi-experimental design	• Case reports • Qualitative • Non-interventional

comparison component involved evaluating outcomes before and after intervention implementation, as well as differences between intervention and control groups, facilitating a clear assessment of intervention efficacy.

We included the outcomes that assessed on the reduction of mental health symptoms such as anxiety and depression and/ or improvements in psychological and behavioural functioning for example mental health literacy, self-efficacy, and resiliency. Related behavioural measures were also considered such as reduction in internet use or substance use. Studies were included if they assessed these outcomes using any validated, objective instrument, such as screening tools, symptom scales, or diagnostic assessments. This criterion ensured standardized and reliable measurement of mental health outcomes across studies. By focusing on validated tools, the review prioritized accuracy in identifying emotional and behavioural symptoms or psychological functioning improvements. Non-psychological outcomes or those measured at only one point in time were excluded to ensure meaningful before and after intervention.

The study design was limited to intervention studies with pre- and post-intervention outcome measures reported, excluding case reports, qualitative studies, and non-interventional research to strengthen the evidence base for psychological interventions in Malaysian adolescents. Whilst randomized controlled trials (RCTs) is an ideal study design, they are scarce in middle-income countries like Malaysia due to limited financial and human resources. Given this scarcity, non-randomized trials, quasi experimental, single-subject design, and pilot study were included in the review to expand the evidence base. This approach acknowledges the challenge face by the country in conducting RCTs and allows for a more comprehensive understanding of intervention effects in resource-limited settings.

We examined the reference lists of all included studies and pertinent review articles identified through our search to find additional relevant references.

Data collection and data analysis

The first search was conducted by two graduate research assistants (LMY, KEW) independently, whom listing down of all references gathered to be then screened by senior researchers/ reviewers (AO, SAB). All related references were imported into the Mendeley Reference Manager software for screening. Screening of the references was conducted by LMY and KEW and disagreements were resolved through consensus, with the advices from senior reviewers (AO, SAB, NAH, SSSI). A series of meeting between all researchers including experts in mental health and psychology were conducted, where discrepancies in searching, screening and studies selection were resolved and agreement was achieved. Since limited studies were identified to meet the review criteria that focusing solely on published local intervention studies within dedicated duration, several series of search attempts were made, at different time-points, and stopped when the search findings were then eventually saturated, resulting in almost consistent numbers of hit results.

The quality assessment for the selected studies was conducted independently by two raters (AO, SAB) independently using the Quality Appraisal for Diverse Studies (QuADS) guidelines, which demonstrates strong reliability in assessing the study's rigor and convenience for quality appraisal in multi-methods health-related research studies (15). Discrepancies in assessment scoring between raters were discussed and resolved via inter-rater discussions, before decided quality scores were determined and recorded.

RESULTS

The initial search yielded 1255 references. 494 were duplicates and were removed and 10 records marked as ineligible by automation tools. 751 studies were forwarded to the title and abstract screening stage. From this screening, 704 were excluded due irrelevant study, resulting in 47 studies were retrieved for the full article. One study has no full-text article, thus excluded. Following full-text reading, 22 were excluded for not answering the review questions, 8 involved non-Malaysian adolescents, and 2 were non-interventional design. A total of fourteen studies (N= 14) met the inclusion criteria and are reported in this review. Table II presents the characteristics of the studies included in this systematic review.

Target Populations

The systematic review includes a total of 14 studies targeting psychological interventions for Malaysian adolescents. The interventions targeted a range of adolescent groups characterized by various psychological and social challenges. These groups included adolescents with high to abnormal depression scores (16, 17, 18, 19), or moderate to severe depression and anxiety with substance use issues (20, 21). Some studies identified adolescents with limited financial capability, such as those residing in boarding schools coming from lower-income families with elevated depression levels (22), or living in suburban industrial areas, belonged to the B40 population (23). Groups with higher risk of developing serious mental health problems were also of target i.e. pregnant out-of-wedlock adolescents with low self-concept and resilience (24), female adolescents in correctional institutions (25), orphans showing mild distress in psychological scales (26), and adolescents from divorced or separated families (27). Additionally, the studies also focused on adolescents struggling with problematic internet use (28) and those with medium to high test anxiety (29). In short, the interventions addressed a diverse spectrum of emotional, behavioural, and social vulnerabilities among Malaysian adolescents.

