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Protocol for the process evaluation of a cluster randomised controlled trial evaluating the effectiveness and cost-effectiveness of a school-based intervention to prevent anxiety and depression in Malaysia: the MyHeRo study

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ABSTRACT

Process evaluations are essential for interpreting outcome trial results, offering insights into how and why interventions succeed or fall short across varying settings. This article outlines the protocol for a process evaluation embedded within the MyHeRo cluster randomised controlled trial (RCT) assessing Super Skills for Life (SSL), a school-based psychosocial programme in Malaysian secondary schools. Given the multifaceted nature of SSL and the diversity of school environments, this evaluation explores how SSL is implemented and experienced in educational settings. A mixed methods approach will assess implementation, acceptability, and contextual factors influencing SSL delivery. Data will be collected through semi-structured interviews with school management, SSL facilitators, and participating adolescents, alongside direct observations of SSL sessions by trained independent assessors to examine fidelity, adherence, and participant engagement. Findings will be synthesised to understand how implementation processes may influence trial outcomes. The results will provide valuable insights into the delivery and reception of SSL in Malaysian schools, identifying barriers and facilitators to successful implementation. Findings will aid mental health professionals interpret trial findings and develop strategies for effectively integrating school-based mental health interventions that are scalable, sustainable, and responsive to local cultural and educational contexts.

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Background

In Malaysia, an estimated 20%–40% of adolescents experience anxiety and depression, compared to approximately 16% in other Southeast Asia countries and 13% globally (Ahmad et al., 2015; Chen et al., 2023; Institute for Public Health, 2017; Kaur et al., 2014; Luo et al., 2025; Mudunna et al., 2025; Pham et al., 2024; Sahril et al., 2025; Singh et al., 2023; UNICEF, National Institutes of Health Malaysia, Burnet Institute, 2022; Wong et al., 2023). Mental health difficulties are most prevalent among adolescents from low-income households and socially marginalised communities (Institute for Public Health, 2017).

Malaysia's mental health system faces a critical shortage of personnel required to deliver effective interventions amid rising levels of anxiety and depression. In the 2021 national budget, less than 2% of total government spending was allocated to mental health, violence prevention, and substance abuse initiatives (Ministry of Finance Malaysia, 2019). The limited size of this allocation affects the availability of

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mental health services including facilities (e.g. clinics, psychiatric hospitals), staffing (e.g. psychiatrists, psychologists), and service options (e.g. inpatient, outpatient, and community-based care), and workforce capacity in terms of recruitment, training, and retention of specialized mental health professionals. A study by Ng et al. (2018) reported that Malaysia had an average of 1.27 psychiatrists per 100,000 population, with wide regional disparities ranging from 0.54 in Sabah to 5.24 in the capital of Malaysia (i.e. Wilayah Persekutuan Kuala Lumpur). In addition to resource constraints, stigma remains a major barrier to help-seeking (Raaj et al., 2021).

School-based interventions offer a promising strategy to address these barriers by lowering treatment costs and reducing stigma. Research shows that targeted school-based programmes can effectively reduce adolescent anxiety and depressive symptoms as well as psychosocial difficulties (Fazel et al., 2014). However, most studies of school-based mental health programmes have been conducted in high-income countries and are often constrained by methodological shortcomings such as small sample sizes and limited long-term follow-up. To address these limitations, rigorously designed school-based mental health intervention studies are urgently needed in low-, middle-, and upper-middle-income countries, including Malaysia.

The Promoting mental **he**alth among at-**r**isk ad**o**lescents in **M**alaysia (MyHeRo Study) (Essau, 2023) study is a RCT that seeks to evaluate the effectiveness and cost effectiveness of the Super Skills for Life (SSL; Essau & Ollendick, 2013). All data collection takes place in Malaysia, a culturally diverse country in Southeast Asia with an estimated population of 33 million, of which 42% are younger than age 25. The study is being conducted in secondary schools in economically deprived regions in rural and urban areas in the Malaysian states of Sarawak, Sabah and Selangor.

Description of the intervention using a TiDier framework

TIDieR criterion 1: Brief name

The name of the intervention is Super Skills for Life (SSL). It is a manualized psychological intervention for adolescent anxiety and depression.