Table II: Characteristics of the studies included in the review (N=14)

Author-Year (Ref.)	Targeted Group	Age (Mean) (Male: Female)	Study Design	INT(n)	CTR (n)	Intervention Components	Control Type	Time of Assessment	Outcomes Measured
Dapari (2022) [19]	Abnormal finding on depression scores	13-16 (45:74)	RCT	62	57	4 x 90 mins Information-Motivation-Behavioural skills sessions based on combined health education modules to enhance MH knowledge, coping, delivered by doctorate in public health researcher via virtual Zoom meeting.	Standard care	T1: Pre Int T2: Post Int T3: 1-month after T2 T4: 2-months after T2	-Depression -Anxiety -Stress
Ibrahim (2020) [22]	Residents in boarding school with lower income families, and high depression scores.	13-17 (14.61) (No mention)	Quasi experimental design	53	48	One-day Depression Literacy group program, developed based on reviewed MH literatures, on depression facts, symptoms, management, delivered by NGO volunteers via physical interactive session.	No intervention.	T1: Pre Int T2: Post Int T3: 3-months after T2	-Depression -Literacy Mental Help Seeking Attitude -Self-Stigma of Help -Beliefs Toward Mental Illness
Ke (2018) [28]	Problems in internet use	13-18 (15.69) (29:16)	Single-group experimental design	45	N/A	8 x 90 mins group Cognitive Behavioural Therapy psychological intervention program focusing on internet use, behaviour and cognitive modifications techniques, delivered by school counsellors.	N/A	T1: Pre Int T2: Post Int T3: 1-month after T2	-Depression -Anxiety -Stress -Social Interaction Anxiety -Problem in internet use
Mohammadzadeh (2019) [26]	Orphans with at least mild range in either one DASS-21 sub-scales.	13-18 (149: 122)	RCT	139	132	12 x 150 mins WHO's group life skills-based intervention programme to build awareness, coping, communication skills and problems solving.	6 x 45 mins program to prevent and control dengue	T1: Pre-Int T2: Post-Int T3: 4-months after T2	-Depression -Anxiety -Stress -Self-esteem
Othman (2025) [27]	Coming from divorced or separated families, or witnessing/ experiencing domestic violence	15-16 (15) (4:6)	Single-group experimental design	10	N/A	14 x 120 mins group, sport-integrated mental health program to develop emotional strength dan peer connection through sport activity, facilitated by trained community coaches, at fields, sport centres.	N/A	T1: Pre Int T2: Session 6 T3: Session 14	-Depression -Anxiety -Emotional intelligence
Pachaiappan (2023) [29]	Medium to high test anxiety scores	16 (4:18)	Single group experimental design	22	N/A	5 x weekly hypnosis and self-hypnosis sessions, accompanied by audio recording and written hypnosis scripts to reduce test-anxiety.	N/A	T1: Pre Int T2: Session 3 T3: Post Int T4: 3-weeks after T3	-Test Anxiety -Social derogation -Cognitive obstruction -Physiologic tense
Sa'ad (2014) [24]	Pregnant out-of-wedlock adolescents with low self-concept, resilience, and high depression scores	No mention (Female =55)	Quasi experimental design	No mention	No mention	7 x 90 mins of either person-centred group counselling OR Ad-Din cognitive psychology intervention sessions at government-funded women shelter homes.	No mention	T1: Pre Int T2: Post Int	-Self-Concept -Depression -Resiliency Attitude
Saw (2019) [16]	High depression scores (RCADS-2 76 and above)	16 (10:10)	Quasi experimental design	10	10	8 x 90 mins weekly group CBT for depression sessions on the interaction between mood, thinking, and behaviour, delivered by trained school counsellors during school hours.	Normal classes	T1: Pre Int T2: Session 4 T3: Post Int T4: 1 month after T3	-Depression -Automatic Thoughts
Saw (2020) [17]	High depression scores (RCADS-2 76 and above)	16 (35:50)	RCT	42	43	8 x 60 mins weekly group CBT for depression sessions on the interaction between mood, thinking, and behaviour, delivered by intervention facilitator at school.	Waitlist/ Normal classes	T1: Pre Int T2: Session 4 T3: Post Int T4: 1 month after T3 T4: 3-months after T3	-Depression -Automatic Thoughts

CONTINUE

Table II: Characteristics of the studies included in the review (N=14) Continued.....