TIDieR criterion 2: Why (rationale, theory, or goal of the elements essential to the intervention)

SSL has five core principles: (1) it targets common core risk factors (e.g. low self-esteem, lack of social skills, unhealthy lifestyles) of anxiety and depression, and as such it should be more time efficient and cost-effective than using interventions that focus on only anxiety or depression; (2) it uses principles of CBT to help children and adolescents develop skills to cope with anxiety-provoking situations; (3) it uses video feedback with cognitive preparation to help adolescents increases their self-perception (Harve et al., 2000; Rodebaugh, 2004); (4) it uses the principle of behavioural activation by having adolescents increase their activity levels and participate in positive and rewarding activities; such activities can help to improve their mood and overall self-esteem; (5) finally, it teaches adolescents basic skills to use during social interactions.

TIDieR criterion 3: Physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers

SSL materials include: (a) Facilitator Manual which gives step-by-step instructions on how to implement each session of SSL. The instructions clearly outline the main aims and strategies to be used for each session; the desired outcomes, and the exercises to be used in meeting to meet these outcomes. (b) Adolescent Workbook contains main messages of each session, exercises, activities, role plays, and homework. Each adolescent will receive a workbook to use during the sessions and to take home, allowing them to reinforce in-class learning and apply the skills in real-life situations.

The SSL material have been translated into several languages (including in Bahasa Malaysia) and adapted to different cultures. The intervention has already been adapted to a Malaysian sociocultural milieu and implemented in Malaysian adolescents (Yoga Ratnam et al., 2022).

TIDieR criterion 4: Procedures, activities, and/or processes used in the intervention

SSL focuses on: (1) teaching about healthy lifestyles; (2) building emotional resilience through stress management; (3) encouraging peer learning and building peer networks; and (4) promoting self-confidence and social skills. These key elements are organized over 8 sessions that address the following topics: Healthy lifestyle; Enhancing self-esteem; Feelings and thoughts; Thoughts-Feelings-Behaviour; Managing stress; Relationship and social skills; Problem-solving steps; and Hopeful future. The SSL sessions are structured with role play, homework, group and individual activities, video-analysis, and feedback.

TIDieR criterion 5: Description of the expertise, background, and specific training given to intervention providers

In the present study, SSL is delivered by staff members of participating schools who have completed a mandatory 20-hour training programme (Figure 1). The SSL training covers topics related to anxiety and depression and their risk factors, and principles of prevention. At the end of this training, facilitators will roleplay the delivery of SSL with research staff members during which they are required to adequately deliver 80% of key components for each session before implementing the SSL in the school. For the first group of adolescents that the facilitators will deliver the SSL to, they will be accompanied by our research staff member who will offer support to adhere to the study protocol as needed. Following successful completion of this first training step, facilitators will independently deliver the SSL to the at-risk adolescents.

TIDieR criterion 6: Mode of delivery

SSL sessions are delivered once a week to a group of 6 to 8 children, for about 45 minutes per session.

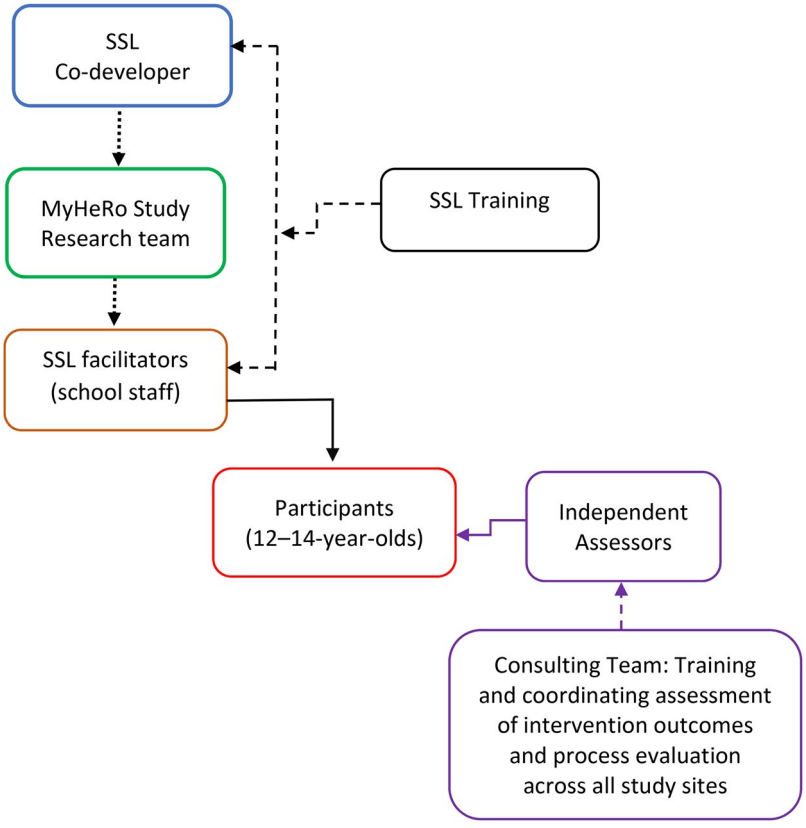

Figure 1. Implementation training and delivery.

TIDieR criterion 7: Type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features

The intervention will be conducted in person with a group of adolescents in a designated room at the school.

TIDieR criterion 8: Number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose

The SSL consists of eight sessions, scheduled for delivery once per week across an eight-week period.

TIDieR criterion 9: Tailoring of the intervention

N/A

TIDieR criterion 10: Modifications of the intervention during the study

N/A

TIDieR criterion 11: Planned procedures for how adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity

Implementation fidelity and provider drift will be evaluated by trained independent assessors who will observe SSL session using observation checklists and assessor field notes to ensure adherence to SSL protocol.

TIDieR criterion 12: Actual adherence or fidelity

N/A

SSL is a multifaceted, school-based group intervention comprising multiple components and delivered by school staff. It is therefore essential to explore not only intervention outcomes, but how SSL is implemented and what local contextual factors may influence intervention outcomes. This is particularly important given that the MyHeRo Study is a multisite trial conducted across schools in three Malaysian states (Selangor, Sarawak, and Sabah), where the SSL intervention may be implemented and received differently. Thus, the process evaluation is embedded within the MyHeRo Study to examine how the intervention is implemented, received, and influenced by context. Following Munro and Bloor (2010), the type and quantity of data needed for the process evaluation has been carefully considered; integrated findings will support the interpretation of the trial outcome results.

The SSL effectiveness and cost-effectiveness evaluation

In this section, we briefly describe the cluster RCT (MyHeRo Study; Essau, 2023) to provide context to the process evaluation design. The overall aim of MyHeRo Study is to determine the 12-month effectiveness and cost-effectiveness of SSL in reducing anxiety and depression, and in improving mental wellbeing in adolescents aged 12–14 years, who have a screening score indicating at least moderate levels of anxiety or depression on the Depression Anxiety and Stress Scale-21 (DASS-21) (Lovibond & Lovibond, 1995; Malay version: Musa et al., 2007). MyHeRo Study is a two-arm, cluster RCT comparing psychosocial intervention (SSL) to study-skills control condition using a 1:1 allocation ratio. The cluster unit for randomisation is classroom.

Eligible adolescents within classrooms in the intervention arm will receive Super Skills for Life (SSL) (Essau & Ollendick, 2013) and those in the control arm will receive Study-Skills programme (SSP) (Osborn et al., 2020). SSP covers note-taking skills, effective study strategies, and time management which will be implemented in a group format in 8 weekly sessions. This active control condition was chosen because

we want all adolescents to benefit from participating in the research. Furthermore, active compared to passive control conditions provide a more rigorous standard of comparison (Osborn et al., 2020).

The primary outcomes are anxiety and depressive symptoms, and mental wellbeing 12-months post-intervention. Secondary outcomes include: psychological (psychosocial impairment, self-esteem, social skills, cognitive emotion regulation strategies, self-harm, suicidal attempts), educational (academic performance, school attendance), cognitive skills (executive function), lifestyle habits (physical activity, sleep, eating habit), and economic (frequency and cost of using mental and physical health and social services) outcomes. Moderators of primary outcome at (a) adolescent level: adolescent gender, age, family socioeconomic status, lifestyle habits, baseline levels of anxiety and depressive symptoms. (b) school level: school size, school climate, socioeconomic index, and location. Mediators of primary outcome at (a) adolescent level: lifestyle habits, anxiety and depressive symptoms, and academic stress. (b) school level: school climate, level of support from school leaders. (c) facilitator level: skills and confidence level, and motivations. Outcomes will be assessed at baseline, post-intervention, and at 6-, and 12 month follow up.