Author-Year (Ref.)	Targeted Group	Age (Mean) (Male: Female)	Study Design	INT(n)	CTR (n)	Intervention Components	Control Type	Time of Assessment	Outcomes Measured
Saw (2021) [18]	High depression scores (RCADS-2 76 and above)	16 (4:6)	Single-group experimental design	10	N/A	8 x 60-70 mins weekly group CBT for depression sessions on the interaction between mood, thinking, and behaviour, delivered by intervention facilitator at school's counselling rooms.	N/A	T1: Pre Int T2: Session 4 T3: Post Int T4: 1 month after T3 T4: 3-months after T3	-Depression -Automatic Thoughts
Woo (2025) [23]	Living in suburban, industrial area which houses a majority of the B40 group, with median household income of RM3000. Non-clinical	No mention (15) (8:11)	Single-group experimental design	19	N/A	6 x 60 mins Time to ACT! program to teach coping strategies, changes and promote psychological strength and values-consistent living, delivered by trained The Discoverer, Noticer, and Advisor practitioners, after school hour, via virtual Google Meet application.	N/A	T1: Pre Int T2: Post Int (n=8)	-Perceived Stress -Anxiety -Psych flexibility
Yoga (2022) [25]	Residing in female correctional institution	12-22 (18.44) (Female = 80)	Quasi experimental design	46	34	8 x 45 mins weekly group sessions of Super Skills for Life – CBT-based program to cultivate social skills and behaviour activation via positive self-perceptions, delivered by trained facilitators.	Standard care/ No intervention	T1: Pre Int T2: Post Int T3: 2-months after T2	-Depression -Anxiety -Stress -Mental well-being -Resilience -Perceived social support -Self-esteem -Coping strategies
Yusof (2022) [20]	Mild to severe depression scores	13-16 (No mention)	Single-group experimental design	115	N/A	Four difficulty levels of digital CBT-based interactive therapeutic game, with a single character game control, to encourage cognitive engagement and skills enhancement to win over the game and fight depression, played in a lab, with individualised computer	N/A	T1: Pre Int T2: Post Int	-Depression
Zakaria (2021) [21]	Substance use problems, with high level of anxiety and depression	13-19 (16.3) (74:34)	Single-group experimental design	108	N/A	8 x 45 mins weekly group sessions of Super Skills for Life – CBT-based program to cultivate social skills and behaviour activation via positive self-perceptions, delivered by trained facilitators	N/A	T1: Pre Int T2: Post Int	-Strengths and Difficulties -Cognitive Emotion Regulation -Behaviour Activation -Loneliness -Lifestyle and Habits

INT: Intervention; CTR: Control; RCT: Randomized controlled trial; MH; Mental Health; B40: Bottom 40% of Malaysian households based on monthly income i.e. earn up to RM5,249 per month; NGO: Non-governmental organization; WHO: World Health Organization; CBT: Cognitive Behaviour Therapy; T1: Time 1, T2: Time 2; T3: Time 3; T4: Time 4; N/A: Not applicable; DASS-21: Depression Anxiety Stress Scale 21 items; RCADS: Revised Children's Anxiety and Depression Scale.

Age and Gender Characteristics

Participants across the 14 studies totalled 1,069 adolescents, with study sample sizes ranging from a minimum of 10 (27) to a maximum of 271 participants (26). The mean sample size per study was approximately 76 participants (SD = 66.3), reflecting considerable variability in study scale. The participants' ages ranged mostly within adolescence (range 12 to 22), with an overall mean age of approximately 17.15 years and a standard deviation of 5.23 years, indicating inclusion of early to late adolescent developmental stages. Gender representation varied with some studies reporting near-equal male-to-female ratios (16, 17, 18) while others had predominantly female samples, particularly in studies focusing on pregnant adolescents (24) and those in correctional institution populations (25). This diverse sample composition reflects inclusivity across different adolescent subgroups in the Malaysian context.

Study Design and Intervention Duration:

The reviewed studies utilized a mixture of randomized controlled trials (RCTs) (17, 19, 26), quasi-experimental designs (19, 22, 25, 29) and single-subject experimental designs (18, 20, 21, 23, 24, 27, 28,). Intervention

durations varied substantially, ranging from one-full day programme (22) to extended group programs lasting multiple sessions such as 4 sessions of 90 minutes (19), 12 sessions of 150 minutes (26), or weekly sessions over several months (16-18).

Intervention and Control Components

Majority of the studies utilized cognitive-behavioural therapy (CBT) frameworks as a core component whilst having variations of delivery methods and activities. For instance, Ke (28) implemented an 8-session group CBT program focusing on internet use behaviour and cognitive modifications techniques, delivered by school counsellors. Saw and colleagues (16-18) employed 8-weekly group CBT sessions targeting depression through interventions to change mood, thinking, and behaviour, delivered either by trained school counsellors or intervention facilitators in school settings. Interestingly, Yusof (20) conducted a multi-level digital CBT-based interactive therapeutic game to encourage adolescents using and sharpening their positive cognitive skills, to win the game, via continuous feedback and positive support given by the computer. Yoga (25) also utilized a CBT-based programme focusing on social skills and behavioural activation training for adolescents in correctional institutions. Woo (23) leveraged a structured 6-session "Time to ACT!" program focused on coping strategies and psychological flexibility, while Zakaria (21) incorporated 8-weekly sessions of a Super Skills for Life CBT-based program to improve social skills and positive self-perceptions among the participants.