Process evaluation framework

We will apply the UK Medical Research Council (MRC; Moore et al., 2015) framework for complex interventions. According to this guidance, there are three components of process evaluation:

a. **Implementation** addresses the question: What was delivered, and how? This involves collecting information on: (i) Fidelity measures the extent to which SSL is implemented as planned by assessing whether each session is delivered according to the manual. (ii) Dose captures the quantity of SSL delivered and received by the adolescents, including session frequency and duration. (iii) Reach assesses the extent to which the target population received the intervention as measured by the number of individuals contacted, those who declined participation, and those excluded from the trial.
   (iv) Adaptations measure any modifications made during delivery to improve contextual fit.
b. **Mechanisms of impact** involves determining the way in which the SSL facilitates change by examining how the participants (i.e. adolescents, intervention facilitators) interact with SSL contents and procedures.
c. **Context** refers to external factors (e.g. school environment) that may influence the acceptability, engagement, and delivery of the SSL, which in turn may act as facilitators or barriers to its implementation and effectiveness.

In addition to the MRC framework, we will use two established frameworks: the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009) and Re-AIM (Reach, Effectiveness, Adoption, Implementation and Maintenance; Glasgow et al., 1999) to guide process evaluation. The CFIR will facilitate our understanding of factors across five domains that are barriers or enablers to the implementation of SSL. These domains include: innovation (i.e. characteristics and design of the SSL), inner settings (i.e. the characteristics of the schools which may facilitate or hinder implementation SSL such as leadership, culture, and structural capacity), outer settings (i.e. broader contextual influences such as school location), individual (i.e. the roles, competencies, and attitudes of school staff who deliver SSL), and the implementation process (i.e. procedures and strategies through which schools deliver SSL).

The RE-AIM framework will be used to evaluate implementation outcomes, including intervention reach (i.e. absolute number, proportion, and representativeness of adolescents who participate in the study and the reasons for participation or nonparticipation), effectiveness (i.e. impact of SSL on the primary and secondary outcomes such as quality of life, and economic outcomes), adoption (i.e. absolute number, proportion, and representativeness of settings and SSL facilitators who choose to initiate the SSL, and reasons for their participation or nonparticipation), and maintenance (i.e. the extent to which SSL is sustained over time at both the individual and setting levels).

Participatory action research is central to our research. We have actively engaged adolescents and other key stakeholder groups right from the beginning planning stages of the project.

The MyHeRo study process evaluation: Aim and objectives

The main objective of the process evaluation is to understand how SSL works across different schools, and why its impact may differ from one school to another, as well as between adolescents. These findings will help us to interpret the effectiveness and cost-effectiveness findings from the MyHeRo Study.

The more specific aims are:

1. To assess the reach, dose and fidelity with which the SSL is delivered; to document how the SSL is carried out across the participating schools, including whether it was delivered as intended. This helps identify implementation successes or failures that could influence outcomes.
2. To determine how participants engaged with and responded to SSL, and to describe participants' views of the SSL, including intervention acceptability. This helps to evaluate SSL's design and delivery format, which will aid in interpreting the results.
3. To explore the contexts within which SSL is delivered, and to explore barriers and facilitators of implementing SSL intervention in schools in Malaysia. The findings could shed light on real-world feasibility and will have implications for future program design and delivery, and adaptation to other settings.

Method

Ethical approval and dissemination

Ethical approval to carry out the MyHeRo Study RCT and the evaluation research was received from the University of Roehampton (PSYC 23/483) and Sunway University (SUREC 2023/093). Approval to conduct this research in schools were provided by the Malaysian Ministry of Education (KPM.600-3/2/3-eras(21819), the Department of Education in the state of Sarawak (JPNSW (SPPD)0.600-11/1/2 Jld.24 (38), Sabah (JPNSBH.SPS.600-1/1/1 JLD.30 (08), and Selangor (JPNS.SPD600-1/1/2 JLD.46 (50), and the participating schools.

All potentially eligible participants and their parents will be provided with participant information prior to participation. Written informed consent will be obtained from parents, facilitators of SSL and SSP facilitators, and adolescents will provide assent.

The findings will be disseminated through various channel, including at national/international conferences, in publications in peer reviewed journals, and funder reports.

Logic model

In line with MRC guidance, we developed the logic model for the MyHeRo Study during a series of participatory workshops with key stakeholders. The logic model (Figure 2) was designed to map the CFIR constructs to factors that could affect the implementation (based on the RE-AIM framework) and the effectiveness of SSL. It also serves as the foundation for developing the process evaluation methods, including choosing dependent variables and designing surveys and semi-structured interview guides.

Data collection procedure

The mixed methods process evaluation is integrated within the MyHeRo Study. Quantitative data for the process evaluation will be collected from both the intervention and control groups, while qualitative data collection will be limited to the intervention group. In implementation research, mixed methods designs are recognised as valuable for assessing acceptability, feasibility, and implementation processes (Dopp et al., 2019). These designs enable a detailed understanding of each school's context and how the intervention is delivered, and to explore variations across clusters (i.e. classrooms).

Four groups of participants will be involved in the process evaluation: Adolescents (aged 12–14 years), school senior management (e.g. school principal), SSL facilitators (i.e. school staff who implement the SSL), and independent assessors (see Tables 1 and 2).

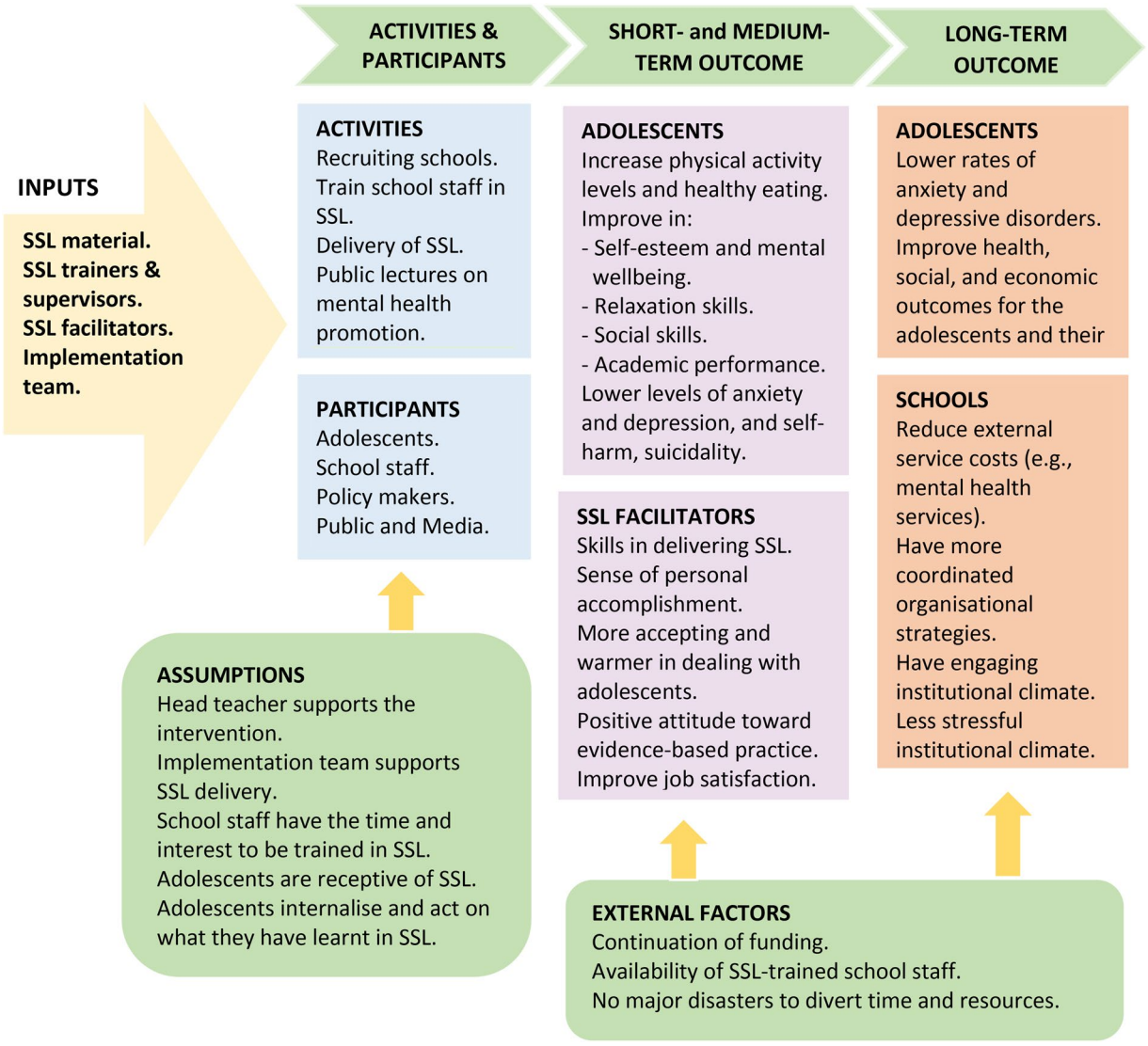

Figure 2. Logic model.