Other interventions emphasized life skills development and mental health literacy. Mohammadzadeh (26) implemented a 12-session group life skills-based intervention aligned with WHO guidelines, designed to build awareness, coping, and communication skills. Ibrahim (22) provided a one-day Depression Literacy group programme incorporating evidence-based materials facilitated by NGO volunteers. Similarly, Dapari (19) conducted a 4-session motivational-behavioural skills programme combined with health education modules to enhance mental health knowledge and coping, delivered by a public health doctorate researcher via virtual Zoom meetings. Several studies included novel and adjunctive approaches such as hypnosis and self-hypnosis (29), Ad-Din cognitive psychology intervention (24), and sport-based mental health programs to foster emotional strength and peer connections (27).

Majority of the studies (n=11) translated the adapted module into Bahasa Malaysia and validated the content to suit the local needs and culture. The module was delivered with a slide presentation, role play, focus group discussion, and planned homework to maintain the active participation of the adolescents.

Whilst the interventions varied in length and time, but most often they occurred weekly, for 8 sessions (n=6). The longest intervention lasted for 14 sessions within several months, whilst the shortest was one full-day program (n= 1). The intervention programs were delivered by either mental health professionals, those hold professional qualifications with standardised skills training or licensure for specific intervention practices, or had undergone training to deliver such programmes (n=7). Two studies claimed no interventionist was required in their programme because of the use of a self-management approach. Some studies did not describe the person involved in the intervention delivery.

Majority of the intervention programs were conducted in schools (n=6). Other programs took place in correctional institutions (n=2), sheltered homes (n=2), computer lab (n=1), and sport fields/ areas (n=1). Most of the intervention programs were conducted at the mostly developing urban areas in the country, such as Kuala Lumpur and Selangor (n= 6), both located in the Klang Valley. Other studies were conducted for adolescents resided at different states in the country including in Negeri Sembilan (19), Johor (23), Pahang (17), and Kelantan (27) (one each), whilst others (n=4) did not report the exact study location within Malaysia.

Whilst majority of the intervention programmes were delivered in-person, three studies were conducted via digital platform. Dapari (19) and Woo (23) conducted the virtual session in view of Restricted Movement Control Order (RCMO) during the Coronavirus-19 pandemic whereas Yusof (20) developed a digital therapeutic game that can be used on a computer and self-administered by the adolescents to learn about depression management strategies.

Overall, the interventions featured a blend of evidence-based psychological therapies, psychoeducation, life skills training, and innovative delivery modes such as digital platforms and sport activities. The common thread across these interventions was the targeting of emotional regulation, coping strategies, cognitive restructuring, and social skill enhancement to improve adolescents' mental health and resilience in varied contexts. Control conditions included standard care, waitlist or normal classes, or no intervention depending on study design.

Outcome Measures

The interventions examined the effects of the interventions on multiple psychological outcomes using validated, standardized tools. Prominently, the researchers focused on depression, anxiety, stress, and resilience (16, 17, 18, 19, 22, 26, 27, 28, 29, 20, 21, 24, 25). This focus likely reflects the high prevalence and significant impact of these conditions on adolescent mental health, as well as the protective role of resilience in mitigating psychological distress and promoting well-being during this critical developmental period. Additional measured outcomes included mental health

literacy (22), self-esteem (25, 26) social support (25), coping strategies (25), emotional and behavioural regulation (21), psychological flexibility (23), automatic thoughts (16-18), self-concept (24), and cognitive emotion regulation (21). These diverse outcomes illustrate a holistic approach to addressing adolescent mental health challenges in Malaysian settings, aligning with the multifaceted nature of adolescent psychological well-being and adaptive functioning.

All the studies evaluated the intervention outcomes using validated, self-report questionnaires from the adolescent participants. Many studies measure emotional difficulties, with the most commonly used self-report scales starting with Depression, Anxiety, and Stress Scale-21 (DASS-21) (n=4), which showed good reliability on three respective domains ranging 0.81 to 0.95 for Depression, 0.74-0.86 for Anxiety, and 0.79 to 0.87 for Stress (19, 25, 26, 28). Other commonly used assessment tools include Reynolds Adolescents Depression Scale- Second Edition (RADS-2) (n=3), with good reliability ranging from 0.89 to 0.93 in the studies (16-18). The Beck Depression Inventory- Malay (BDI-Malay) (n=2) was used in two studies, though reliability scores were not reported (20, 24). Among all studies, ten employed translated scales and module delivery in Bahasa Malaysia, while two did not specify the language utilized for the participants.

Time of Outcomes Assessment

All the studies assessed the program effectiveness at least two time points, before and immediately after the intervention was completed. Mohammadzadeh and colleagues [26] holding the longest follow-up interval at four months post-intervention. The studies reviewed assessed outcomes at multiple time points. Some studies included multiple follow-ups, such as assessments at one month and again at two- or three-months post-intervention, providing a more detailed understanding of the sustainability of intervention benefits. This approach allowed for evaluation of both short-term symptom reduction and longer-term maintenance of psychological improvements, which is critical for understanding intervention efficacy in adolescent populations. Overall, the timing of assessments was systematically planned to capture a comprehensive picture of intervention impact over time.