Four types of data will be collected and triangulated: school data, self-report questionnaire data, observation, and qualitative interview data.

1. **School data**: School contextual characteristics will be collected from the Malaysian Ministry of Education website. These include the school size (i.e. the number of students in the whole school, and the number of classes in each year group) and school location (i.e. rural or urban areas).
2. **Self-report questionnaires**: SSL facilitators will complete a set of questionnaires immediately after taking part in the SSL training workshop, using online survey software (Qualtrics). These questionnaires include:

   Demographics and Intervention-related Scale**:** This questionnaire asks SSL facilitators to provide information about their professional background, conceptualizations of mental health, current mental health practices, perceived mental health challenges in schools, service provision, and barriers to mental health support.

   School Evidence-based Practice Attitude Scale (Merle et al., 2023) will be used to measure SSL facilitators' attitudes toward adoption of evidence-based practices (EBPs) in a school setting. It's an adapted version of the original Evidence-Based Practice Attitudes Scale (EBPAS) (Aarons, 2004), developed specifically for use with teachers. It contains 13 items which covers four attitude domains: (1) the intuitive appeal of EBP, (2) Openness to new practices, and (3) Fit (i.e. the degree to which

Table 1. Implementation process.

Implementation process	Process data	Source of data
Outer setting School characteristics	• Location (urban versus rural). • Area (Malaysian states of Selangor, Sarawak, Sabah). • Level of economic deprivation.	• Publicly available information. • Malaysian Ministry of Education's website.
Inner setting School organisational characteristics	• School size, school type (public school, religious school). • Number of teachers. • School counsellor availability. • Competing demands. • School readiness for Implementation.	• Malaysian Ministry of Education's website. • Semi-structured interview with school teachers.
School senior management team	• Level of support.	- Semi-structured interview with school teachers.
Individual characteristics • SSL facilitators	• Age, Gender, Years of employment, Self-efficacy. • Perception towards evidence-based intervention, Previous training in psychosocial interventions, Mental health literacy.	• Semi-structured interview with the SSL facilitators. • An online survey using self-report questionnaires.
• Participants/Adolescents	Age, Gender, Mental health literacy.	• Online survey using self-report questionnaire. • Semi-structured interview with the SSL facilitators.
Intervention characteristics	Comments about SSL.	• Interviews with the SSL facilitors and the participants (adolescents).

Table 2. Implementation outcome.

Implementation outcome	Implementation data	Source of data
Fidelity	SSL being delivered by the school.	• Written observations in all SSL sessions by the Independent Assessors. • Semi-structured interview with the SSL facilitators at post-intervention.
Reach	• Proportion of parents of at-risk adolescents who provide consent for their child to participate. • Proportion of those who receive consent to participate in SSL.	• Observations/Routine monitoring data by the IAs. • Semi-structured interview with the SSL facilitators.
Uptake	• Proportion of schools that participate in the study. • Proportion of school staff who facilitate SSL.	• Semi-structured interview with the SSL facilitators. • MyHeRo Research team.
Acceptability/Appropriateness	• Satisfaction with SSL by the adolescents, school, SSL facilitators.	• Semi-structured interview with the adolescents and the SSL facilitators.
Adoption and sustainability	• SSL facilitators continue to implement SSL. • SSL facilitators train their colleagues to implement SSL (based on the Train-the-trainer model)	• Semi-structured interview with the SSL facilitators at 12 months post-intervention.

teachers perceive an EBP to fit with the needs of their students and their teaching philosophy). In this research, the original subscale 'Burden' (i.e. the degree to which a teacher perceives the EBP to add undue burden) is retained.

Self-Efficacy Scale will be used to measure the school staff/SSL facilitator's confidence level in delivering SSL in their settings. This scale is based on the construct of self-efficacy which is a person's belief in his/her capability to master a specific task (Bandura, 1986). The SSL facilitators will be asked to rate on a 5-point Likert scale ranging from not at all confident (0) to 'extremely confident' (4) their level of confident in their skills, knowledge, experience, and ability to overcome existing obstacles such as limited time and space.

3. **Observation**: An independent assessor will be assigned to monitor the implementation of the SSL delivered to a group of students. The assessor's role is to assess the fidelity, quality, and adherence to the SSL protocol, and to document group dynamics and participant engagement. The assessors are graduates in Psychology who underwent orientation sessions to become familiar with the structure and content of the SSL. The observations will be conducted using a structured checklist and field notes. The checklist allows for systematic recording of whether each element was delivered as intended, whereas field notes will be used to capture qualitative aspects of the sessions (e.g. facilitator delivery style, student responsiveness, group cohesion).

4. **Qualitative interviews**:
5. All the SSL facilitators will be asked a series of questions related to: (1) Their experience in implementing SSL program in their school, (2) their motivation to take on the role of a SSL facilitator, (3) factors that influence their ability to deliver/support the SSL program in your school, and about the aspects of your school made it difficult for you to support the program, (4) aspects of the SSL works best/does not work well, (5) involvement of their school senior management in the SSL, and (7) describe the readiness of your school to take on the SSL.
6. Based on purposive sampling, a sample of the participating adolescents will be asked (1) whether or not they enjoy SSL, (2) the skills from the SSL they find the most useful and the frequency they use that skill(s), (3) reasons why other young people might be hesitant to participate in SSL, (4) whether the content of SSL should be changed, (5) whether the mode of delivery needs to be changed, (6) the way to recruit adolescents to participate in SSL, (7) whether they have any friends who might benefit from SSL, and (8) the best way for us to share the findings of this study to other people.

Planned analysis of the data collected

Quantitative analysis plan

Facilitator questionnaires will assess facilitator's competence, confidence, and experience in delivering the SSL, as well as attitudes toward adopting evidence-based practices in schools.

Observation data and independent assessor's field notes will be analysed to examine implementation outcomes including reach, fidelity, and dose. Descriptive analyses (e.g. counts and percentages) will determine demographic differences in the intervention outcomes. Group differences in proportions will be tested using Pearson's Chi-squared tests, and trends will be assessed with Chi-square linear-by-linear association tests.

Regression models will also be conducted to examine the influence of contextual factors on implementation outcomes such as reach, uptake, and acceptability.

Following MRC guidance (Moore et al., 2015), mediation analysis will be conducted to examine the extent to which contextual variation (e.g. site-specific barriers) is associated with implementation quality (e.g. poor fidelity) and intervention outcomes (e.g. satisfaction, and quality of life).

Qualitative analysis plan

Interviews will be audio-recorded, transcribed verbatim, and analysed using thematic analysis, following Braun and Clarke's six-phase model (Braun and Clarke, 2006). An iterative and reflexive approach will be applied by combining themes emerging from the data with topics from the interview guide. Two coders will independently generate initial codes and themes for a subset of transcripts and refine these through discussion.

A Framework Method (Gale et al., 2013) will be used to organise and interpret the data by combining deductive (pre-determined) and inductive (emergent) coding. This approach enables exploration of pre-defined topics (e.g. barriers and facilitators to implementation) while at the same time allow new, unanticipated themes to surface. Consistent with a realist approach (Rycroft-Malone et al., 2012), the inductive analysis will identify underlying mechanisms influencing programme delivery and outcomes.

Triangulation of qualitative and quantitative data

Qualitative and quantitative data will be analysed separately before being integrated through triangulation, following these steps:

a. Organising findings: Results from both qualitative and quantitative datasets will be organised into overarching meta-themes aligned with the research questions to identify areas of convergence and divergence.
b. Developing a convergence coding matrix: A matrix will be developed to organise and explore any

degree and type of convergence within each theme (e.g. agreement, partial agreement, silence, or dissonance). This iterative process will help synthesise key concepts across both data types into coherent meta-themes.

c. Reviewing meta-themes: Meta-themes will be reviewed to determine the level of convergence and to identify any differences in interpretations among researchers.
d. Ensuring clarity and consensus: The findings will be independently assessed by multiple researchers, and any disagreements will be addressed through discussion and re-examination of the data.

Process evaluation data will be analysed independently of the trial's clinical and cost-effectiveness outcomes. To minimise bias, the trial statistician will remain blinded to process evaluation findings until the analysis of all primary and secondary trial outcomes is complete.