The Effects of the Interventions on Adolescents' Psychological Functioning

Table III presents the effects of the interventions on the outcome measures as reported in the reviewed studies. For all studies, except one, there was a significant improvement in the post-test evaluation, with at least one measure outcome. Multiple studies demonstrated statistically significant reductions in depression, anxiety, and stress symptoms following intervention.

Depression showed consistent reductions across several studies. Dapari (19) demonstrated statistically significant decreases in depression ($p=0.002$) alongside anxiety and stress among adolescents in a randomized controlled trial (RCT). Saw et al. (16-18) also found significant and sustained decreases in adolescent depressive symptoms, with effects lasting up to three months post-intervention. Mohamadzadeh (26) confirmed these effects in a large RCT, with significant reductions observed at three different time points. Sa'ad (24) found a significant drop in depression scores ($p=0.036$) in a quasi-experimental study.

Anxiety and stress outcomes were similarly improved post-interventions. For example, Pachaiappan (29) showed reductions in social testing anxiety across multiple time points. Mohamadzadeh (26) found reductions in anxiety symptoms post-intervention. Yoga (25) demonstrated significant reductions in anxiety ($p=0.012$) and stress ($p \leq 0.001$) across pre-intervention, post-intervention, and two-month follow-up assessments. Woo (23), although not achieving statistical significance, reported trends toward decreased anxiety and stress among participants.

Other symptom-related outcomes included problem internet use and social anxiety (28), and automatic negative thoughts associated with depression (16-18). Othman (27) found fluctuating anxiety levels post-intervention, likely due to the small sample size.

Alongside symptom reductions, several studies also captured improvements in positive psychosocial constructs, highlighting holistic mental health benefits of the psychological interventions. Self-concept and resilience were notably enhanced in Sa'ad (24), who reported significant improvements in self-concept ($p=0.001$) and resilience ($p=0.047$) alongside decreases in depression. Self-esteem improvements were documented in Mohamadzadeh (26), demonstrating significant increases that corresponded with symptom reduction.

Mental health literacy and help-seeking attitudes showed noteworthy gains in Ibrahim (22), who reported significantly increased depression literacy and help-seeking behaviour, alongside decreases in self-stigma and negative beliefs about mental illness. These effects were maintained at follow-up, emphasizing long-term benefits. Social support, coping, and wellbeing were positively influenced in Yoga (25), showing group and time effects for perceived social support ($p=0.038$), coping skills ($p \leq 0.001$), and mental wellbeing ($p=0.047$).

Study quality appraisal

The methodological and reporting quality of the 14 included studies was appraised using the Quality Appraisal for Diverse Studies (QuADS) tool (15). Individual study scores for each quality domain, as well as total scores, are presented in Table IV. The total

Table III: The effects of psychological interventions on the outcomes measured

Author Year (Ref.)	Design & Sample Size	Negative Symptoms	Assessment Tools & Time Points	Positive Psychosocial Outcomes	Other Outcomes & Notes
Dapari (2022) [19]	RCT, INT=62 (CTR=57)	↓ Depression (p=0.002), ↓ Anxiety (p=0.005), ↓ Stress (p=0.015)	DASS-21 T1-T4	N/A	
Ibrahim (2020) [22]	Quasi-experimental, INT=53 (CTR=48)	N/A for symptom change	Depression Literacy Scale Mental Help Seeking Attitude Scale Self-Stigma of Help Scale Beliefs Toward Mental Illness T1-T3	↑ Depression literacy (p<0.001), ↑ Help seeking (p=0.001), ↓ Self-stigma (p<0.001) ↓ Negative belief on mental illness (p<0.001)	Sustained mental help-seeking attitude (p=0.034) and negative beliefs on mental illness (p=0.14).
Ke (2018) [28]	Single-group exp, INT=45	Medium to high reductions in problematic internet use (d=0.59), social anxiety (d=0.37), stress (d=0.41) and social interaction anxiety (d=0.31) at 1-month follow up, with low to medium effect size.	Problematic Internet Use Questionnaire Social Interaction Anxiety Scale DASS-21 T1-T3	N/A	No changes on depression scores.
Mohammadzadeh (2019) [26]	RCT, INT=139 (CTR=132)	↓ Anxiety (p=0.01), ↓ Depression (significant at 3 timepoints, p<0.001)	DASS-21 Rosenberg Self-Esteem Scale T1-T3	↑ Self-esteem (p<0.001)	Significant improvements in symptoms and self-esteem
Othman (2025) [27]	Single-group exp, INT=10	↓ Anxiety: Significant decrease T1-T2, increase T2-T3, no sig difference T1-T3	Patient-Health Questionnaires Generalised Anxiety Disorders Emotional Intelligence Scale T1-T3	N/A	Anxiety levels fluctuated over time; Small sample
Pachaiappan (2023) [29]	Single-group exp, INT=22	↓ Social test anxiety (statistically significant at 4 time points)	Friedman Test Anxiety Scale T1-T4	N/A	Intervention reduced overall test anxiety, cognitive anxiety, tenseness
Sa'ad (2014) [24]	Quasi-experimental	↓ Depression (p=0.036)	Multidimensional Self-Concept Scale, Beck Depression Inventory Adolescent Resiliency Attitude Scale T1-T2	↑ Self-concept (p=0.001), ↑ Resilience (p=0.047)	Positive effects on depression and psychosocial constructs
Saw (2019) [16]	Quasi-experimental, INT=10	↓ Depressive symptoms (p<0.05)	Reynolds Adolescent Depression Scale (RADS-2) Automatic Thoughts Questionnaire (ATQ) T1-T4	N/A	Effects sustained 1-month post-intervention
Saw (2020) [17]	RCT, INT=42 (CTR=43)	↓ Depression (p<0.001), ↓ Automatic negative thoughts (p=0.004)	RADS-2, ATQ T1-T4	N/A	Effects persisted for 3 months post-intervention
Saw (2021) [18]	Single-group exp, INT=10	↓ Depressive symptoms immediate and 1 month post (p=0.020, p=0.0013), ↓ Automatic negative thoughts (p=0.031)	RADS-2, ATQ T1-T4	N/A	Negative thoughts did not persist at 1 month; depressive symptoms did
Woo (2025) [23]	Single-group exp, INT=19	Overall anxiety, stress, and psychological inflexibility decreased by 7.14%, 9.15%, and 4.05%, but all not statistically significant, with d = .60, .33, and .11 correspondingly.	Perceived Stress Scale Revised Child Manifested Anxiety Scale Acceptance and Fusion Questionnaire for Youths T1-T2	N/A	No significant changes in all scores.
Yoga (2022) [25]	Quasi-experimental, INT=46	↓ Anxiety (p=0.012), ↓Stress (p ≤ 0.001) across pre-post-2m follow-up → Depression improved by group (p=0.001) and time (p=0.040), but not overall intervention effect	DASS-21 Warwick-Edinburgh Mental Wellbeing Resilience Scale Multidimensional Scale of Perceived Social Support Rosenberg Scale of Self-Esteem Brief-COPE T1-T3	↑ Mental wellbeing (p = 0.047) ↑ perceived social support (p = 0.038), ↑ self-esteem (p ≤ 0.001) ↑ coping skills (p ≤ 0.001)	Time effects for social support and coping
Yusof (2022) [20]	Single-group exp, INT=115	↓ Depression (p=0.000)	Beck Depression Inventory T1-T2	N/A	
Zakaria (2021) [21]	Single-group exp, INT=108	↓Emotional symptoms (p<0.05) ↓ Difficulties Questionnaires scores (p<.10).	Strengths and Difficulties Q Cognitive Emotion Regulation Q Behavioural Activation for Depression Scale Loneliness Scale Lifestyle and Habits Q T1-T2	↑ Pro-social behaviour (p<0.10)	

INT: Number of Intervention Subjects; CTR: Number of Control Subjects; ↓: Significant reduction in scores; ↑: Significant increment in scores; T1-T4: Time 1 to Time 4

Table IV: Study quality ratings via the Quality Appraisal for Diverse Studies (QuADS)*

Study no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Author (Year)	Dapari (2020)	Ibrahim (2020)	Ke (2018)	Mohammadzadeh (2019)	Othman (2025)	Pachaiappan (2023)	Sa'ad (2014)	Saw (2019)	Saw (2020)	Saw et al. (2021)	Woo (2025)	Yoga (2022)	Yusof (2022)	Zakaria (2021)
References	19	22	28	26	27	29	24	16	17	18	23	25	20	21
Theoretical or conceptual underpinning to the research	1	3	1	1	1	3	1	0	2	1	3	0	3	1
Statement of research aim/s	3	3	3	3	3	3	3	3	3	3	3	3	3	2
Clear description of research setting and target population	3	3	1	3	3	3	3	3	3	2	3	3	2	2
The study design is appropriate to address the stated 1research aim/s	3	3	2	3	3	3	3	3	3	2	3	3	2	2
Appropriate sampling to address the research aim/s	2	2	0	3	1	0	1	1	3	2	2	3	0	2
Rationale for choice of data collection tool/s	2	2	2	1	3	3	1	2	2	3	3	1	2	3
The format and content of data collection tool is appropriate to address the stated research aim/s	1	3	3	3	3	2	1	3	3	3	3	3	2	3
Description of data collection procedure	3	3	3	3	3	1	1	3	3	3	3	3	0	3
Recruitment data provided	3	3	0	3	2	3	0	1	3	2	3	1	0	3
Justification for analytic method selected	2	3	1	3	2	1	0	3	3	3	3	1	0	3
The method of analysis was appropriate to answer the research aim/s	3	3	2	3	3	3	1	3	3	3	3	2	2	3
Evidence that the research stakeholders have been considered in research design or conduct	3	1	3	3	2	1	0	3	3	3	1	0	3	0
Strengths and limitations critically discussed	2	2	2	3	2	3	1	3	3	3	2	2	0	3
Total Score	**31**	**34**	**23**	**35**	**31**	**29**	**16**	**31**	**37**	**33**	**35**	**25**	**19**	**30**