Discussion

This protocol describes the rationale, design, and methods for the process evaluation embedded within a cluster RCT (MyHeRo Study), which assesses the effectiveness and cost-effectiveness of a school-based psychosocial intervention (SSL) delivered by school staff. The process evaluation aims to explore how SSL is implemented in school settings, how it is experienced by staff and students, and what factors influence its delivery and uptake. The methods are guided by the MRC framework for the evaluation of complex interventions, as well as by the CFIR and Re-AIM frameworks. These frameworks provide a structured approach for assessing how interventions are implemented, how they function in context, and the mechanisms through which outcomes are achieved or not. By aligning with this guidance, our evaluation promotes methodological rigour and supports standardised reporting to enhance cross-study comparability and knowledge accumulation across similar trials.

The process evaluation is embedded within a cluster RCT of the MyHeRo Study and will contribute critical insights into trial outcomes. In the event of a lack of positive evidence based on outcome data, the process data will enable us to explore whether outcomes reflect intrinsic limitations of the intervention, implementation failure, participant-level barriers, or contextual challenges. Such information will be instrumental in guiding future intervention refinement or adaptation. Conversely, should the trial demonstrate positive effects based on outcomes, the process evaluation will help identify core components and contextual enablers that contributed to success. For example, if strong leadership from school principals is found to be a key driver of intervention uptake, this information could inform the design and delivery of similar future programmes.

Strengths and challenges

A notable strength of this process evaluation is its use of a mixed-methods design, integrating both quantitative and qualitative data to provide a multidimensional understanding of implementation. Data will be collected using various methods, including participant questionnaires, and semi-structured interviews with adolescents, school staff, and SSL facilitators, and observation the delivery of the SSL which will enrich contextual understanding. This triangulation of data sources and methods allows for greater analytical depth and enhances the trustworthiness of findings. By capturing perspectives from all key stakeholders, the evaluation aims to identify both individual- and system-level factors that affect intervention engagement and delivery. Importantly, interviews will be conducted by independent assessors external to the research team, reducing potential interviewer and confirmation bias during data collection and analysis.

Despite its strengths, several limitations need to be considered. First, the context-specific nature of the trial presents a risk of limited generalisability. Although the intervention is implemented across diverse regions in the Malaysian states of Selangor, Sarawak, and Sabah, local sociocultural norms, school infrastructure, and health system capacities may influence outcomes and reduce transferability to other geographic contexts. Second, we acknowledge the potential for selection bias in qualitative interviews, particularly if participants who drop out of the intervention are less likely to engage in follow-up interviews. Additionally, as with many school-based evaluations, the added burden on school staff and competing academic priorities may impact engagement and response rates.

Conclusion

By examining intervention fidelity, contextual variation, and SSL facilitator/adolescent's experiences, this process evaluation will enhance the interpretation of the MyHeRo trial outcomes and support the optimisation of future mental health interventions in school settings. This process evaluation offers valuable insight into which elements of the intervention were effective, how and why outcomes were achieved (or not), and how implementation varied across settings. These findings will enhance the interpretation of the effectiveness evaluation and contribute to the broader literature on process evaluations within complex school environments. This research underscores the importance of embedding process evaluations in clinical trials, particularly in real-world settings where variability in context, resources, and participant characteristics can significantly influence outcomes.

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Trial status

The trial is ongoing, and recruitment of participants for process evaluation continues.

Trial registration: ClinicalTrials.gov Identifier: NCT07138664, first posted on August 16, 2025.

Authors' contributions

CAE served as the Principal Investigator of the project and led both the funding application and the preparation of the initial manuscript draft. All authors (SZ, CHT, JLAC, ADT, ALON, HAM, HD, NDNF, NAM, SW) made substantial contributions to the conception and design of the study. SZ was responsible for translating and adapting the questionnaires (from English to Bahasa Malaysia), as well as the manuals and workbooks for the Super Skills for Life and Study Skills programmes. CAE led the team that conducted the back translation of the questionnaires in accordance with recommended translation procedures. CHT and JLAC reviewed the final versions of the adapted questionnaires to ensure content validity and linguistic clarity. ADT developed the statistical analysis plan and performed all statistical analyses. All authors substantially revised or critically reviewed the content of the article and approved the final manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

This manuscript reports a study protocol; hence, no data are available at this stage. Data generated during the study will be available from the corresponding author upon reasonable request following study completion.

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