*(15)

scores for the included studies ranged from a low of 16 (24) to a high of 37 (17). With a mean total score around 29.8, the collective evidence suggests moderate-to-good overall quality in this body of research, though improvements are needed in sampling, recruitment, and analytic justification for future studies.

The highest-quality study is Saw (17), achieving a total score of 37. This study scored consistently high, with many top ratings (3 points) in critical areas such as research aims, study design appropriateness, data collection description, and justification for analytic methods, indicating strong methodological rigor and transparent reporting. The lowest-scoring study is Sa'ad (24) with a total score of 16, reflecting notable weaknesses in various domains including research conceptualization, sampling, recruitment data, and analysis justification. This suggests limited methodological clarity and reporting completeness.

Across all studies, the highest mean scores were consistently observed for the domains concerning the "Statement of research aim/s" and the "Description of data collection procedure," with 12 out of 14 studies

scoring the maximum of 3 in these categories. This indicates a high degree of transparency and clarity in reporting these aspects of the research. In contrast, greater variability was noted in the domain evaluating the "Appropriateness of study design to address the research aim/s," where scores ranged from 0 to 3. The "Strengths and limitations" domain also showed significant variation, with scores ranging from 0 to 3, suggesting inconsistency in the self-critical reporting of the studies (15).

The variability in the "Appropriateness of study design" domain often reflected the absence of randomized controlled trials (RCTs). In the context of a middle-income country like Malaysia, where resources for large-scale, experimental studies are often limited, a broader range of study designs was necessary for the review. The inclusion of quasi-experimental and single-group designs was deemed appropriate despite their inherent limitations, given the practical and ethical constraints frequently encountered in applied research settings. This approach ensures a comprehensive synthesis of the available evidence from the region, reflecting the research landscape within a resource-scarce environment.

DISCUSSION

To our best knowledge, this systematic review represents the first comprehensive effort to synthesize available research on mental health programs targeting adolescents in Malaysia. This systematic review identified fourteen relevant studies conducted on Malaysian adolescents that shed light on mental health interventions on this vulnerable population. The current review deliberately focuses on studies published from 2011, the year when important moves were made from the government in curbing adolescent mental health problems, including the introduction of the Healthy Mind Programme, a nation-wide, mental health screening and intervention conducted at almost all government schools using standard measures on regular basis, until now.

As the search databases is restricted to those indexed, undergone thoroughly peer-reviewed publications, the quality appraisal revealed a generally high standard of reporting for study aims and data collection procedures, reflecting transparency in the research process. The inclusion of heterogenous study designs, while potentially affecting the internal validity and overall quality scores in the 'appropriateness of study design' domain, was a necessary and deliberate choice. Given the resource-constrained environment typical of countries like Malaysia the available evidence base often comprises studies with designs other than RCTs due to practical and financial limitations (30). As such, synthesizing findings from quasi-experimental, single-group, and pilot studies provides a more realistic and comprehensive overview of the research landscape and the interventions being implemented in these settings.

Majority of the interventions incorporated the evidence-based intervention approaches, with Cognitive Behavioral Therapy (CBT) being the most widely used intervention. Accordingly, CBT-based programs foster engagement and skill development, demonstrated promising outcomes among children and adolescents (31, 32). School-based interventions incorporating CBT have similarly demonstrated positive outcomes to curb mental health issues among students, especially when considering cultural and contextual compatibility (33,34). Notably, the studies included in this review respected the translational algorithms and used a validated and translated module that was relevant to Malaysian adolescents.

Whilst prevention is always better than cure, we found that all studies, except two, included adolescents whom have been experiencing mental health challenges, at baseline. While mental disorders often emerge during adolescence, prompt help-seeking promotes treatment prognosis and reduces complications in long run (35, 36). Unlike physical ailments, mental health issues may not be easily recognized or readily disclosed without proper knowledge. In one local study, researcher found that eighty percent of the adolescent participants would seek help for depression but only less than four percent of adolescents recognize depression accurately (37). With no proper awareness, the adolescents may not even know that he or she needs helps or treatment. Continuous operation of preventative mental health programmes at the national level such as Healthy Mind Programme and Peer Support Programme for younger school children is paramount (11), unfortunately no published articles or scientific reports was identified to recognize the programmes' strength, achievements, challenges and effectiveness since the inception.

Convincingly, most of the interventions for Malaysian adolescents were conducted in school settings and yielded positive outcomes. Past literature shown that there is potential for scaling up interventions to treat mental health problems in schools, especially when the affected adolescents shown mild and moderate symptoms (39). In Malaysia, school-going adolescents spend most of their time in school, making school an inextricably collaborative partner to address and prevent mental health issues (39, 40). Reasonably, the school counsellors are the main reference for students who experience mental health crisis (41). However, a high ratio of school counsellors to students (1:500), inadequate training in mental health crisis intervention, and additional core duties often inhibit the school counsellors from providing timely care (42), resulting in highly elevated symptoms and harmful self-destructive behaviours. Potential solutions include collaboration with external stakeholders for training teachers in specified skills such as psychological first aid (PFA) and

crisis intervention, dedicated counselling hours during school-time for optimal, uninterrupted sessions plan and execution, as well as effective referral databases and system linking between school administrators, parents, health clinics, hospitals, NGOs, and even community at large, could potentially overcome the present challenges.

Remarkably, several studies have explored innovative treatment delivery models incorporating digital platforms via online self-management programme and game-based application. These technology-augmented approaches hold promises for improving accessibility and engagement, particularly among digital-native adolescent. Problems in cultural stigma, stereotype, and bias against mental disorder and help-seeking behaviours could be lessened via this alternative. However, successful, effective, and sustainable programme implementation require careful analyses to deliver only valid, reliable, developmentally appropriate content, with adequate training of the facilitators, and structured monitoring and continuous support for the users. Few studies did not discuss much on the practicality and acceptability of this digital format, such as users' financial limitations hindered internet connection sustainability, led to high attrition rates, highlights a critical area for future research.

Several methodological challenges were identified in the present review and must be addressed in future evidence syntheses. First, we included a few major databases but did not include inaccessible, preprint servers that may contain eligible local studies to be included. Second, large numbers of the reviewed studies have sub-optimal study quality due to methodological limitation, including heterogenous design and types of interventions, small sample size, lack of control groups, and reliance on self-reported measures, of all which entails response bias and limit the reliability of the findings. Few studies did not report on the interventionists' credentials. This diversity, while a strength in highlighting the range of approaches, complicates a direct comparison of effectiveness across studies. It underscores the multifaceted nature of mental health interventions and suggests that a combination of components, rather than a single modality, may be a common practice in the field. It also reflects where non-specialised mental health workers and lay person can be mobilized to deliver the intervention, given the resource limitation in Malaysia. The long-term treatment efficacy of the existing intervention and the development of the participants in the studies after the intervention remain unobserved. It is recommended that further research be carried out to evaluate the generalizability and longitudinal clinical relevance. In future, we call for longitudinal research that may strengthen the clinical relevance and future evidence synthesis to optimize adolescent mental health in Malaysia.

Given the huge body of evidences mainly comes from Western countries where diversities in lifestyle, culture, and health system may hinder the feasibilities in the local context, the strength of this paper is the focus on generating local evidence for adolescent mental health interventions. Our results show the potential for utilize cultural-sensitive interventions and scaling up interventions in local schools and youth settings. These are evident from the review that indicate collectively, those interventions reported notable improvements in depressive symptoms, anxiety, social self-concept, and coping skills among the participants, validating CBT's adaptability within Malaysian cultural contexts.

The insights obtained from this present review could also be useful for mental health practitioners and policymakers to design comprehensive planning of psychological services to advance the existing adolescent mental health systems. Mental health practitioners should engage in continuous training, integrate culturally sensitive approaches, and collaborate with primary care and school systems to deliver accessible, evidence-based interventions. Ideally, policymakers can prioritize mental health as a key agenda across ministries, establish inter-ministerial committees to coordinate efforts, and update legislation such as mental health acts to protect adolescents' rights. Collectively, these actions will promote sustainable, effective mental health programs tailored to the Malaysian adolescent context.

CONCLUSION

This systematic review provides a comprehensive overview of psychological interventions for adolescents in Malaysia, demonstrating their generally positive impact on mental health outcomes. It highlights the feasibility and effectiveness of various intervention approaches, particularly those incorporating CBT elements, in a resource-limited setting. The synthesis of findings from diverse studies underscores the potential of school environment for mental health interventions, the innovation in treatment mode delivery, and the increased recognition of culturally sensitive intervention modules. While the existing evidence base is promising, a significant need remains for more rigorous, long-term research, specifically randomized controlled trials, to establish the clinical relevance and sustainability of these interventions. Standardizing outcome measurements and reporting methods in future studies will be crucial for building a more robust and comparable body of evidence. The insights from this review can serve as a vital guide for policymakers and mental health practitioners in advancing the development and implementation of effective adolescent mental health programs.

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